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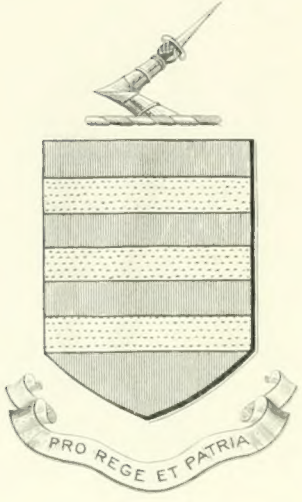

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Original Articles.

MORBID SOMNOLENCE AND ITS RELATION TO THE ENDOCRINE GLANDS.*

BY CHARLES L. DANA, M.D.,

NEW YORK.

PROFESSOR OF NERVOUS DISEASES, CORNELL UNIVERSITY MEDICAL COLLEGE.

SOMEWHAT over twenty years ago I wrote an article on "Morbid Drowsiness and Somnolence," of which the opening paragraph will answer now: "The earliest writer upon this subject was a physician of the first century, Aretaeus, who left two books upon "The Lethargics." Galen, who a little later covered the field of medicine for 1200 years, also made many references to abnormal somnolence and lethargy. On the other hand, at the present day we find that in the five large volumes on nervous diseases in Ziemssens' Encyclopædia there is barely a reference to this subject. Perhaps we are more wide-awake now than they were seventeen centuries ago."

The literature on the subject of morbid somnolence is still rather limited, but the subject has been more carefully defined and some of its causes successfully investigated.

Morbid somnolence and drowsiness is a condition which may occur as an intermittent phenomenon, or as a somewhat continuous performance, like that of the man whose case was recently reported in a German journal. He received a wound on the head and slept for three and a half years; he then recovered.

1. These cases of continuous sleep are usually cases of mental disease or of the so-called "hysterical" and "trance sleep."

2. Conditions of interrupted or prolonged somnolent states occur also in the depressive phases of manic-depressive insanity, and in dementia precox. They are also recognized now as being mental rather than sleep disturbances.

3. In certain rare instances something which resembles sleep attacks occur as equivalents for epileptic seizures, or hysterical seizures. These epileptic and hyterical sleep seizures include most of the cases which go under the name of "narcolepsy."

4. Perhaps the most familiar forms of seriously morbid drowsiness and somnolence occur as the result of senile or syphilitic changes in the circulation of the brain; or in severe exhaustion and autotoxemic states.

5. A good deal of attention has been paid to the somnolent and drowsy states that occur in organic disease of the brain, more specifically in tumors of the brain.

These are especially associated with tumors of the third ventricle. Among 30 such cases collected by Weisenberg, drowsiness and somnolent tendencies occurred in six or 20 per cent., and in none of these was there any involvement of the pituitary gland. A conclusion has been drawn that pressure on the optic thalami blocks the sensory pathway and thus leads to somnolence and sleep.

All these types of somnolence are not particularly rare or puzzling.*

But there are other cases which are not so easily explained or are explained on the theory that they are due to disorder of ductless glands. It is to these that I wish to call attention now.

Ten years ago Salmon advanced the idea that physiological sleep was due to an internal secretion of the pituitary. A year later, Gemelli refuted this idea, and showed that in the hypophysis of the marmot during hibernation there was a decrease of secretory cells. Gemelli thought that the glandular hypophysis in connection with other ductless glands had the function of neutralizing toxins and had no especial relation to sleep.

Cushing was impressed with the fact that in hypopituarism there occur phenomena much resembling those of hibernation, viz., unusual deposition of fat, lowering of blood pressure, pulse, and temperature, and oftentimes prolonged somnolence. He made a study of the subject in a series of hibernating woodchucks. He found that during the sleeping period there were changes in many of the ductless glands, the most notable occurring in the pituitary body. This gland diminishes in size and the cells of the anterior part lose their characteristic staining reactions. When hibernation ceases the gland swells and the cells increase again and acquire their affinity to differential stains.

He concludes on the basis of these observations that hibernation may be attributed to a physiological wave of endocrine gland inactivity, and he thinks that the essential rôle may be played by the pituitary body, since the most striking histological changes appeared in this structure, and since it has been shown that diminution of the secretion of this gland, and of this gland alone, produces symptoms comparable to those of hibernation.

This conclusion is plausible, though the phenomenon might be explained also in part on the theory that the glandular inactivity was the result rather than the cause of hibernation.

As illustrating the influence of tumors of the

*Read at a meeting of the Practitioners' Society, Nov. 5, 1915.

*Going over now a list of twelve personal cases of marked somnolence and drowsiness, I find I can explain them as being due in one case to epilepsy; in two cases to arteriosclerosis and autotoxemia from overindulgence in food and alcohol; in two cases to profound fatigue from excessive work with cardiovascular weakness and very low blood pressure; in four cases to the depression of melancholia; in three to abnormal constitutional conditions, defect of habit—the patients were born with sleep defects, but with no mental or physical defects; in two to dementing conditions.

pituitary in producing somnolence, he cites the case of a man of forty-eight with an interpeduncular tumor, involving the pituitary gland. There were characteristic morbid pressure symptoms, but in addition there were evidences of hypophyseal insufficiency, and among these symptoms was drowsiness which became one of the leading symptoms. The patient not only passed most of his day in slumber, but on a number of occasions he slept for several days. And once he slept so deeply and there was such a marked slowing of respiration that artificial means were resorted to for its continuance. His somnolent symptoms were improved by subcutaneous injections of the anterior lobe extract and by sellar decompression, and finally and markedly by the implantation into the subcortex of the brain of the pituitary gland of a stillborn child. This also produced an astonishing improvement, but in one or two months he relapsed and died.

The Endocrine Glands.—The three major ductless glands are the suprarenals, the thyroid, and the pituitary, these being especially characterized by the fact that they each have two kinds of tissue.

The minor glands are numerous and perhaps not yet altogether known. They would include the thymus, the interstitial cells of the gonads, the islets of Langerhans, certain duodenal glands, the corpora lutea, the uterine and mammary glands, the placenta, the pineal gland, and perhaps the liver.

With regard to the first three, the major glands, there are rather definite clinical conditions associated with decrease or increase in their activity. We have hypo- and hyper-thyroidism. We have a hypoadrenal condition, and we have hypo- and hyperpituitary conditions. With regard to the suprarenals and the minor endocrine glands, there are certain pathological conditions associated with them, but in none of these except perhaps the pineal* does there occur anything that suggests a disturbance of sleep.

In conditions of marked hypothyroidism which have developed into myxedema there is a mental apathy and stupor, but there are no characteristic periodic sleep attacks and no condition which resembles prolonged somnolence. One does see, however, conditions of hypothyroidism in which apathetic tendencies and sluggish mind conditions are improved very much by thyroid extract; so that it seems possible that thyroid deficiency may be one factor in the production of morbid somnolence.

The facts regarding the pituitary gland are much more definite. In affections of the anterior part when leading to acromegaly there is sometimes a certain amount of mental dullness and apathy, and there are sometimes also somnolent seizures.

In affections of the posterior part with probable deficient functioning there occur along with adiposity, genital atrophy, slowness of respiration and pulse, low blood pressure, low temperature, a great tolerance of carbohydrates, distinct periods of drowsiness and sleep; so that this condition is sometimes a characteristic feature of that group of symptoms known as the "Fröhlich syndrome."

As an illustration of this are various cases of dyspituitarism, of which the following summary of a history kindly furnished me by Dr. Walter L. Niles is a case in point (The case is reported in full in this issue):

Case I.—*Summary:* Male, age 23, normal mentally and physically and of slender build until four years ago. Then his eyesight began to fail. He grew fat and sleepy, occasionally a frontal headache. Visceral, renal, cardiovascular conditions and blood normal. Figure of feminine type, tapering fingers. Marked deposits of fat, genitals small. Thyroid not enlarged. Much suprapubic hair, skin rough, and dry. Hair of head, face, and axilla normal. No pigmentation. Temperature constantly subnormal. Pulse 90 to 100. No enlargement of sella turcica. During the day he is very drowsy, sleeping in his chair, and even while standing up. Some mental deterioration. Marked polyuria, an abnormal tolerance to carbohydrates. (Fig. 1.)

Dr. William M. Leszynsky recently reported a case of a somewhat similar type.

Case II.—*Summary:* A boy of 17, normal until his twelfth year, when he began to increase in weight and had severe headaches. In his sixteenth year he began to lose his eyesight and in six months his right eye became blind; he had difficulty in walking, had attacks of vertigo. He began to get dull, stupid, and somnolent. He slept from twelve to fourteen hours daily and fell asleep at inopportune times. He had when examined pronounced adiposity (weight 152 pounds, height four feet nine inches) and a feminine type. Skin was dry, no hair in axilla and little on pubis, genitals undeveloped, fingers tapering. Mentally retarded. Sella turcica not enlarged, but base was irregular in outline. Nystagmus and primary optic atrophy.

Fig. 1.—Dr. Niles' Case of Morbid Somnolence and Hypopituitarism. (See also Figs. 3 and 4 on p. 7.)

Dr. Kraus, in the *American Journal of the Medical Sciences*, has reported a case of an irregular form of the Fröhlich syndrome under the title "Pilous Cerebral Adiposity."

Case III.—*Summary:* The patient was a man, aged thirty-one, who had a fall on the head at the age of four, followed by Jacksonian epilepsy which lasted from

*Hypopinealism is characterized (Frankl-Hocht) by abnormal pigmentation of skin; excessive growth of hair; obesity; premature genital and sexual development; precocious adolescence; drowsiness.

the age of thirteen to the age of twenty-six. Then the Jacksonian epilepsy ceased and he became obese, hairy, and sleepy. His weight increased to 282 pounds, and there was great development of hair over the body. He developed attacks of profuse sweating. He had a carbohydrate tolerance of 700 grams. There was genital atrophy and he began to suffer from drowsiness and somnolence during the day, and excessive prolongation of the normal hours of sleep. He was intelligent and jolly and had no signs of a brain tumor; no changes in the cranial nerves; no change in the shape of the sella turcica. (Fig. 2.)

Fig. 2.—Dr. Kraus' case of pilous cerebral adiposity with somnolence.

However, the Fröhlich syndrome is not always sociated with somnolence:

Case IV.—Last winter I had in my clinic and under charge at the Neurological Institute a boy aged twelve, who had within the previous two or three months been developing symptoms of intracranial pressure, viz., headache, vomiting, and papilloedema. Examination showed him also to have developed the adiposity and genital atrophy such as characterize in the Fröhlich syndrone. Superimposed on this came symptoms of a brain tumor. His most serious condition was the choked disc, with impaired vision. Dr. Elsberg performed a callosal puncture on him and this showed that the fluid in the ventricles was under very high tension. After the operation the headache and vomiting disappeared and the general condition was improved, but the eyesight was too far gone and the boy became blind.

Mentally, he was unusually bright and alert and never drowsy or somnolent. (Fig. 3.)

The foregoing cases and evidence submitted are sufficient to show that pituitary disease has something to do with certain cases of morbid somnolence and that it may produce morbid somnolence without any of the "neighborhood symptoms" due to brain disease or to tumor invading the third ventricle. The question then presented itself whether certain obscure cases of morbid somnolence might not be explained on the basis of some functional disturbance of this gland.

In illustration I submit the two following histories:

Case V.—Morbid somnolence, doubtful hypophyseal disease. Mr. A. McC., aged 30, single, carpenter. The family history is negative. Personal history: The patient was born and grew normally. When he was five years old, he fell from the second-story window and received a severe head injury. A year later, when he was six years old, he began to have attacks of drowsiness and sleep seizures. He would sleep late in the morning and when going to school he would fall asleep at his desk; so that he was not able to keep in his classes, and failed to get an adequate education. As he grew older, the condition of drowsiness and the somnolent attacks increased.

When I saw him first, he was at the age of twenty. He was then trying to make a living as an insurance collector, but his sleep habit soon lost him this job. He would fall asleep when he was walking in the street and would continue to walk in a straight line until he ran into something that woke him up. He would go to sleep also while at his meals, and he would fall asleep while carrying food to his mouth.

During this condition of sleep his face did not change color, except for a slight red spot which appeared on each cheek—a kind of flush. He never had made any spasmodic movements. He would go to bed at about 10 and sleep until 8 the next morning, and on some days until 10, 11, or even the whole of the next day. When he awoke he was quite ready to go to sleep again. When I first saw him he had already lost four positions because he went to sleep at his work. He took, for example, a position in a designer's office and was given a model. He took this and put it in front of him and then went to sleep.

In October, 1915, I saw the patient again, after a lapse of ten years. He stated then that he was considerably improved, and was able to keep awake with some effort during the day. If, however, he followed inclination he would go to sleep at his work.

When he gets home and sits down to rest he falls asleep. He does not fall asleep over his meals and during the night he sleeps about nine hours. He says that he feels better, but still has some headaches, has to fight sleepiness, and has had one or two attacks of dizziness. He also has attacks of leg weakness, in which his knees tend to give way and he has to make an effort to prevent himself from falling.

He has always a good deal of trouble with his nose, which was originally broken. Nine years ago he spent two weeks in the Manhattan Eye and Ear Hospital having his septum adjusted and his posterior nasal fossa cleaned out. He still has some difficulty in nose breathing and has one quite enlarged tonsil. Otherwise the patient's health is good. He is mentally alert and a man of considerable intelligence. The physical examination at this time shows the following: The patient is below the average height, 5 ft. 4½ in. His weight is normal, 136 pounds. As a boy he was plump but never fat. His head is large and might be termed

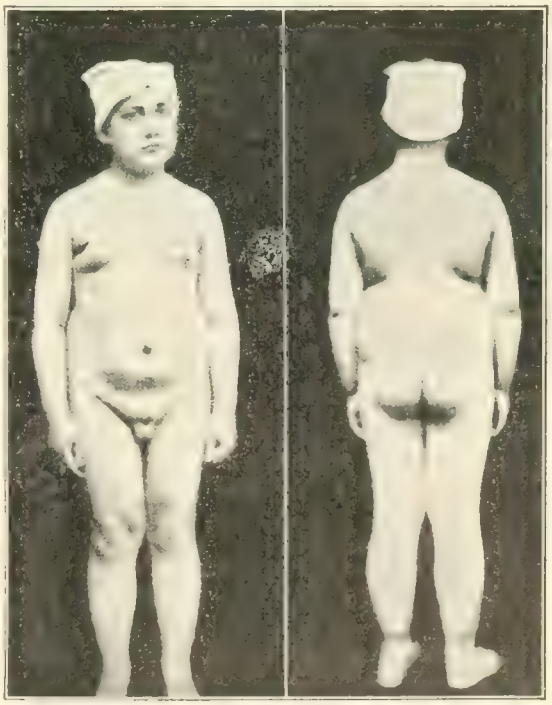

Fig. 3—Fröhlich Syndrome. Brain (Pituitary?) Tumor with Unusual Mental Alertness and No Somnolence

"hexagonal" or square shaped. He wears a $7\frac{3}{8}$ hat. His feet and hands are rather large, but not abnormal. His fingers are rather squat, not pointed. He is not round shouldered, but stands fairly straight. His skin is smooth, not dry, and indeed he perspires rather abnormally. He has freckles over the shoulders and arms from exposure to the sun. The face is not characteristic of dyspituitarism. It is rather suggestive of a chronic hydrocephalus, if anything, the brows being rather prominent and the facial bones rather small. The teeth and jaws are normal; no wrinkling of the forehead. The hair on the head is thick and does not grow low. He is smooth shaven, but could grow a beard. The hair on the body is scanty but not abnormally so, and is abundant on the pubes and in the axilla. There is no excess of subcutaneous fat nor of breast tissues. The figure is a masculine type. The thyroid is palpable. Thoracic organs, normal. Pulse, regular and 80. Temperature under the tongue, 97.8°. Neurological status: The gait and station are normal. The hands show no tremor. Cranial nerves: The vision is very hypermetropic, but when corrected is normal. No limitation of the visual fields. Slight nystagmus on lateral fixation. Ocular movements otherwise normal. Pupillary reflexes, normal. Pupils, even. No facial

Fig. 1.—Roentgen Ray Photograph of Skull of A. McC. (Taken by Dr. A. P. Evans), Showing the Sella Turcica.

tremor; no tremor of the tongue. Hearing and equilibrium sense, normal.

It is already stated that the patient has had adenoids and tonsils removed, and the deviated and broken septum straightened. But he has always had, in spite of that, much catarrhal trouble, probably sinusitis and rhinitis and hypertrophied tissues in the back of the nose and throat.

He used to have migrainous headaches, but now he has catarrhal headaches about every week. The urine is normal. The blood count was not taken. Examination by *x*-ray showed: Absence of anterior clinical processes and a shallow sella. Dr. A. P. Evans, who made the plate, writes: "The sella turcica appears as a very shallow depression. The posterior clinoid processes are present, but there is no shadow corresponding to the anterior clinoid processes. This sella turcica must be considered as enlarged, although there is no erosion of the body of the sphenoid. The frontal sinuses are very large and double. The antra and sphenoidal sinuses are clear."

The evidence in favor of this case being a form of somnolence due to pituitary gland trouble is not very strong, and yet it has certain weight. There is:

First, the history of a severe fall and injury to the head preceding the attacks of somnolence. There could have been easily some injury to the pituitary gland through the result of such a fall at that time. Second, there is the evidence of a slight hydrocephalus in the enlarged and square-shaped head. Chronic hydrocephalus leads sometimes to pituitary diseases.

Third, there is the fact of a rather low temperature.

Fourth, there is a history of a great deal of nasal and post-nasal trouble, and it is not difficult to imagine that some functional pituitary disturbance might have been caused through this catarrhal and inflamed condition. I have two other patients who suffered from persistent somnolence and who had long standing post-nasal disease.

Fifth, the *x*-ray shows some defect of the sella turcica.

Sixth, improvement under pituitary feeding.

Case VII.—H. G. C., male, aged 41, married; no children; artist by occupation. The family history is negative.

The patient has been a strong man, a very hearty eater, and of rather lazy disposition. His habits have been good. He has had no infection, and he has not been excessive in the use of alcohol or tobacco. About a year ago he began to get sleepy. He would go to bed at nine o'clock and sleep until eight in the morning. He would then get up and eat his breakfast, and then go to sleep again and sleep all day, unless he was urged to keep at some active work.

While he is on his feet and walking about and doing something he can keep awake. If he is kept awake in the forenoon by active work he will eat his lunch and perhaps paint for an hour and then sleep until supper time. Then go to bed and sleep eleven hours.

His sleep is very heavy and deep. He snores noisily and can be awakened with difficulty. He goes to sleep sometimes when he is at table or at the toilet or while sitting on a chair. Sometimes he goes to sleep and sleeps so heavily that he falls off the chair on the floor and has recently hurt himself by such a fall. His somnolence is not accompanied with any twitchings, and he has no fainting turns or aura or any suggestions of epilepsy or convulsive disorder.

His mental condition is apparently normal when he is awake. He has no defect of memory. His powers of comprehension and narration and judgment are apparently as good as ever.

Examination shows him to be a rather fleshy man, weighing 224 pounds, height 5 feet 11 inches with large head. His gait and station are normal. His physiognomy shows a considerable deposit of fat and rather large mammary glands, but no feminine shape to his body; no excess of hair. Skin is not especially dry or moist.

His cranial nerves are normal; his sight and field of vision are normal. He has no nystagmus and no evidence of visual trouble. No optic nerve involvement. His reflexes are normal and he has good control of his hands, being able still to paint.

His heart is normal; pulse rather fast; blood pressure 104.

He has had his skull *x*-rayed and it shows no abnormality of the sella turcica. There is no change in the shape of his hands or skull bones and the skin is normal in feel.

He has been treated by Dr. Wilson of 616 Madison Avenue, on the theory of dyspituitarism, and he has been given, as I understand, pituitary gland without any effect.

The results of the laboratory examinations are as follows. There is a slight degree of anemia, endocrine blood change, some excess of indican in the urine which is rather concentrated. The gastric acidity is below par. The phenolphthalein test of the kidney is normal. I had no tests made of the nitrogen of the blood.

Dr. Wilson was kind enough to send me his report of the examination of the urine for excretion of levulose. These tests indicate that there was no insufficiency and that the levulose was handled in a normal way. Dr. Wilson's examination of the urine also indicated a high specific gravity and excess of

acidity and a very decided excess of indican, otherwise it was normal. His examination also showed some slight grade of anemia with some excess of white blood cells, but no trypanosoma.

The examination of the stools showed no evidence of hookworm or other parasites.

The most marked symptoms are: Somnolence, obesity, condensed urine, indican, endocrine blood changes, low blood pressure.

It is difficult to assign the cause of this somnolence, but it seems easiest to explain on the basis of autotoxemia and ductless gland disorder.

We find that morbid drowsiness and somnolence occur in connection with:

1. Anterior lobe disturbance, as in acromegaly.

2. Posterior lobe deficiency as in the Fröhlich syndrome. We find that such somnolent conditions may occur when there is no other lesion such as neighborhood tumors or hydrocephalus.

3. Morbid drowsiness and somnolence occur, however, also in cases of tumors of the neighborhood region, whether these tumors involve distinctly the hypophysis or not.

4. Also in cases of other central brain disorders, such as chronic hydrocephalus and perhaps in pineal gland disease.

5. There are obscure cases of drowsiness and somnolence occurring in persons who have no distinct evidence of organic brain disease, but who have some of the minor symptoms of dyspituitarism. Hence, in these obscure cases investigation should be made for hypophyseal defects. These symptoms are liable to escape notice unless hunted for. They are sella changes, adiposity, hyper- or hypotrichosis, genital atrophy, impotence, amenorrhea, carbohydrate tolerance, endocrine blood changes characterized by an increased number of white blood cells, diminution in polynuclears and a mononucleosis or increase in the number of lymphocytes, and the absence or presence of a large number of eosinophiles.

In addition, there are the symptoms of low blood pressure, slow pulse and dryness or perhaps excessive wetness of the skin.

In hunting for such groups of symptoms, it must be borne in mind that there may be pluraglandular disturbance and that the thyroid, the pineal gland, and perhaps the suprarenal glands must be investigated.

Finally, one can say that there is no glandular organ whose disturbed function is so often associated with marked drowsiness and somnolence as the pituitary (15 per cent. to 20 per cent. of ordinary cases), and such somnolence can occur in cases in which the gland disorder is not associated with symptoms of neighborhood tumor invasion or general brain pressure.

The somnolence of hypophyseal disorders is especially due to deficient action of the posterior lobe associated with some disturbed functioning of the anterior lobe.

So that morbid somnolence, so far as it is hypophyseal, is probably due to defective action of the whole gland.

Sleep is a biological phenomenon which needs to be explaineed only as the waking state, or the diastole and systole of the heart need to be explained. It is not forced upon the system by any special hypnotizing secretion. It is part of the inherent and rhythmic habit of living tissue.

In sleep there is a blocking of the sensory inflow and of many association paths. Hence we might expect drowsiness from pressure on great sensory stations like the optic thalami.

This nerve block is caused ordinarily and in part by fatigue products acting on the synapses of the neurons. The activity of such product is perhaps antagonized by the pituitary secretion (Gemelli).

If this pituitary secretion is lessened as in disease the blocking action of fatigue products is greater and morbid somnolence occurs.

With or without such a hypothesis, we are justified in paying closer attention to the endocrine glands in their relation to morbid somnolence.

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53 West Fifty-third Street

DYSPITUITARISM, PARTICULARLY OF THE POSTERIOR LOBE.

BY WALTER L. NILES, M.D.

NEW YORK.

ASSISTANT PROFESSOR OF CLINICAL MEDICINE, CORNELL UNIVERSITY MEDICAL COLLEGE; ASSISTANT ATTENDING PHYSICIAN TO BELLEVUE HOSPITAL.

ALL recent studies of the pituitary body tend to substantiate the conclusion of Cushing, that it is a dualistic organ, both anatomically and functionally. The anterior lobe influences, if it does not control, skeletal development, while the posterior lobe is related to the processes of metabolism, especially the assimilation of carbohydrates. Experiments and clinical observations justify the assumption that functional hyperplasia of the *pars anterior* results in gigantism if it exists prior to completion of epiphyseal union, while such hyperactivity subsequent to epiphyseal union produces acromegaly; hyposecretion retards skeletal growth and may result in infantilism. Insufficiency of the secretion of the *pars posterior* leads to adiposity with increase in tolerance for carbohydrates, while an excessive secretion causes wasting of the tissues with relative intolerance for carbohydrates.

These functional disturbances may result from tumors of the hypophysis, or pressure upon it from adjacent growths, hydrocephalus, or increased intracranial pressure from any cause, and they may possibly occur without any gross change whatever. As the secretion from the posterior lobe reaches the blood stream by way of the cerebrospinal fluid, stasis of this secretion may result in changes similar to hypoplasia of the gland.

Most examples of dyspituitarism give evidence of more or less disorder of both lobes, but usually with predominant symptoms referable to one of them. The syndrome of dystrophia adiposogenitalis (Fröhlich's syndrome) apparently is the outcome of chronic inactivity of both anterior and posterior lobes.

Since the publication in the *American Journal of the Medical Sciences*, cxlv. 3, of Cushing's paper on the symptomatic differentiation between disorders of the two lobes of the pituitary body I have studied two cases of posterior lobe hypopituitarism, both of which showed little evidence of disturbance of the anterior lobe or of other endocrine glands.

CASE I.—A boy, aged 13 years, came under my observation on April 19, 1913. He is the elder of two children; birth was difficult and his head was misshapen for some days following, though forceps were not used. The boy's mother, and all of her family tend to obesity, but none were fat in early life. His weight at birth was 8½ pounds; at three months, 13½ pounds; at six months, 18 pounds; at nine months, 27½ pounds. He has always been fat, but during the previous year the increase has been especially noticeable, though he has gained little in height. Upon two occasions he has fainted, following slight injuries, and during one attack his face twitched. The attending physician subsequently told his father that it was suspicious of epilepsy.

His appetite is enormous, especially for carbohydrates. He wears heavy clothes and in the summer requires heavy bedding. He is not unduly sleepy, nor does he have headache. He is emotional and cries on slight provocation, but is an attractive boy with a charming personality, his intelligence being quite up to the average.

In the summer of 1911, he is said to have stepped in a rabbit hole, following which he had pain in his right hip and limped. This did not improve until a cast was applied in June, 1912. Following its removal in August, 1912, he had little pain or disability until March, 1913, when it became worse than at any previous time.

Physical Examination.—A large, active, fat boy, weighing 150 pounds (normal average 88.3 pounds), and measuring 63.5 inches in height (normal average 58.2 inches. His conformation is distinctly feminine, broad hips and thighs with tapering extremities, the hands and feet small. There are heavy pads of fat over the abdomen and mammary regions. The skull is

Fig. 1.—Case I. Excessive adiposity and rarefaction of the surgical neck of the right femur.

not large (55.5 cm. in circumference). Neuromuscular and other systems are negative. He has polyuria, passing 65 to 80 ounces of urine daily, which is of low specific gravity, but otherwise negative. Blood, negative.

The skin is rather coarse and dry. The hair of the scalp is thick and brittle; there is no hair elsewhere. The genitalia are noticeably small and under-developed. The temperature is markedly subnormal, being 96° in the morning and only once in three weeks did it reach 98° in the evening. The pulse is uniformly 80 to 84. Blood pressure, 125 systolic, 80 diastolic.

During a five-day period without dietary restriction he averaged 35.2 calories per kilo, but his parents said he ate much less than usual, and a loss of 3 pounds in weight confirmed it. Feeding 200 grams of levulose did not produce glycosuria, but did result in urticaria which prevented further tests of carbohydrate tolerance.

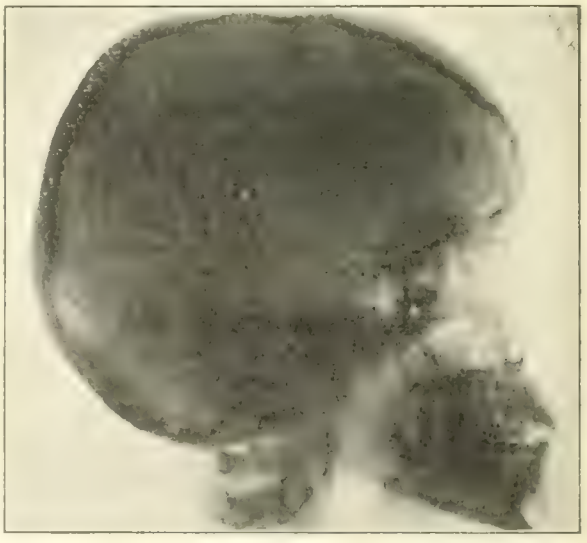

Fig. 2.—Case I. Radiogram of skull, showing an exceedingly small sella turcica and sphenoid bone.

A radiogram of the cranium shows a very small sella turcica on a non-cellular, solid sphenoidal base:* Many radiograms of the hip were made and showed an abnormal appearance of the surgical neck of the femur

*Dr. E. W. Caldwell says the sella turcica is one of the smallest he has ever seen.

which was difficult to interpret. There was distinct rarefaction and some irregularity in the outline which did not appear to be in the periosteum. Several observers thought the condition was tuberculous, but Dr. Virgil P. Gibney, under whose orthopedic care the boy was placed, insisted that it was not, and this opinion

Fig. 3.—Case II. Obesity, narcolepsy, and cerebrospinal syphilis, with bilateral optic atrophy. (See also Fig. 1 on p. 2.)

was concurred in by Dr. E. G. Brackett of Boston. There was subsequently increased angulation of the surgical neck of the femur, so that the leg became shortened three-fourths of an inch. Other bones were normal.

The results of treatment have been very interesting and satisfactory. His food intake was reduced to about twenty-four calories per kilo per diem, and he was given 1/10 gr. posterior lobe of pituitary gland three times daily by mouth. Perhaps the most striking change was in the temperature which at once began to range between 98° and 99.4°. This continued for eighteen days when it began to sag and again became 96° to 97°. The amount of pituitary extract was doubled and it immediately became quite normal, never being noted below 98°. This continued for two months, when the gland was stopped, and four days later the temperature dropped about 1°, again to become normal upon resuming the extract. After four months of treatment, his weight was 114 pounds (a loss of 36 pounds), the temperature was normal and his urinary excretion averaged 35 ounces. While he had heretofore not been regarded lethargic, everybody noticed that now he was far more active both physically and mentally, and during the next year stood at the top of his class in a large school.

During most of the first year of observation, the right hip was kept in a cast, which of course interfered with his enjoying much exercise. It was subsequently massaged and given passive and active movements, and now appears to be perfectly normal, except for the angulation of the surgical neck of the femur and consequent shortening of the leg. He weighs 145 pounds at present, but carelessness in overeating results in rather rapid gain in weight. His genitalia appear normal, and the pubic hair is profuse, though rather feminine in distribution.

Feeding of the pituitary extract was continued for six months, after which calcium lactate and thyroid extract were given for about the same length of time.

Case II.—Herman M., aged twenty-three years, single, was admitted to the Second (Cornell) Medical Division of Bellevue Hospital on February 27, 1914, complaining of weakness, obesity and impaired sight. His father, mother, five sisters and one brother are living and well without a history of any similar trouble. He has never been sick excepting measles at four years of age. As a child he was sometimes "foolish" but not stupid. He was thin and slender until nineteen years old. He has worked as a machine operator on clothing, earning $7 per week until Christmas, 1913. His habits are good and a history of venereal infection is not elicited.

Present Illness.—Four years before admission, he began to get fat, and his vision to fail. He drank large quantities of water and urinated often. Frontal headache was occasionally mentioned, but it was never severe. He became very sleepy, especially in the day time, but at night he slept little. He eats great quantities of food, especially carbohydrates. He has had no nausea or fits, nor has he been paralyzed, though he is weak. He feels the cold greatly and requires more blankets than anyone in the ward. So far as is known, he has never exhibited any sexual desire.

Physical Examination.—A light complexioned, fat, good natured young man. Height, 66 inches. Cardiovascular, renal and other systems negative. Blood pressure, 135 systolic, 90 diastolic. Blood, normal Temperature is constantly subnormal, ranging from 97° to 98°. Pulse, 90 to 100. Eyes: no muscular deficiencies; there is partial optic-atrophy about equal in both eyes. There are no scotomata for color or form (Dr. R. G. Reese). The skeletal configuration is feminine with broad hips and tapering extremities, especially the fingers, and there are large deposits of fat about the clavicular, mammary and pelvic regions. The skin is rough, harsh, dry, and he never perspires. There is no pigmentation. He has a good crop of hair on the head, axillæ and face. The suprapubic hair is widely distributed. The thyroid is not enlarged. The penis is small and the testicles are small and soft.

All extremities are weak and there is a fine tremor of the hands. Superficial reflexes, normal. No palsies. Knee jerks are exaggerated and equal. Ankle jerks, also over-active. No clonus or Babinski. The tongue is deeply fissured and covered with small, superficial erosions. Radiograms of the skull show the sella turcica to be normal in size; the sphenoidal base is dense (non-cellular). There is no evidence of increased intracranial pressure. Blood Wassermann, weakly positive. Spinal fluid: Wassermann positive, fourteen lymphocytes per cmm.

A note by Dr. E. F. DuBois on April 1, 1914, is as follows: "He has been restless and so stupid that it has been necessary to keep him in bed to get twenty-four hour specimens of urine. He gets up every few minutes at night and wanders about the ward. During the day he is very drowsy, sleeping in the chair or even when standing up as has frequently been observed. He is good natured, rather slow of speech and apparently understands even his own language (Yiddish) with

Fig. 4.—Case II. Photograph taken with sisters seven years before the time Fig. 3 was taken. Note acromegalic features of sisters.

difficulty. He forgets instructions quickly and weeps when his breakfast is withheld but soon forgets his troubles. His voice has a peculiar, harsh, monotonous, nasal quality. He has a marked polyuria passing four to five liters daily."

The first time in the calorimeter, fourteen hours after

his last meal, his metabolism was 21 per cent above normal. After 200 grams of dextrose it was only 2 per cent above normal and there was no glycosuria. During 25 days, most of the time on regular diet, he gained seven pounds (155 to 162).

He was given neosalvarsan, mercury, and iodides but without improvement. During a seven-day period when he received 2/10 gr. extract of the posterior lobe of the pituitary gland three times daily, and was subjected to a moderate restriction in his diet his temperature rose to 99.5° and he lost five pounds in weight. Attempts at dietetic control resulted in his becoming dissatisfied, however, and his parents took him home.

I was fortunate in securing a photograph taken with two sisters when he was sixteen years old. He appears to have been quite normal, but his sisters, one of them especially, show acromegalic features. His parents were normal.

Case I is of interest because the dyspituitarism began before puberty and was accompanied by changes in one bone (the neck of the femur) which resulted in permanent deformity. Whether this was the result of hypopituitarism is problematical; it, however, differed from any familiar condition and, considering the rarity of both affections, the chances are in favor of their association with each other. The only evidence of anterior lobe disturbance is his rather large skeleton, but without the usual features of acromegaly.

Case II showed all of the known symptoms of posterior lobe hyposecretion without any evidence of disturbance in the anterior lobe or other ductless glands. He certainly had cerebrospinal syphilis but without definite indication of a tumor in any part. It seems possible that syphilitic changes had developed in his pituitary gland.

The positive results which are obtained from feeding extract of the posterior lobe of the pituitary gland add to the importance of differentiating disorders of the various ductless glands from each other and recognizing the various types of dyspituitarism, which can now be done.

56 East Seventy-seventh Street

SPASMODIC STRICTURE WITH DILATATION OF THE LOWER ESOPHAGUS.*

By THOMAS WRAY GRAYSON, A.M., M.D.,
PITTSBURGH, PA.

Having three cases of dilatation of the esophagus to report, I wish in the following article to give an outline of this condition, a description of one method of treatment, then an account of three cases, and lastly a discussion of these cases in the treatment of which I have learned a few points worth reporting.

Organic strictures may exist in any part of the esophagus and be caused by different conditions (burns, cancers, aneurysms, etc.). Naturally the resulting diverticula or dilatations may exist in any part of the gullet; but this article deals only with those dilatations of the lower esophagus which apparently are the result of spasm of more or less obscure etiology.

Many names have been applied to this condition such as "cardiospasm," "phrenospasm," "abdominal esophagismus," "hiatal esophagismus," "cardiospasm with successive dilatation," "spindle-shaped dilatation of the esophagus without anatomical stenosis," "congenital dilatation of the esophagus," "idiopathic dilatation of the esophagus," "spasmogenic diffuse esophagus dilatation," "paralytic dilatation of the esophagus," etc.

*Read before the College of Physicians, Nov. 11, 1915.

Chevalier Jackson says (*Laryngoscope*, July, 1913), "The word cardia is properly used as the name of the esophageal orifice of the stomach. Spasm limited solely to this orifice is certainly exceedingly rare, while spasms of the abdominal

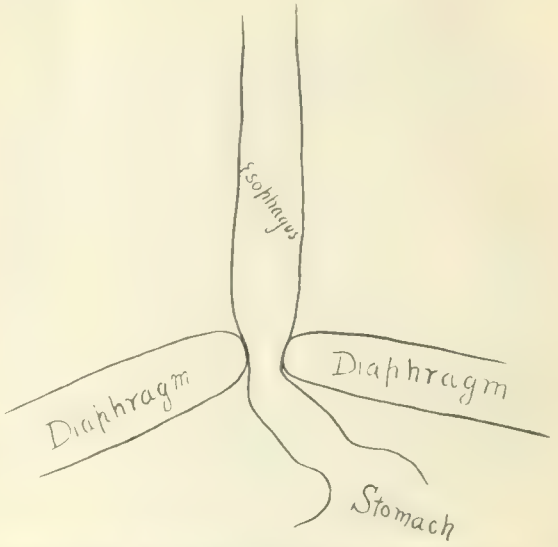

Fig. 1.—Sketch showing how the normal esophagus passes through the diaphragm and merges into the stomach.

esophagus and of the esophagus at the hiatus, either separately or together, are relatively common and should be called by their proper names, and the word "cardiospasm" should either be dropped as a misnomer or limited to those rare cases of true "cardial esophagismus." (See Fig. 1.)

The lower end of the esophagus passes through the diaphragm; then the abdominal esophagus from the diaphragm to the cardia is about 2 to 4 or 5 cm.

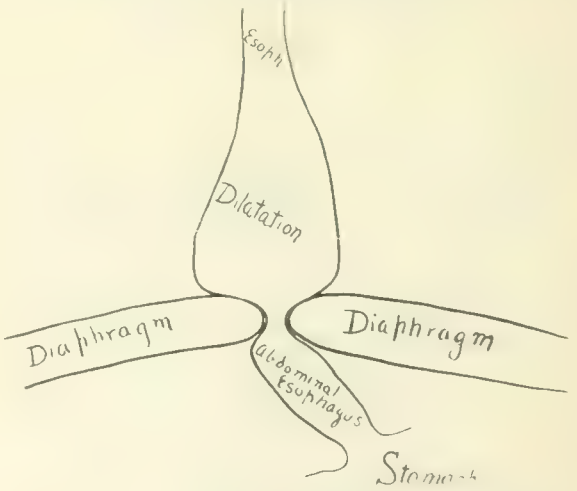

Fig. 2.—Sketch showing where the dilatation of the esophagus usually occurs.

long before it merges into the stomach. It is well established that there is no sphincter at the cardiac end of the stomach, that the muscle fibers there are not more numerous nor differently arranged than in the adjoining portions of the esophagus and stomach. For this reason the best known name for this complaint, "cardiaspasm," is a misnomer. While there may be a spasmodic condition of any segment of the esophageal wall, the usual cause in these cases is not a spasm at the cardiac opening (where there is no sphincter muscle) but a spasm of the diaphragm or of the esophagus at or below the diaphragm. (See Fig. 2.) The pathological condition is really a double one. There are

both *spasm* and *dilatation*. These two entities and various descriptive adjectives give rise to the different names cited above.

Experiments show that stimulation of the peripheral ends of the vagi causes dilatation of the

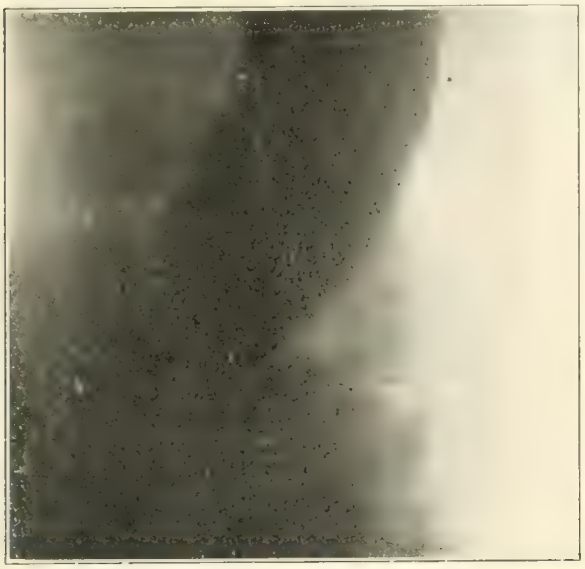

Fig. 3.—Front *x*-ray view of Case I immediately after lavage and a bismuth meal. (Picture by Dr. R. H. Boggs.)

cardia and contraction of the walls of the esophagus, but that cutting of these nerves has the opposite effect. These phenomena may throw some light on the origin of this condition—but how?

It has been suggested, with a good deal of reason, I think, that in these cases there is always an underlying pathological condition, possibly congenital of the autonomous nervous system, and when we understand this system better we shall know more about the causes of spasm and dilatation of the esophagus. The direct cause is often unknown, too, but sometimes appears to be undue haste in eating or overacidity of the stomach.

As in many diseases, the first references to this condition were vague. It seems to have first been observed in autopsies and later was occasionally recognized by the use of bougies, by the sounds of delayed deglutition, etc., but it was not until the esophagoscope was used that much attention was paid to it. Still later by the use of *x*-ray pictures the condition has become moderately well known. Purton reported one of the first cases in 1821. Seventeen case-reports were gathered up in 1878 by Zenker and von Ziemssen, and a number of other writers described other cases in increasing numbers, until Mikulicz mentions a hundred cases reported up to 1904. Since then many have been reported by various observers, among them Einhorn, Plummer, Sippy, Meyer, and others in this country. Some two or three hundred cases altogether have now been reported under various names. Compared with the forty cases described by Plummer, and the ten cases detailed by the late Jesse Meyer in 1910, my experience with three cases has not been great, but I hope gives me reason for writing about a subject to which I have given a good deal of consideration.

The chief complaints of these patients are of inability to swallow freely, and of the regurgitation of food. Before proper diagnosis is made they usually have learned to force the food down (often after drinking water).

The descriptions by these patients of their symptoms make one think at first of neurosis of the stomach, hourglass stomach, or some other *gastric* disorder; but more careful investigation differentiates the trouble from these conditions. When this comparatively rare complaint once comes into the mind of the physician, the diagnosis is comparatively easy. It is quite necessary to confirm the diagnosis by either an endoscopic examination or an *x*-ray picture. With the endoscope or esophagoscope in skilled hands a diagnosis of this condition can often be quickly made. The *x*-ray picture should be made when the gullet is as empty as possible and immediately after a "bismuth meal."

In a number of cases the true nature of the disease has not been recognized, and because of the "vomiting" and epigastric pain gastroenterostomy or appendectomy have been performed. A dilated esophagus may be found at autopsy when no symptoms have been noticed during life.

There is a sense of stoppage or fullness under the lower part of the sternum, and later in the disease this may become actual pain radiating to the back or shoulders. The regurgitation is different from a true vomiting. The patients say "the food just comes up," usually without warning. While the patient is asleep the liquid contents of the dilated portion or sac may appear in the mouth or wet the pillow. If this food comes up soon after swallowing it has its own proper taste, but if it accumulates in a large pouch, it becomes sour or even fetid. There is an increased secretion of mucus, which, mixed with the undigested food, looks quite unlike true vomitus.

The curability of these cases is in inverse ratio to the duration, that is, the earlier the condition is recognized the better the prognosis. The more extensive the dilatation or the sac formed the less is the probability that the esophagus will regain its normal size and tone. If these patients are fortunate enough to have the condition recognized within a few weeks or months after its beginning, they can be benefited to such an extent that with

Fig. 4.—Lateral *x*-ray view of Case II, taken immediately after a bismuth meal, and showing large spindle shaped dilatation of esophagus. (Picture by Dr. R. H. Boggs.)

careful eating and drinking the condition gives little or no trouble. Even if the patients are not cured, the relief after proper treatment is so great that they are much pleased with the results. If a case is treated as a neurosis of the stomach month

after month, if forced feeding is advised until the condition has lasted a year or over, and if the dilatation has increased in size until it holds 6 to 8 oz. or more, then the prognosis is not good, and only by frequent washing out and most careful dieting and living can the patient be kept moderately comfortable. Even then some serious operation or fatal termination is always imminent.

In Dr. Jackson's skilled hands the divulsion or dilatation of the strictures has been successful in helping or curing these patients. He prefers the divulser of Mosher inserted through the esophagoscope.

In 1898 Russel reported (*British Medical Journal*, June 4) a number of cases of this complaint treated with a silk covered rubber balloon, and in 1906 Sippy reported before the American Medical Association a series of cases treated in this way.

In treating these cases I first pass an ordinary stomach tube well down into the esophagus and thus enable the patient to empty the dilatation; then by thorough lavage the gullet is washed clean.

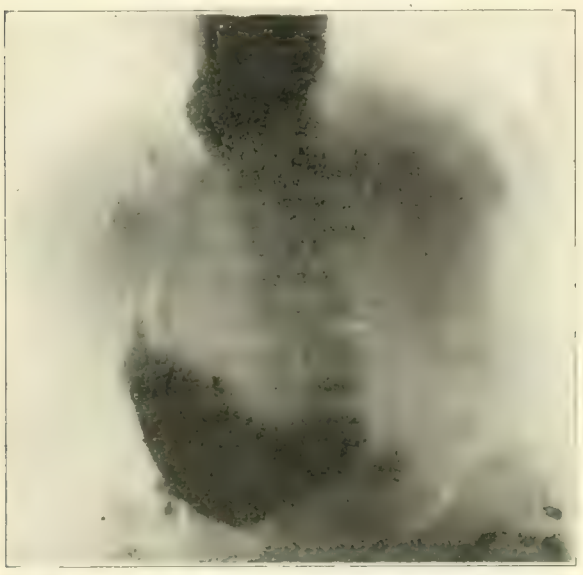

Fig. 1.—Front x-ray view of Case II taken 7 hours after a bismuth meal. Note bismuth at lower end of esophagus at top of picture. (Dr. R. H. Boggs.)

This alone gives great relief. Next the dilator is introduced.

This dilator resembles those used by Plummer, Meyer, and others. It is made on an ordinary closed-end tube, near the tip of which about 5 inches of seamless rubber dam tubing ("Penrose drainage tubing," 1 to 1½ inches in diameter) is firmly fastened with a neat winding of sewing silk, leaving exposed the rounded end of the tube, but enclosing the "eyes" or openings. Next a sausage shaped bag made of thin but strong dress silk is slipped on and fastened in the same way, and then another length (slightly longer) of rubber dam tubing is put on in the same manner. Now if air or water is forced into this tube, it escapes through the "eyes" into the rubber bag which was first applied, and then the apparatus looks exactly like a link of sausage with a stomach tube passing through its long axis.

A mandrin of dentist's cable assists in the introduction of this instrument, in fact is usually required. In recent cases this dilator can be passed through the stricture quite readily, but in the cases of longer standing (probably a year or more) the bottom of the dilatation gets broad and flat so that the mandrin is necessary and the introduction is a tedious operation.

When the tip of the dilator slips through the stricture, the patient can distinctly feel it do so, and the operator, too, can feel it. The mandrin is then withdrawn with a continuous turning as though it were being unscrewed. The tube is held firmly with the other hand to prevent its withdrawal along with the mandrin.

Next a stout syringe filled with *warm* water is fastened to the dilator and the water is forced in. In the author's experience no manometer is needed, for the patient feels any over-distention (which the silk bag in the dilator should prevent). Moreover, a stomach tube is used as a foundation for this dilator which is but 50 cm. long and has 20 cm. of soft rubber tubing of the same diameter vulcanized onto it; the syringe nozzle fits into this mouth piece which by its stiffening shows the pressure accurately enough. When filled with water from the syringe, this tube is pinched, the syringe laid aside, and a pinch-cock slipped on to retain the water, *still under pressure*. The patient sits with this in place for five or more minutes, then the water is released and the instrument withdrawn.

Case I.—A stout meat merchant, married, was referred to me in October, 1910. Family history and habits good. He had worked hard and was of a rather nervous disposition. For years he had weighed 210 to 240 pounds. In 1907 he noticed slight indigestion at times for about six months and then developed an ordinary case of typhoid fever. About the time he fully recovered, he began to have a feeling of pressure in his chest and of choking on eating, but no nausea or pain. The trouble has since been practically continuous. Often while eating the food will seem to stop, causing choking and increased distress until he brings on "vomiting." This gives relief. Every few days an increased full feeling and general malaise causes him to empty esophagus of its contents along with much ropy mucus. Patient often "vomits" a quart including food eaten the previous day. He locates the choking at the tip of sternum and sometimes has a dry cough and hemicrania when the fullness is at its worst. Acid foods bring on the trouble at once, and also salads, sauerkraut, cabbage, many potatoes, coffee or milk. Physical examination shows nothing except a tremulous gray coated tongue and some tenderness in the epigastrium. Weight 228 pounds. Five hours after an ordinary breakfast a stomach tube withdraws a watery fluid with a floury layer. Little mucus present. HCl absent; total acidity, 26 parts per 1,000.

October 18, 1910, Ewald fifty minutes, HCl absent; acidity 10. Diagnosis as yet unsuspected. Treated for chronic anacid gastritis. November 12, patient gave me one ounce of matter "vomited" 7½ hours after supper; no HCl.

November 14, drank cold water in my office. This choked him and as he forced it into stomach, stethoscope over tip of sternum heard squirting sound. November 25, stomach tube withdrew watery liquid much like the chyme after an Ewald test breakfast, HCl absent. Then the true condition dawned on me and I began lavage and passing hard rubber bougies, with rapid improvement in the general feeling. An *x*-ray plate showed an enormous dilatation of the esophagus. (Fig. 3).

January 1, 1911, I began to use the soft rubber dilator described above. This patient was under my care for a year. General health became very good, and he was very comfortable with weekly treatments. Once or twice when he took cold, and once when his store was robbed, he had more trouble in forcing food into his stomach and the dilator did not enter the stomach so easily.

Through 1913 I hardly saw him. He kept himself comfortable by emptying out his esophagus two or three times a week. In January, 1914, he took cold which made him decidedly worse. He got absolutely no food or liquid into his stomach for twenty-four hours, and the pain near the tip of the sternum became so acute that he could not straighten up; but lavage and passing

the dilator made him feel much better at once, and a few treatments made him feel as well as in the past year.

This patient is now comfortable, but his esophageal condition is, I believe, worse than when I first saw him. I am trying to have him undergo esophagogastrostomy.

CASE II.—A merchant of 40, single, consulted me in August, 1914, complaining chiefly of loss of weight, sense of fullness in chest and regurgitation. Family history negative. Personal history negative except hay fever. Habits good. Former weight 155 pounds. Trouble began suddenly eight or nine months before, and no cause could be found. Ate ordinary supper and was well when he retired. Awoke at 1 or 2 A. M. with liquid in mouth; then symptoms continued. Said that six months before seeing me, *x*-ray pictures were taken and pyloric stenosis suspected. Operation showed a normal stomach, but appendix was removed; no improvement resulted. Later had slight pleurisy. Ate generally, but melon or raw fruit "would not go down." Physical examination negative. Weight, 123.

After no breakfast, tube withdrew several drams water with white flakes (evidently from esophagus). Congo negative; HCl absent; total acidity, 96 parts per 1,000; lactic acid present. Ewald test breakfast, one hour; HCl 20; total acidity, 36.

Diagnosis: Dilatation of esophagus. Dr. R. H. Boggs took *x*-ray pictures which showed a spindle-shaped dilatation of the lower end of the esophagus. (Figs. 4 and 5.) Sept. 1, breakfast food at 7 A. M. Tube removed 8½ ounces from esophagus at 9.30. Congo, negative, 2½ per cent. sugar present. Began use of rubber dilator.

Treatment continued a year and a half beginning with three and four days intervals and increasing to intervals of fifteen to twenty days. Soon food was swallowed more easily; the dilated portion decreased in capacity (0 to 2 or 3 ounces), and the body weight increased 30 pounds. If the intervals between treatments were lengthened too rapidly the symptoms tended to return. In August, 1915, he went camping for two weeks. Had no treatments, but was so well that none of his companions suspected his trouble.

In November, 1915, the patient looks and feels well except that after most of his meals he feels a fullness in the chest which is easily relieved by swallowing or by drinking a glass of water.

CASE III.—G. K., a seamstress of 34, single, was seen by me in April, 1915, through the courtesy of Dr. Chevalier Jackson. Her chief complaint was the regurgitation of food. Family and personal history negative. This trouble began in 1908 with difficulty in swallowing liquids and regurgitation at night. Trouble continuous and in December 1914 she was referred to Dr. Jackson who diagnosed the condition with the aid of the esophagoscope and began treatment. Her circumstances admitted of only occasional visits to Pittsburgh when she was always benefited by mechanical dilatation of the stricture through the endoscope. Patient ate everything and appeared well. Would finish meal and then she would feel esophagus full. Then by repeated "swallowing of air" got food into stomach. Liquids harder to swallow than solids.

In September, 1915, she reported by letter to Dr. Jackson that she had been "feeling real well all summer." No hard choking spells and greatly benefited by the treatment.

Remarks.—The *early* diagnosis of this condition is most important, for the earlier proper treatment is begun the better is the prospect of cure.

The esophagoscope shows this condition at once and very plainly. An *x*-ray picture *of the chest* after a bismuth meal is an excellent aid to diagnosis. The withdrawal of the stomach contents at one time with the tube and at other times the withdrawal of undigested food with lactic acid should put the physician on the alert.

When one "draws in" his breath, the lungs passively expand to fill the dilated chest, *i.e.* there is a negative pressure in the lungs and esophagus. If a tube is inserted in the dilated esophagus, air goes in and out with the breathing, and if the end of the tube is held in a glass of water, the liquid is drawn into the esophagus when air is drawn into the lungs. If the tube is in the stomach, just the opposite takes place.

In the dilatation the conditions are ideal for the development of lactic acid which is almost always present. On the other hand, HCl is present (normally) when the stomach is entered and true chyme obtained.

Slight nervous irritation will usually aggravate this condition.

The dilator should be distended with *warm* water at or a little above blood heat. This is certainly best to relax a *spasmodic* stricture.

The distended dilator should remain in place at least five minutes. Case II improved most rapidly just after this was begun.

In the treatment of these cases patience is required. While some of the people are cured in a few treatments, many of them are benefited only by prolonged and patient care.

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WESTINGHOUSE BUILDING.

TREATMENT OF RHEUMATIC FEVER.*

BY BEVERLEY ROBINSON, M.D.,

NEW YORK.

IN the treatment of rheumatic fever, despite all the advances of knowledge during the past few years, we have not improved upon the use of the salicylates.

It is true we no longer regard them as specifics, but we have, as yet, no other agent which relieves acute pain of the affected joints so rapidly and considerably. In addition, when the fever is high and maybe threatening, they lower it at the same time. But the salicylates are objectionable frequently. Given in large doses they are apt, after a few days, to cause annoying symptoms like headache, dizziness, nausea, a weak, irregular pulse, buzzing in the ears, general depression. To not a few patients we are compelled very soon to diminish the amount or the frequency of the dose, and although the patient is still suffering, feverish, and with several of the larger joints swollen and painful.

In view of these facts it has seemed well to stop their use by the mouth at times and give them either by the rectum, as injections, or hypodermically, through the veins. They cause irritation and swelling when given subcutaneously.

To Dr. Lewis A. Conner[1] we owe as, I believe, the best study of the intravenous injections of the salicylates, when from one cause or another either the stomach is rebellious, or the attack is serious and demands rapid and efficient doing. Notably, the brain, the heart, hyperpyrexia, unusual distress, or the involvement of the eyes, may be indications in this direction.

To obtain the best results a small, sharp needle should be used and the chemically pure salicylate of sodium is preferable. The dose may be 10 to 20 grains in a 20 per cent. solution, and the injection repeated in twelve hours, or three times in twenty-four hours, if required.

With proper care as to local sterilization by painting with tincture of iodine, there are no un-

*Read before The Practitioners' Society of New York, November 5, 1915.

toward sequels. Despite Dr. Conner's experience, I would favor, preferably, if I abandoned giving a salicylate by the mouth, the use of it by the rectum.[2]

This method is easily available and requires no special skill or doing. A preparatory soapsuds enema is all that is required before the solution of the salicylate is injected. The amount of the salt dissolved in a few ounces of water with the addition of 15 minims of tincture of opium, may be as much as 2 drachms, and the injection may be repeated, if required once again, in twelve hours.

The amount of the salicylates to be given intelligently will depend upon the view we have of their action and of the effects produced. To some who regard them as specifics in rheumatic fever, large, frequent doses are essential to obtain good results. To others, who still regard them only in a measure as specifics, such doses are not desirable, and the best results are obtained when 10 to 20 grains of the soda or ammonia salt are given by the mouth every three or four hours. I, personally, share the views of the latter. I also believe it is wisdom to combine with their use an equal amount of bicarbonate of soda, either given with the salicylate, or else between times. Often, drinking freely of Celestins Vichy water seems to me preferable to any other way of introducing soda into the system.

To those who prefer a potash salt on account of its diuretic properties, the citrate in 20-grain doses in solution with a little lemon juice added is preferable.

As regards the salicylates, I much prefer the ammonia salt to the soda salicylate. It may be given in the same dose, but it is surely more stimulating and agrees better with the stomach and following its use, has fewer unpleasant symptoms. Preferably, however, to the ammonia salt and as soon as the pains in the joints in adults have diminished, I greatly prefer salicin to any other salicylate. It is a tonic; it agrees with the stomach and may be given frequently and in relatively large doses, 10 to 20 grains, every two hours, without any attendant risk.

Whenever the heart is weakened, or slightly dilated and a murmur exists, this alkaloid is especially serviceable. While I do not endorse the miasmatic views of Maclagan in regard to its value, I have little doubt that in very much he is, even to-day, therapeutically correct. I am of the opinion that the late Dr. Austin Flint's experience corroborated many of Maclagan's affirmations. I have never been convinced that the use of wintergreen oil was preferable to the salicylate of sodium, or ammonium. At one time, as we know, Dr. F. P. Kinnicutt made frequent use of it.

To me, the best combination internally, in the treatment of rheumatic fever, is salicylate of ammonium, five to ten grains, phenacetin one to two grains, caffeine one-half to one grain, every two to three hours in two capsules, at the beginning of an acute attack. Later, it may be given every three or four hours—or three times in twenty-four hours.

I have made use of this same combination with the happiest results, for many years, in attacks of influenza and have continued its use for several days. I am quite sure in both diseases it exercises an antimicrobic effect so far as the general pains and the high temperatures are concerned. I do not believe it has much effect in rheumatic fever, in warding off heart complications. At least, this is true whenever no other salt of sodium, or potassium, is taken at the same time. When it is, I have the impression that heart complications are less frequent, or less severe. Certainly there was much in favor of the old alkaline treatment of rheumatism, and particularly from the heart point of view.

It is to the combined treatment with the salicylate that we obtain, as Lees has abundantly shown, our best remedial effects. After all that may be said in the way of remedial treatment, in rheumatic fever, it is a most distressing, obstinate affection. Just when we seem to get the better of it, it crops up again, and whether we regard these exacerbations, as relapses, or reinfections, they are none the less disheartening. Even during the attack and as far as may be proper, we should search for the focus which has caused it and treat it with good judgment.

If it be in the nose, or throat, a suitable antiseptic spray, or gargle, may be really useful, and lessen somewhat the virulence of the attack. What is true of the nose, or throat, is true of the mouth, and an antiseptic mouth wash, such as Wadsworth's, may be an important factor in keping the mouth in good shape, especially when the teeth and gums are evidently the source of absorption of many pernicious organisms. The true, efficient treatment from this point of view is the preventive one, which has in view the rheumatic attack before it has occurred.

No child to-day should have offensive catarrh, obstructed nasal passages, adenoid growths, or enlarged or diseased tonsils without having them duly considered and cared for. An operation is not always required, but occasionally it is. When this is true, delay is wrong and should not be permitted. Independently of an operation much may be done with appropriate local treatment to put the nose and throat in better shape. So it is with the teeth. If they are decayed they should be filled. If they cannot be filled they should be extracted. In any event the regular use of the tooth brush, waxed dental floss, and a suitable dental paste and tooth wash must be insisted upon. No doubt, in a proportion of cases, not small, the dyscrasic, or constitutional condition, is present as a producing cause in rheumatic fever.

Still it is far from being omnipresent. What is clearer to-day and generally admitted, is that rheumatic fever is an infection caused by a special micrococcus, or by more than one streptococcus, or other infective germ. These are absorbed constantly from a diseased focus and show their evil effects especially when the system is debilitated and susceptible from any cause. This cause may be bad surroundings, such as lack of sunlight, dampness, insufficient air space. Poor food, and that, too, in quantity inadequate to bodily needs, may also be a very important, efficient cause of an attack of rheumatic fever. Certain it is, that among the well-to-do, who suffer from no such deplorable conditions, rheumatic fever is far less frequent.

While among adults, all such conditions should be effectually combated, they do not have the immense importance they have among the young. What sadder sight is there even for the older physician than the view of the little child bound to its bed, suffering from constant dyspnea and unable to move, or even eat, or sleep, without some addition to already existing pains. These symptoms are in part only the index, as it were, of the rheumatic infection and poisoning as it affects the heart. We have before us the enlarged, tumultuously acting

heart, unable to respond to the calls made upon it to preserve life, or well-being. These little ones do not always die immediately, or very soon. But they have before them months, or years, of distress and disability, and ultimate cure is usually most difficult, or well-nigh impossible.

To no one more than to Dr. George M. Swift[3] do we owe an instructive, enlightening account of carditis among children as observed by him at St. Mary's Hospital, New York.

Again, to Poynton and Paine[4] we also are greatly indebted for their insistence upon the great value and importance of all those prophylactic measures which should be instituted to give our poorer children the opportunity to escape from the dire perils of an insidious and terrible disease.

As they remark, how true is it that so very much has been done for those threatened, or attacked with tuberculosis, and how very little relatively, for those threatened with, or attacked by rheumatic fever. Just as we need sanatoria, and desirable surroundings for the tuberculous, so we very much need proper convalescent homes for cardiac sufferers among both the young and the old. They cannot work at any active employment again when they leave the hospitals. They absolutely require prolonged rest, very few, graduated exercises at a given time, assimilable, nutritious food, and the most judicious, careful medical management.

Who will look after this in a practical way? Who will give the money to fit up and endow a large special hospital in a healthy site, with warm, dry air, for all such?

It is needed for the race, present and prospective, more perhaps than any other thing I have now in mind.

In view of the imperfect and limited good which we have been able to accomplish with our treatment of rheumatic fever with the salicylates and alkalis, we have in later years had recourse to serums and vaccines. The former have thus far not succeeded, even in a few cases, in producing any very notable or advantageous results. Many times they have been followed by local, or general disturbance which has occasioned not a little natural anxiety. The skin specially has been recalcitrant, and an angry erythematous rash accompanied by chills and fever has been witnessed by the experimenters. In the minds of the men we should rely on, these trials are not considered advisable. Perhaps we may speak somewhat more confidently about the use of vaccines. They have been of distinct service in several well recorded cases,—but they, too, have their drawbacks and their uncertainties. Whenever a culture can be obtained from an evident focus of infection and made use of after due development, in a case where the salicylates are inoperative, they may not be objectionable and should be tried with every precaution.

To begin with, we should make use of a very moderate amount of any particular vaccine, and little by little test its tolerance to the individual. As to those vaccines which are called polyvalent and are the combination of more than one poisonous microbe derivative, it seems as though it were a very uncertain and irrational method of treatment. If one special micrococcus develops an antibody which may be curative, how can the others be of service? If not of use, may they not be harmful? With such a mixture of microbes, how can we make use of the really valuable microbe in sufficient quantity and not inject into the patient's system a great number which are inert, or injurious? To many observers the problem has become additionally difficult, because the vaccine and the salicylate have been employed simultaneously, and to assign to one or the other the good or bad effects brought on is simply beyond our powers of judgment.

To sum up this matter by quotation from a prominent scientist, I would add: "In the acute stage of the disease [rheumatic fever], the only time when joint cultures will yield positive results, the usual vaccine treatment does the least amount of good and is accompanied with distinctly greater local and constitutional reaction than during convalescence and after all symptoms have subsided."[5] Further, "in cases where salicylates fail to do good the vaccine usually also has little, or no beneficial, action."

In regard to local treatment during the acute attack, I wish to make special emphasis as to the importance of keeping the inflamed joint, or joints, at rest, so far as possible. This is done by means of a well fitting, padded splint, in felt or plaster, for the knee or ankle. For the shoulder, or elbow, a proper supporting cushion or pillow is about the best we can do. The support must not be too soft and yielding. The joints or joints affected should be directly covered with cotton batting, and with thin rubber, or oil silk outside and held in place by a light flannel or gauze bandage.

Warm lotions with bicarbonate of sodium and laudanum may be applied on lint or layers of gauze to subdue the pain; provided they don't interfere with the support obtained from the splint, or necessitate frequent changes, which cause great pain through unavoidable movements.

I deprecate absolutely the application of iced cloths or an ice bag to the inflamed rheumatic joint in its acute stage. In this way, I am confident, a lamentable and dangerous metastasis may be caused to the heart or lungs. Further, I object most strenuously to what is now frequently practised, namely, the application of an ice bag interruptedly, or continuously, to the region of an over-acting heart, where a murmur or friction sound may already indicate the beginning of endocarditis, or pericarditis, or indeed, the involvement of all the heart structures, including the myocardium.

No doubt pain, if there is any, is thus subdued and the frequency of the heart beats lessened, but to me the old custom of a warm mush, or flaxseed poultice, or warm applications similar to those suitable to inflamed joints, are far preferable. They soothe and quiet quite as well, I believe, and are freer from attendant, and possibly very unfortunate sequels. To see a poor, weak, anemic, suffering child, or adult, with an ice bag over the heart, always upsets me, and simply because I believe it is irrational, bad practice, and may occasion very harmful consequences, mainly in the direction of a metastasis to the lungs, or nerve centers, without being of any real or lasting advantage to the heart itself. The old time so-called inflamed heart is not in reality inflamed; it is simply suffering from an acute infection carried to it through its arterial supply and also from the resulting toxemia. This, Dr. George M. Swith has shown, as I believe, most clearly and graphically.

During the semi-convalescent period, locally, the joints may be gently massaged with great advantage, with or without the addition of mutton suet, camphor, or soap liniment. Passive movements may also be utilized in like manner. At first, and if the joints do not yet bear movements, or even

massage treatment well, an application of turpentine and soap liniment sprinkled on flannel, equal parts, may be merely laid upon the painful joint. If evaporation be prevented by means of rubber tissue, or oil silk, blistering may be produced. This result at later stages of the disease is often useful, and turpentine, as in the case of tonsillar inflammation, when locally applied, has appeared to me to have a somewhat specific effect.

As to the use of superheated dry air treatment at this stage of the disease, I have little doubt that in some cases it is very desirable in lessening pain and securing more pliability to joints which have been previously acutely inflamed. To secure the best results it should be followed frequently by gentle and skillful massage—and done daily, or every other day, in a properly equipped establishment, where the patient has the services of an operator who has experience and knowledge. Even in hospitals this can rarely be had. It is most exceptional in any private house, where it could only be obtained by considerable expense and with great difficulty. It would become then a question also as to its real and lasting utility and to what extent one should insist upon its sufficient trial.

Electricity in one form or another has been vaunted by the enthusiasts in sub-acute forms of rheumatism. The *x*-ray, the rapidly interrupted current, have both been used and with excellent results, as reported by the specialists. About these results I am still somewhat sceptical. In one very serious and obstinate case, however, I now recall, I am confident static electricity was very beneficial when other methods had failed to relieve.

As to diet and clothing, a few remarks may be not out of place. I am convinced that too restricted nutriment is a mistake. Of course, a liquid diet in the intial stage is necessary. But even then there is no reason why a little tea, or coffee and milk, milk flavored, or prepared in different ways, jellies, broths—perhaps a little milk toast, or an egg may not be allowed, particularly if the patient is much run down and very weak. A little good old brandy or whiskey, also, will be very useful, given in small repeated doses. Despite all theories which oppose their employment, clinically they are very helpful to tide over a few days of great stress.

Later, when the fever and pains have subsided, in part at least, any simple, well prepared food in moderate quantity at one time which the patient's appetite craves is, as a rule, permissible.

The patient should wear an undergarment or nightshirt of wool or silk. Preferably, also, he should be between woolen blankets, and not between sheets, even of cotton, in the acute stage of the disease. Unnecessary and too frequent exposures of the chest to examine for changes in heart murmurs, or for more or fewer râles in the lungs, or pleuræ, are deplored. Only movements that are absolutely required should be permitted. Meddlesome interference on the part either of doctors or nurses is objectionable. Great care and gentleness should always be the watch-word.

Management of the bowels so as to obtain proper evacuations without causing much distress is often a difficult task. Cascara by the mouth is our most helpful drug, as required.

During convalescence the one thing to be avoided is too rapid return to walking or to work, and before the heart has recovered from the rheumatic poisoning, so-called, which really means microbic infection of one or other sort. The period of complete rest after all acute symptoms have disappeared should be several weeks on an average. To resume work or movements except a very mild kind, and especially in the case of young people, is almost suicidal short of this period. It is not a question of a heart murmur, but it is a question of a heart muscle which has suffered dilatation and loss of power through infection.

Among the tonics which I hold as most valuable to restore health and strength to the patient,I know of none equal to a combination of the glycerophosphates of lime and soda with kola and cinchona. To ward off future attacks and complete the cure, a few weeks at the Hot, or White Sulphur springs of Virginia, for those whose means permit it, is much to be desired. Formerly a trip abroad in the summer and a cure at Aix-les-Bains, followed by a few weeks in the Swiss mountains, was what seemed most desirable. If the general health is kept up to the highest point a second attack is not so likely to occur, even in young boys or girls. Seemingly, the cardiac disablement which follows an attack of severe chorea is more than that subsequent to an attack of rheumatic fever, in which chorea has not occurred. In these instances a longer period of complete rest and, even greater, more continuous care is very essential to a complete return to normal health.

When other means fail and even prolonged rest, massage, passive movements, graduated exercises, do not re-establish a weak, dilated heart, the Nauheim treatment abroad, or at home, is a final resort of great value. It must be employed, however, with rare good judgment and knowledge to obtain valuable, enduring results. Otherwise, I believe, it is deceiving and harmful.

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THE INCEST EPIC OF THE FREUDIANS.

BY GEORGE MITCHELL PARKER, M.D.,
NEW YORK

The door into the nursery was open. The mother saw it. "Always we should have it closed in the morning and you had said it was when we awoke." The father rose. "It was closed—ah"—the door flashed back and past his father rushed the boy. With a leap he was in the mother's arms, the four-year old Paul. He was disturbed and cried: "I do not want my father to come here—I do not want him—he would hurt you and you are mine. When will he go away, so that I may sleep here with you alone?"

Now this father and mother read all the magazines or nearly all the magazines and especially they had clustered most intimately about such articles as inform one of the wonders of science in their application to mankind. Singularly all conveyed a certain implication that in some way a betterment was on its way. They were to be helped; life was to be made easier and richer. Science would do this for them and their children. Science had become a kind of foster parent. The old theological concept of the Great Artificer was rapidly

merging into a flux of test tubes and instruments of precision. Only the kindly emphasis still lay upon the care and solicitude for the reader. The articles were pleasant and easy to understand and sufficiently diverse to maintain a ready attention. With a contented spirit they shared their knowledge of cancer and Montessori, of Salvarsan and Gary Schools. Both knew the entire truth as to alcohol and twilight sleep and were happy in their conjoint possessions.

Yet, up to the present moment, this knowledge had been without interest; they had not been able to find its application in their lives. Inwardly both had mourned the absence of a personal message beneath a quite fictitious complacency in the soundness of their vital arrangements. But now the message had come. Little Paul was carried back to his brother Rudolph and his sister Frieda, whose careers we must wrongly slight that Paul may receive the illumination to burst forth from his father and mother as the door closed upon his pitiful figure. "Œdippus," moaned the father; "Incest," the mother whispered. "And in our child"—the fascination of the terrible fulfillment of the prophecy. Both knew they were in the presence of the original apple of the original tree of knowledge, for a newer folk-lore had left no vagueness as to the meanings of biblical symbols to this enlightened pair. Both knew nothing in the sky nor on the earth nor in the sea which did not portray sex; neither that made by God nor hewn by man lacked it. The sun, the moon, the fruit, the flowers, the insects which sucked their juices, the beasts which trampled them under foot, the fish, the water, the tides, the steeples of churches, the stairs, the chimney, the closet, the drawers, the hats, the canes, the rings, all—all marked off to the discerning eye the various objects which a generation earlier had been given to see but in a few and painfully obvious similarities. Theirs now was a richer and wider knowledge. To them Incest stood forth as the core of life, never attained nor attainable, yet ever desired; banished to a part of mind which an apt intelligence had grasped with a localizing sense so keen that the unconscious took a vision of a clear hinterland, inhabited by strange creatures occasionally forcing a way through an intervening space into the city of life. And the life in this city was made always to adjust itself to the inhabitants of the hinterland. At first this seemed strange, that the adjustment should not be to the city; but both soon felt the greater mystery and truth inherent in the former conception, for did it not contain the ripest product of Science? Only it had been difficult to dig up affirmatory data from their own lives. Yet here in their child was the Infantile Libido and for the first time they seemed to grasp a meaning which much writing had not made plain. They saw now that the qualifying adjective "sexualis" must be given it. This was another point upon which they had stuck; that sex, as sex expression toward sex, could be so early in its exit. Psychosexual as a term had not helped much. Yet the structure of this system of life had predicated sex the basic, with hunger and a few other instincts as quite subordinate and derivative. It had, of course, been their misfortune to gain this knowledge long after the nursing period. Both had regretted the impossibility of having seen the Libido in its emergence when the infant lips had first seized the mother's breast. To be sure, little Paul had wet his bed rather longer than had his brother Rudolph; also he had been a restless sleeper and a child demanding much care from the mother. Yet this never seemed quite clear cut. Certainly it had lacked the exhilarating dramatic element of the Major Revelation.

It is inherent in a revelation to disclose; and to the parents this morning had defined the past and laid bare the future of their little Paul. They saw now the error under which mankind had staggered in the conception that the nursing child is dominated by a tropism leading the lips to the breast whose flow inexorably induced the reflex of swallowing. The amiable experiments of comparative psychologists on the chick, apparently showing the existence of this reflex, the studies of Loeb, which, again, apparently demonstrated that tropism involving the juxtaposition of bodily surfaces, all these now were false. Too plainly the lips were real erogenous zones, which sought the mother's breast for a psychosensual pleasure to which the hunger was a codicil, emphasizing but not initiating. Little Paul, an infant, had been driven by the same tendencies which, later, were to make him, presumably, a factor in the perpetuation of his race. The mother had now to abandon finally a feeling that her infant's calm and happiness found in the mother's arms meant to him a simple satisfaction in being cared for, of being in a safety zone. She could now only see in this attitude a satisfied Libido, a psychosexually satiated organism. Every care given him had intensified the Libido of the child for the mother, this Libido Sexualis. That bed wetting meant a repressed eroticism now was plain. She saw that the care and personal attention subsequent to this was again but giving to the child his object of desire which so plainly emerged in an act standing for a deeper sexual relation. The restlessness at night, the importuning for the mother's presence was the beckoning of an inarticulate Incest.

But now it had spoken and tragedy enveloped them from that Greek drama in which the voice of poetry had been silenced by the louder threnody of Science. Æschylus had become the psychoanalyst; poetry the handmaid of Science. If life is sex, then the core of life is the incest complex. In every creature this is immutable. The unfulfilled incest was the original unfulfilled wish, hence to be banished as years come on to the hinterland of the unconscious. Here it would breed a demon herd to invade the fair city of the conscious life until it came to be exorcised by the analyst. The adventures of these modern knights had especially held the parents. Certain ones possessed evident fascination, for they had appeared in different articles, approaching in this the actuality of an Arthurian ballad told the child where the dragon is overcome at the same point and at the same time every evening. They knew each dream, unriddled, led through a vast labyrinth back to the core of incest unfulfilled. In a humble way they had marveled at the extraordinary facility which delved to the bottom in each cup of a word for meanings centuries old, for symbolisms left far behind by civilization, each brought upward by the delving analyst to confront the dreamer with the proof that his unconscious, in some way, had inherited treasures consciously never met with. It confounded the dreamer that always the trail led back to the unhallowed desire for father or mother. Nor could he protest, for even the protest registered only

a shame at sex, the sign of blood guilt, psychologically. No red herring could lift the nose from that spoor which ran to sex. Physical symptoms as a toothache or a neuritis, a joint rigidity, head pains, abdominal cramps, all these they had seen the analyst throw within the hopper to emerge as successive links of a monstrous but impressive string of sexual sausages. The more unusual symptoms of fear or compulsions or anxieties yielded the same product but more readily. There was less of physical nonsense here to override. Personal characteristics as miserliness, aggressiveness, delicacy of demeanor or attire indicated latent tendencies of a kind to exclude the carrier from ordinary society. And all of these things their boy might carry; all of these things their boy might be, for all expressed various compromises with the unfulfilled wish for incest which this morning had shown.

Yet beyond their boy were other boys and beyond these more and the world. An incestuous world, an incestuous society; to mend this a small and devoted band of scientists who were to teach mankind that life is made up of an adjustment to an ungained but ever-desired incest, residing in a place consecrated for itself, that here it might find pleasure in its being. Health came only in accepting the belief of this presence. Confessedly, this process was difficult for the usual person. Even the analyst granted that few were able to rise in a free flight so far above the structure of culture. Their emphasis lay upon the necessity of an individual induction into a range of ideas out of which the incest concept might crystallize. It had not been difficult with this point of view for the parents to understand, as necessary, the rather unpleasant procedure of an analysis which converted all individual life into a homogeneous medium of sex terms, for only out of such a saturated solution of sex could crystallize the pure and iridescent crystals of the incest motive.

Yet here was this dominant motive dislocated into the unconscious, driven there by society, and still by science so placed that extensive pilgrimages were recommended thither that, in his treatment, the individual might exclaim to this squatting Buddha of Power, "Most Powerful, we acknowledge Thee and beseech Thee that we may make our lives ever adjusted to Thy Presence." Perhaps their honest bourgeois minds did not do quite this, despite a rabid and unsatisfied desire to believe in something. Indeed, they did halt and fail to see why society should have carried out an exile if this incest motive were real and not fictitious. On the one hand, it must be real, if health demanded an adjustment to it. But, if it were real, then what about this very matter-of-fact world where a living was to be made, laws enacted and meals ordered? So far as society, the lessee of this world, had expressed herself, there had been laid down a more or less straight rule that things which were real always had adjusted themselves to other realities. The things which were fictitious had been relegated to limbo. It seemed an isle of safety that the unconscious was this limbo. But if this were so, how could the majestic Œdippus, sole resident and taxpayer in this land of the fictitious, how could he be viewed as real? This was where belief took their moist palms and led them on, reiterating the necessity of adjusting their lives at this throne, even though their garden instincts made them see it lacked utterly that reality which Walt Whitman divined in the frost upon a burr.

It is not a little unsettling to find oneself wholly wrong after many years of fairly even endeavor. Yet Paul's parents faced this bravely. They had adjusted to nothing but reality and a most real outer world. Of some gaps in their composition they had been well enough aware. Many desires had failed them, but they had laid few flowers on the graves of their unfulfilled wishes. Now they must exhume these and peer into the vestiges to see, as reality, the dread lines of an incest—if they would be well. Plainly, they never had taken a breath of health. Until now they never had sacrificed to Œdippus. Unfortunates, they had walked with society, let it be with a halt or blurred vision, here had been their place. They had sacrificed to Themis as had all others. Indeed, when the precedents of their past conduct enveloped them in the history of man, painfully and imperfectly but honestly adjusting, they found themselves sliding back from the "feste burg of incest." "In a practical way, just how could the knowledge of this Œdippus concept have aided in piling up the humble structure of a drug business"—and then the accusation fell from the open, "Think why you chose this work; has it not all to do with the pestle and mortar," symbols which colored the face of the father as he thought of the unworthy motives which must have unconsciously driven him, impelled by the incest desire, to express his sexual aspirations under the cloak of a vocation into which he had thought himself inducted through a combination of economic need and the fortuitous death of the only druggist in his little town. All his study, all his application had been at the behest of this one motive—the one reality. Also the butcher—he shuddered at the sadistic impulses harbored by this fat and pleasant citizen who smelled of nothing worse than suet to any nose but an analyst's. The baker with the rolls, the photographer, was there not here a plainly-marked exhibitionism? The dentist and his secret desires satisfied with each painful tooth extracted by the pliers; Jerry, who sold cigars, with hidden homosexual longings in the dusty cases of his Regalias; they were all quite as bad off as he and society as rotten. A bitter grief caught him, as he thought how happy it would have been had all known the plain incestuous longing which his child so beautifully expressed in the first moment of this wonderful day. The splendid unification of life thus brought, the singleness of this pathology among all men, the directness of the path to light, gave him the exhilaration of a Salvation Army corporal. Little Paul had rolled his father into one of those side pockets which the literally minded describe as belief.

Now, what had happened to this man we may not pass by, for it is none too easy to understand what goes on as the wheel spins. When a man believes, he believes in something or somebody, and he ties himself up to this external thing or person. This is all plain. It is in the center. But back, something else has happened before this. It is much as if a resonance from the man's interior had been sounded. We all know of certain things which stir us, selective, personal things. But we all do not know that there is a kind of generic resonance which is not selective nor personal and which may be touched off a few times in our lives with a terrifying result which we call belief. And the gods have laughed through all the ages at the silly fuses which have loosed this, for is not this the peculiar mark of man? They see it really does not matter

what is this external thing which man believes; it may be a pulverized beetle or a prayer or a relic or a phrase or anything. They know that man really only believes in the resonance and only sees the external. He never has known of his resonance. If he had, history would have engrossed fewer halts when the cheering subsided. Paul's father believed in the incest. He had heard the word; he had seen the word in the act. This was the external and it was called incest and he thereby believed in incest. If it had been named mayhem, he would have believed in mayhem. And we must acquit him of not hearing the resonance. But we must hear the laughter of the Olympians, warning against the object of belief. This always is to be viewed with skepticism or suspicion. It is our right and privilege, then, to ask just what Paul's father did see, if he saw what he thought he saw.

This is what Paul's father saw really: He saw three people and three behaviors. The latter were as different, one from the other, as the former. They were made up of attitudes taken in relation to one another. It was not the intrapersonal background which he saw; even his own was quite vague. But he could see the relations between the different members in all this behavior of his wife, his child, and himself. It was these relations which he really saw. It was not the terms, his wife and child, and himself, but their behavior, which the relations showed or stood for. These relations presented between three social units. The context was social. Between mathematical entities such relations either show disparity, with one greater or less than the other, or equality. When the terms are social, there is always the disparity and never the equality. Man has always been greater or less than man, never equal to man. At the moment of Paul's entrance, the so-called dramatic element lay in the change of one set of terms between man and woman by which the father was replaced by the son. The tragedy lay in the peripateia of the relation between man and man, for he who had been greater became less; the son took the place of the father. All that Æschylus felt was a fate which drove a son to excell the father. His genius lay in showing this relation in primitive pattern, but transferred to a later period where the same relation, emerging, horrified by its exposure of ill adjustment to life. It was the rebirth of the old, but only of the old relation in which the son became greater than the father. To the child the relation was a reality; to the man it was a fiction, out of correspondence with that reality to which society had made him adjust. Society punishes the fiction; calls it incest. In this she really criticises the terms, which are of sex. The young child carries no such terms, yet the Freudians name this also incest. Because the terms of man in adult years are sexual, then the terms in childhood are sexual, or, offending too grossly biology, psychosexual is given in place of sexual. Because a relation like Paul's is one of reality and a universal in childhood, therefore the later relation is of the same reality; that is, incest is a universal. They here have committed about all the logical errors possible. They only know something is common to both equations, to Paul and the adult Œdippus. Not being able to see it in the relations, they force the similarity or rather identity upon the terms.

Consider now what the Freudians have done to the terms and one can see how they have had to blind themselves to the relations as the logical constant. The terms which enter into these relations are those of man in all his various activities. They are all we see or can see; they are the objective date, all these which we call behavior. The Freudians have denied all terms or activities but sex. All activity of life, all conduct, all behavior is sex conduct or behavior. Sex is the primary modality of life, and this sex enters in all relations. Now both these are at once assumptions and errors which have grown from a faulty method in the observation of the objective field of man's behavior. Yet it does display an attempt at scientific method. It has sought a constant as the physicist sought his in the concept of conservation or the chemist in his atom. But the constant here was sought in a term, whereas biology, dealing with life, finds it in a relation. The error was easier in that the term it assumed as basic, sex, has possessed earliest and in the most rudimentary form the singular facility of expressing the relation of disparity which is our constant. It is that instinct which has carried its tropismatic inevitableness furthest into consciousness and has grouped back of it the largest associative mass. But, equally certainly, it has been progressively dismissed as a term in the more highly evolved relations. The Freudians naïvely assure us that it enters into every later term, like a wandering and repressed Logos. Priority means to them paternity; that all other modes are born of this. To them life is not a continuum, a series of relations; but it is a succession of births in which an entire foundling asylum is filled by the same irresistible parent. They have been driven to this concept in their proper attempt at unification which wrongly seized upon a term instead of a relation as the constant. Just this far is it a "good little devil."

In emphasizing the relation as the constant in all the objective behavior of man one is isolating a definite objective manifestation in man. It is before the eye, the inequality of terms ever being perpetuated in its particular placement or reversed. Yet this is not a parent mode but a common mode in all relations. We disregard paternity when we emphasize its common quality. We do not need to assume it bore art and religion and science in the best Freudian manner; we only need see it objectively in art or religion or science as ultimate modes of behavior. Much less do we need to assure ourselves that Paul's desire to take his father's place in the mother's bed is incest, even in a "psychosexual" connotation. What we really observe is a disturbance in relations between father and son, in which the inferior son becomes the superior father. When we talk of this as incest, we are looking at terms. Yet the one thing we sense as familiar is the relational change. This is the old. We do not deny that incest, as we know it, is a return of this old, but cast in definite sexual terms. But we do insist that the terms here are but one mode of behavior objectively seen, while the Freudians insist that it is the only mode and make all other behavior derivative to it. To them all terms are sex; that is, all behavior is the objective data of sex. Seeking for a single source for all behavior, for the mother lode from which all conduct has slowly seeped its way outward, they have dug deep into early depositions of human life. One admits freely that a large mass of early material has been cast in sex terms. Then, all relations largely showed these terms. The lessened sex density of later stadia the Freudians have attempted, disas-

trously, to explain in civilization repressing the sex and substituting "sublimations," pallid cousins. But in missing the point of the relation being the constant rather than the term, they have missed that vision which sees this relation, not repressing but discarding the sex in seeking for wider, more plastic, more effective terms to express the movement from an inferiority to a supremacy. Because sex, as a term, is narrow, inelastic, and hence less fit for the more complex adjustments of society, it has been discarded. It has not been discarded as a term, but as a less useful term to carry the relation. It has not been repressed, as sex, but because it tended peculiarly to make the relation unbending and non-adaptive. Indeed, it is apparent that, until a wider range of terms were offered the relation, history was inarticulate. But it was the potentiality of the relation which drove man forward in the search. To seek for the power in the term is like studying dynamics in the Keeley perpetual motion motor. Behavior cannot be written except in relations.

History, as a study of behavior, has come to see a mutation of terms, but a constant of the fundamental motivation which the relation between the terms expresses. It acknowledges a revival of archaic terms, as sex, but in this always traces a reversion to a less plastic or flexible period, one in which the drive of the relation sought less vigorously to express itself. But it has not seen the increasing plasticity of civilization nor man's better social adjustments as the Freudian linear descendants of these archaic terms of sex. It refuses the formula of priority meaning paternity. History defines the increasing plasticity, expressed in more adaptive terms than sex, as arising solely from the demands of a more insistent relation disparity, which has thrown aside the old to seek the new.

We can study the individual in no different way. His behavior is in relation to others. The terms which the relation holds are varied and idiosyncratic. They constitute a part of what we call his trends. But the fundamental of his trends is the relational disparity which he discloses. The accretion of the associations are about the terms; but their potentiality and adjustment to society rest upon the constant, the relation which they develop in life. The one secure way to aid the adjustment is not to revive the terms, but to straighten out the relation which is wrongly adjusted. It is not Paul's incest with which he must be confronted; that would be to face him with terms. It is his non-adaptive supremacy over his father which he must be led to correct. He need not be laid within a bath of sex facts, anecdotes, and reminiscences that from their emanations he may arise revolted, disillusioned, and cured. But he must have the relation discovered to himself from every angle, that he may realize its non-adaptiveness. The richness and profusion of terms with which this single wrong relation comes to be seen in the vast field of affirmatory personal data are in striking contrast to the poverty of terms indicated by the painful and artificial elaboration to which the Freudian is driven. Thus has been made his Epic, which is neither Epic nor Incest.

It is plain that the criticism, here involved, is one of method. It is method upon which Freud's psychoanalysis in large part has been built. Upon this method the greatest security has been predicated. His concept of sex is well open to attack from the point of biology. That would stand as a criticism of material selected for construction rather than as an evaluation of the method of construction. But such a criticism is secondary always to that applying to method and is only of corroborative value. If this criticism has been enclosed in a presentation which seems highly personified, it is hoped that the tinsel may be made to stand in the reader's mind as a vague reminder of the spectacular and popularized Freudian debuts which have issued out of that falseness and with that resultant artificiality which this paper has attempted to define as a fundamental error in method.

23 East Seventy-seventh Street.

FRONTAL AND MAXILLARY SINUSITIS AND SEQUELAE, DUE TO STAPHYLOCOCCUS PYOGENES ALBUS.*

By RALPH OPDYKE, M.D.,

NEW YORK.

We are all perfectly well aware that acute and chronic affections of the various sinuses are caused by streptococcic and the various staphylococcic microbes. Also that in some instances either of the above *alone* may be the exciting factor, but seldom do we find such a prolonged series of severe and obstinate involvements caused by the *Staphylococcus pyogenes albus* alone as in the case I report to-night.

W. W.; age 18; U. S.; single. Parents living and in good health; one older brother and no sisters. Has been affected with various ailments since childhood, all of which were of a serious character, among them being acute articular rheumatism when quite young, which left him with the usual mitral lesion which was aggravated by frequent succeeding rheumatic attacks. He had been a patient of mine for some years for minor attacks of tonsillitis and chronic pharyngitis. Just previous to this attack he had been preparing for college and doing extra chemical laboratory work which had lowered his vitality and resistance, a proof of which was the presence of a slight neurosis of his inferior maxilla, which healed only after several energetic curettings.

On Saturday morning, May 30, 1914, after dancing in his house and while still over-heated, he took home some of the house-party in his open car and caught a violent cold as a result of this exposure. On the following evening he was attacked with violent pain in and over his left eye, which was continuous and severe in character. His oculist examined him and reported nothing abnormal as to his visual fields. On the following noon and the third day of the attack, I was called to his home and found him suffering from an acute virulent maxillary sinusitis on the left side, with all the cardinal symptoms of the same—temperature 104.8°, pulse 118, respirations 18; he was thoroughly prostrated, in great pain, nauseated, extremities cold, and had all the symptoms of an acute suppuration.

On opening the antrum of Highmore with trocar an abundant amount of pus drained off, which on examination proved to be a pure culture of *Staphylococcus pyogenes albus*. It was found necessary to irrigate the antrum twice a day, as the amount of the discharge was very copious. Two days later the patient was taken with a severe attack of tonsillitis on the left side, with a quinsy resulting the following morning. It was necessary to lance not only the peritonsillar abscess but also to proceed through the posterior pillar and to the posterior pharyngeal wall in order to drain thoroughly the various pockets of pus. The discharge from it as well as from the antrum continued to be extremely free.

An autogenous vaccine was at once made from this culture and given at five-day intervals, without having any appreciable effect in staying the obstinate and persistent course of the disease. It was interesting to note a peculiarly marked exaggeration of the hip, knee, and ankle pains after each hypodermic dose of the vaccine, even though unusually small doses were given.

*Read at a meeting of the Section on Laryngology of the New York Academy of Medicine, October, 1915.

Several days later there appeared a marked swelling on the left side of the neck, anterior to the sterno-cleidomastoid muscle. Twenty-four hours later the condition became so serious and the patient so prostrated that an external operation became necessary. Dr. Abbe opened this abscess externally, with a free incision, inserting tubal drainage, and a direct connection was found to exist between the tonsil and the sinus, extending also well forward toward the arytenoids.

Following daily drainage, frequent gargling, and antrum irrigations, the patient improved constantly although his temperature and pulse kept up and he continued to have at times spasmodic pains in his left arm and right thigh, which seemed to be due to metastatic phenomena. Fearing a collection of pus in his right gluteal region where the pain was especially severe, aspirations were made in and about his right hip, with negative results, however. On June 6 he was able to be up and about for an hour at a time and was fairly free from pain; the drainage from the neck wound was scant, the neck wound partially healed, and the antrum practically well. The hip pains, though, continued to be very severe and were not controlled by antirheumatics nor analgesics.

On June 28, the patient complained of severe left frontal headache and his left frontal sinus was curetted. This treatment was continued as occasion warranted and with prompt relief to the patient. Even up to July 8 he continued running a temperature of from 100° to 102°, with a corresponding increase in pulse of from 110 to 124. His diet meanwhile was of a modified character with plenty of stimulation when necessary.

There seemed to be off and on a marked amount of photophobia and ocular distress, which at times was quite unbearable. On July 11 there appeared occipital headaches and insomnia, controlled only by morphine, the previously used hypnotics having failed to control his distress. On July 12, his left frontal sinus was again curetted and drained. An ice cap frequently applied to his occiput seemed also to give him some relief.

At no time previous to July 15 was there present more than a slight congestion in each visual field. From July 20 his temperature and pulse were not far above normal and he was able to be out of doors several hours each day, although the headaches continued to be somewhat more severe. On July 24, however, there were frequent attacks of nausea and several attacks of vomiting, the character of which material was not especially diagnostic.

On July 28, after probing his left frontal sinus and irrigating it, to my surprise, I removed a large piece of necrotic bone from his left nostril, which proved to be the major part of his left inferior turbinated bone which had gradually sloughed off. I might add that he had had present a very prominent nasal spur which during the previous violent nasal discharge had become adherent to the inferior turbinated bone, thereby interfering with drainage and forming a focus for the above referred-to slough.

On July 31 an early and hasty summons to his bedside found the patient partially delirious, with a temperature of 104.4°, and complaining of cramps in his right leg, followed shortly afterward by a convulsion, epileptic in character. The clonic contractions of his right limb became very violent and uncontrollable; he frothed at the mouth with a tendency to bite his tongue; his left arm and left fingers twitched spasmodically, and his unconsciousness became complete; his pulse was thready and irregular, his extremities cold, his pupils equally dilated, and his color decidedly bad. Lumbar punctures revealed nothing. After the usual treatment in such a condition, heroically applied, he regained consciousness but remained in an exhausted condition, his temperature continuing to rise. The leg and arm symptoms moderated until they were more of a twitching character. At 11.00 A. M., four hours later, a similar attack was repeated, with all the earlier symptoms greatly exaggerated. Temperature was now 105°, pulse hardly perceptible, contractures most exaggerated, extremities icy cold, neck muscles rigid with head to the right, eyes wildly dilated with a double lateral nystagmus pointing to the left side, and absolute unconsciousness. His family physicians now believed him dying, and one of them even thought him dead. As a last resort, and extending little hope to his friends as to the outcome, I suggested an immediate decompression. They consented, and within forty-five minutes he was under the knife. Very little anesthesia was necessary and a typical trephining was done over the fissure of Sylvius. Frequent aspirations through the dura into the parietal lobe revealed nothing, nor was the dura bulging nor discolored. However, on aspirating into the floor of the fourth ventricle there was drawn off about three drachms of seropurulent fluid which proved to be a pure culture of *Staphylococcus pyogenes albus*. The upper button of bone was replaced and a drain inserted in the lower space, and the usual semicircular flap reunited. The patient was put to bed and all emergency stimulative measures were carried out. His temperature, which had touched 106.8° previous to the operation, dropped to 104.8° two hours later.

He did not regain consciousness until early the following morning, his temperature staying about 104° F. There was no return of the convulsive seizures. Convalescence was naturally prolonged, the temperature and pulse slowly decreasing. For the first week frequent doses of morphine and hyoscine were necessary to control not only the limb and arm pains—which, though moderating, still existed—but also the extreme psychical condition of the patient. Frequent massage, alcohol rubbings, fluorescent rays, and sunshine aided to some extent his apparent return to health.

By August 9 his temperature had reached about normal, when unexpectedly he had a relapse, with a rise of temperature and pulse of marked degree and a return of most of his earlier epileptoid seizures.

After a hasty consultation it was decided that a second decompression was necessary. The patient was quickly prepared for operation, anesthetized, and an extensive operation was completed in fifty minutes. At this time the replaced button which had become adherent to the dura was taken out, and the parietal, occipital, and temporal bones were resected to a considerable extent.

The resulting uncovered dural area was about 3½ inches in diameter. The dura was cut crucially, and the hemisphere again explored in all directions, with a negative result, save that, as before, some fluid was aspirated from the floor of the fourth ventricle. In this instance, only about thirty minims were withdrawn. The lateral sinus was exposed from about the knee well back toward the occiput, and appeared healthy in color, as well as being freely compressible. The dura was not reunited, and the inverted horseshoe flap was returned and sutured, with a small cigarette drain inserted at its inferior angle. The patient rallied nicely and, as before, the exciting constitutional and local symptoms slowly subsided.

The convalescence in this instance was highly satisfactory in every way, and at the time of the removal of the sutures and wick, four days later, his temperature and pulse had become nearly normal. By August 15 he was able to eat squab, and a few days later he was strong enough to be in a Morris chair for a short time.

Unfortunately, a hot water bag had severely burned the crest of the left ilium after the second operation, and for several weeks the series of nasty burns of the first and second degree were obstinate in healing.

It is interesting to note that neither before nor after this second attack and the above-described operation were the various lumbar punctures positive.

On August 14 frontal pains of a violent character started up out of a clear sky, and nothing given locally or constitutionally eased them at all. An immediate double radical frontal operation was insisted upon, which was approved and acquiesced in. This was at once done, and the findings were as follows: Right frontal sinus—a noticeably small sinus above its nasal opening, the surrounding bones being extremely eburnated, and the mucous membrane lining this embryonic cavity slightly necrotic. Left frontal—enormous in size, filled with necrotic detritus, and with a distinctly foul odor. This left sinus was thoroughly curetted, the nasal opening enlarged, the punctate necrotic bony areas cauterized, and the skin sutured with fine silk—with perfect primary union and no visible cicatrix later.

In twenty-four hours his temperature dropped from 104° F. to normal, and remained there. His convalescence was subsequently rapid and, following the administration of the proper tonics and systemic treatment, he gradually recovered his strength, color, weight, and general health.

It goes without saying that during and after the numerous and terrible attacks his strength and resistance had become of the lowest character, and he

was a skeleton as to weight, a ghost as to color, and as pitiable an object as one is wont to see. However, throughout it all, save in his moments of unconsciousness, he was mentally most alert and keen as to his subjective symptoms, and helpful to us all in the handling of his case.

A rest at the seashore in the fall and a vacation during the winter have restored completely the patient who, at the time of this writing, weighs about 170 pounds and is apparently in perfect health.

He wears, when liable to injury to his head, a metal plate made from a plaster cast, in such fashion as to protect perfectly the area left without a skull covering.

In March, 1915, he had a violent attack of quinsy on the same left side, and it appeared for a time as though the above history might be repeated, but fortunately he recovered after many thorough lancings of the peritonsillar area. In this recent attack the culture was mixed *Staphylococcus pyogenes albus* and streptococci, the latter being in the great minority.

It is pleasant to report that there exists at this time no observable scar about his head designating the line of incision of the many operations I performed on him. This summer his tonsils were enucleated, and he is at the present time enjoying perfect health.

It has seemed to me that this case, continuing over so many months, with its many marked and constitutionally dangerous symptoms, following the usually more or less harmless infectious microbe—the *Staphylococcus pyogenes albus*—with its numerous operations (twenty-one in all), with its sure but delayed recoveries, and its final fortunate outcome, is one well deserving of a complete report.

40 East Forty-first Street.

Medicolegal Notes.

Consent to Method of Operation.—Action for damages was brought against a surgeon for trespass to the plaintiff's person in removing an ovarian tumor by what was alleged to be an entirely different operation from the one authorized by the plaintiff. The tumor was removed through an incision made in the skin immediately between the external opening of the genitals and the bowels, or what the plaintiff called the "lower or rectal operation." She claimed that she consented to an operation by an incision through the walls of the abdomen, but not to the lower or rectal operation. The evidence showed that the operation was performed in the manner outlined in a letter by the surgeon to the plaintiff's family physician, which she had received, without any objection by her. The surgeon was without knowledge that she had objected to any one to the operation as outlined by him in his letter. It was held that the plaintiff could not recover.—Gould vs. Kerlin, 192 Ill. App. 427.

Sale of Cocaine—Ignorance of Violation and Intent.—Action was brought to recover penalties for sales of cocaine made by a wholesale physicians' supply house to a person in violation of an ordinance of the City of Chicago prohibiting sales of such drug to a person addicted to the habitual use of morphine and cocaine, and without a written order of a duly registered practising physician when made at wholesale. The buyer of the drug was a licensed, but not a practising physician, and had no office and no patients. It was held that it was no defense that the defendant's clerk who made the sale had previously dealt with the purchaser as a practising physician, and had no knowledge of his habits; but proof of the intent or ignorance of the person making the sale is admissible for the consideration of the jury in determining the amount of the penalty. The evil intended to be abated requires the strictest police regulation and it was held to be no objection to such rigid enforcement of the ordinance that the extreme precaution required to escape the penalty of its violation may in some instances impose hardships.—Chicago vs. Truax Greene & Co., 192 Ill. App. 524.

Opinion Evidence as to Probably Supervening Paralysis.—The Illinois Appellate Court holds that the opinion of a physician that the plaintiff in an action for personal injuries was "liable" to have recurrent attacks of paralysis and that the degenerative state of the nerve tissue and its surrounding connective tissues might lead to developments that are liable to bring about a paralytic stock are objectionable. The statement of a mere probability of the recurrence is not sufficient. Where the subject matter of the inquiry was whether paralysis, if produced by an injury, would necessarily follow almost immediately, and also whether or not an injury such as the plaintiff claimed to have sustained was capable of producing paralysis, it was held competent for a medical witness to express his opinion thereon and to state his reasons for such opinion.—Hutchison vs. Chicago City Ry. Co., 192 Ill. App. 464.

Malpractice—Professional Skill, etc., Questions for Experts.—The Michigan Supreme Court holds that in an action against a physician or surgeon, matters of special knowledge strictly involving professional skill and attention, unskillfulness, negligence, or failure to do that which ought to be done, must be shown by the testimony of those learned in such matters, and the jury cannot be permitted to draw their conclusions from their own unprofessional notions as to proper treatment. In an action against a surgeon for performing operations on the plaintiff more serious than those she understood were to be performed, in which it was also claimed that a hernia resulted from one of the operations, no physician or surgeon questioned the propriety of the operations, or the care and treatment given the plaintiff by the defendant, or expressed the opinion that the hernia was attributable to want of skill or negligence, while surgeons did testify that the operations were necessary and properly performed, and that hernia resulted where there were no operations, and were no evidence of malpractice or unskillfulness. It was held that there was no question for the jury as to negligence or unskillfulness, and the court properly submitted only the question of whether the plaintiff understandingly submitted to the operation; on which question the jury found for the defendant.—Zotterell vs. Repp, Michigan Supreme Court, 153 N. W. 692.

Cystitis Alleged from Use of Dirty Catheter—Insufficient Proof.—In an action against a hospital the plaintiff contended that she contracted cystitis by the negligent use by a nurse of an unclean catheter. There was no evidence that the catheter used was unclean, and the opinion of a physician, called by the plaintiff, that in his opinion her trouble was caused by the use of a dirty catheter was not founded on any evidence in the case, and was the naked conclusion of the witness. Cystitis, the court said, does not necessarily follow from the use of a catheter, and no inference could be indulged in the case at bar that its use was the cause of the plaintiff's infection, or that it was unclean and not in proper condition for use.—Moses vs. St. Barnabas Hospital, Minnesota Supreme Court, 153 N. W. 128.

Action for Services—Lack of Value as a Defense.—In an action by a physician to recover for medical services to the defendant's minor child, who was injured in an accident, the defendant's family physician, who was called into consultation with the plaintiff at the defendant's request, testified that the child's condition indicated that death was imminent, that the plaintiff admitted having reached the end of his medical resources, whereupon he suggested to the plaintiff the injection of a saline solution, immediately after which the child's condition improved, and that if the injection had been made earlier it would not have been necessary to remove as much of the child's leg as was afterward amputated. The Illinois Appellate Court held that the testimony was admissible as having a tendency to raise an issue of fact as to whether the plaintiffs services were of any value, and that proof that such services were of no value was a defense to the action.—De Tarnowsky vs. Walker, 191 Ill. App. 610.

Physician and Patient—Privileged Communications.—The Missouri Supreme Court holds that communications by a party suing for a personal injury to a physician examining him under order of court directing him to submit to a physical examination by the physician, are not privileged communications within the Missouri statute. The injury was received nearly three years before the trial. The plaintiff testified that he had been afflicted with gonorrhea, and that a stricture, which might have been the cause of the injury complained of, had only been present two years. It was held that the testimony of the physician appointed by the court to examine the plaintiff, that the latter made statements in conflict with his testimony, was admissible to impeach the plaintiff, in the absence of anything to show that the statements to the physician were not voluntary.—McGuire vs. Chicago & A. R. Co. (Mo.) 178 S. W. 79.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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FREQUENCY OF RECURRENCE OF STONE IN THE KIDNEY AND URETER AFTER OPERATION.

IT is now 35 years since Henry Morris did the first nephrotomy for the removal of a calculus from an otherwise supposedly healthy kidney, and the same length of time has elapsed since Czerny removed a pelvic stone by pyelotomy. These 35 years have seen remarkable advances in the field of renal surgery due, in a large measure, to the recent rapid development of *x*-ray and cystoscopic technique. With such marked progress in almost everything pertaining to renal surgery, it is hard to understand why the frequency of recurrence of stone after operation remained so long undetermined; particularly since in recent years the propensity for statistical studies has been rampant. Consequently, one is hardly prepared for Cabot's amazing statement that he could find no useful statistics bearing upon this important subject. One explanation of this statistical hiatus advanced by H. Cabot and Crabtree (*Surgery, Gynecology and Obstetrics*, August, 1915) is that it is in only comparatively recent times that a diagnosis of recurrent stone could be made with accuracy. Another explanation, which we would suggest is that surgeons have been unaware of the late recurrence of stone since patients very soon pass from their charge to that of the family physician and also because here, as in gall-bladder cases, both patient and family physician have often considered that the recurrence of symptoms pointed to a stone which the operator had carelessly overlooked, hence the patient goes to another surgeon for the secondary operation.

Be that as it may, it has generally been considered that when but one kidney was involved recurrence after operation was unusual in aseptic cases and far from frequent in the presence of renal infection. That this conception of the matter is far from correct has been shown most conclusively by Cabot and Crabtree, whose paper is based upon a study of 155 cases operated upon for stone in the kidney or ureter by various surgeons at the Massachusetts General Hospital during the eight years previous to January 1, 1914. They feel that the results of their study may be considered to represent a fair average of those obtained throughout the country. Of the 155 cases, but 87 could be satisfactorily studied; for the authors insisted that all patients should come to them so that a careful physical examination, an examination of the urine, and an *x*-ray could be made. Upon nothing less than this were they willing to report end-results. They recorded as cured those patients who presented a negative physical examination as far as the urinary tract was concerned, who had a normal urine on chemical and microscopical examination, and in whom the *x*-ray was negative. They recognized the fact that even with the urine normal and the *x*-ray negative it is possible that stone may be present; but they considered it would be so unusual for a stone to go undetected, if present, under the conditions stated above that they could safely disregard such a possibility.

Of the 87 cases, 66 had been cases of stone in the kidney and 21 of stone in the ureter. Of the 66 cases of stone in the kidney, 34, or 51 per cent., were well and 32, or 49 per cent., were not. Of the 21 cases of stone in the ureter 15, or 71 per cent., were well and 6, or 29 per cent., were not. They now attempted to determine whether or not the type of operation was an important factor in the result, and found that of 30 cases treated by nephrotomy, 13, or 43 per cent., were well and 17, or 56 per cent., were not; of 33 cases treated by pyelotomy, 16, or 49 per cent., were well and 17, or 51 per cent., were not; and of 12 cases treated by nephrectomy, 11, or 92 per cent., were well and 1, or 8 per cent., were not. The authors explain that in referring to the cases of nephrectomy as well or not well, they refer to the patient rather than to the kidney. It is interesting to note that in only one case did stone form in the remaining kidney.

Cabot and Crabtree do not find infection a factor of great importance in the recurrent formation of stone: nor did the length of time that the original stone had been in the kidney seem to have any bearing on recurrence; for of 8 cases with a history of less than one year, 4 cases recurred and 4 did not; of 14 cases of six years' duration, 4 recurred and 10 did not; of 6 cases of fifteen years' duration, 4 recurred and 2 did not; and of 6 cases of twenty years' standing, 3 recurred and 3 did not. Regarding the influence of age, they found that in patients of less than 35 the probability of recurrence is comparatively large, while when the age is over 40 it is comparatively small.

In summing up the situation the authors say: "It appears that we shall have to revise somewhat our rather optimistic views as to the results of operation for stone in the kidney. * * * Most of us have, I think, been in the habit of assuring the patient that the probability of cure is large. On the basis of these cases we can only say to the patient that the risk of operation is small; that the danger of progressive destruction of the kidney by the stone, if it is left, is large; that the probability of recurrence is considerable; that it depends somewhat upon the age, undoubtedly somewhat upon the method of operation and the skill with which it is carried out, but clearly somewhat upon the entirely unknown factor—the liability or the ability of that particular kidney to form concretions. The outlook for the cases of stone in the ureter is apparently

considerably better. In this small series of 21 cases the probability of permanent cure seems to about two to one."

Undoubtedly we shall have to revise our ideas in regard to the recurrence of stone after operation. While it is possible and, indeed, we think probable that the study of a larger series of cases may lower this actually appalling ratio of failures to cures, it is certain that we have been far too optimistic heretofore and that conservatism must be the watchword in prognosis hereafter.

DISEASE FACTORS IN THE DEVELOPMENT OF TUBERCULOSIS.

Apart from the fact of the inherent virulence of the tubercle bacillus, its almost universal distribution among the human races, and its tendency to cause an hereditary predisposition, although it is not itself thus transmitted, there are a number of disease entities which seem to prepare the system for the easier invasion. Or, it may be that the tubercle bacillus flourishes better in symbiotic relation with the bacterial agents causing the other morbid conditions. While the campaign of education in respect to the prophylactic measures necessary in the eradication of foci of infection has been of great value, the advances in epidemiological knowledge and control has perhaps been of even greater value. And yet the morbidity tables from such diseases as measles, whooping cough, and influenze, diseases eminently predisposing to the development of tuberculosis, are still large despite the ever-increasing efficiency and vigilance of the health authorities. Indeed, so much of the tuberculosis incidence has its origin directly in one of these diseases that a large part of the campaign against tuberculosis can with profit be launched in this direction. The public is very gradually being weaned from the superstition that every child must contract measles, that the sooner over with the better, and that healthy children should be exposed to the disease on the first opportunity. Some physicians even, while not flat-footedly approving this notion, do not interpose very serious objection to it. They realize, indeed, the dangers to life from complicating bronchopneumonia though oblivious to the larger, though not so immediate, danger from tuberculosis.

That the recent epidemic waves of influenza have played a very pertinent part in keeping the tuberculous population still rather high is universally conceded by the medical profession although the laity do not yet seem to understand even the inherent gravity of this disease. Many fulminant types of tuberculosis are, nevertheless, traceable to this disease. Until the public learns the true significance of the disease the quarantine regulations must be perhaps more strict than for other quarantinable diseases. Of the nonspecific conditions figuring in the development of tuberculosis may be mentioned tonsillar disease. Because of the wide distribution of gland tuberculosis its benign nature has often received comment. It was even the belief at one time that gland tuberculosis immunized against further infection. Certainly, its wide distribution and its amenability to cure well illustrate Virchow's contention that there is no one who does not at one time or other have a tuberculous infection, but that most individuals easily overcome it. He found cured tuberculous nodules in the lungs of nearly all bodies coming to autopsy for other than this disease. Infection with tuberculosis alone seems to be self-limiting. But in conjunction with other bacterial agents the tubercle bacillus assumes an extreme virulence.

Diabetic patients and those with cirrhosis of the liver seem to have an especial predisposition to infection with tubercle bacilli. In both instances the complicating tuberculosis appears late in life, and though ordinarily later-life tuberculosis is of slower course and more benign in nature, it is here particularly fulminant. This proneness to tuberculosis existing in cirrhosis of the liver illustrates the erroneous impression long existing that alcoholic indulgence of a high degree —which so often is the cause of the cirrhotic condition—will cure tuberculosis. On the contrary, alcohol is a direct as well as an indirect predisposing factor in this disease.

THE FEVER THERAPY OF GONORRHEA.

It has long been known that the gonococcus cannot survive in a temperature of 42° C. (108° F.). Even at 39° or 40° (102°-104° F.) proliferation becomes notably inhibited. In gonorrheal patients who chance to develop high fever, secretion becomes arrested. Neverthelss in practice ordinary hot air and diathermy seem to exert no decided action on the disease, probably because the entire blood mass should be heated at once.

In the *Münchener medizinische Wochenschrift* for November 2, Dr. Weiss relates his attempts to raise the temperature of the entire body to the theoretically indicated point. His gonorrheal patients were placed in hot baths of from 40° to 43.5° C. (104°-110° F.) and their temperature was increased from normal to as high as 42.6° (105° F.). The tolerance to these temperatures was very variable. It was of course to be thought of that such temperatures might also weaken the natural immunity of the tissues. The bath was of the vapor type, and the head was protected by an ice-bag. One patient received a bath of 40 minutes and his highest temperature was 42.6°. His discharge, which was purulent and full of gonococci, became very slight and sterile. In another case the same results were obtained with a shorter bath and lower temperature. A third underwent two baths before recovery. In the first his temperature did not rise above 39.7° and cocci were still present in the discharge. A second bath brought about a temperature of 40.3°, which appeared to destroy all cocci. In patients not cured after one bath, in addition to more baths permanganate of potassium injections were given. Generally speaking, Weiss says, when the first bath can raise the body temperature to 42.6° a brilliant recovery may be anticipated. Six patients, despite ideal external conditions, could

not be made to react to a point high enough to kill the cocci. This failure seems due to circulatory conditions. It must not be forgotten that—as is noted in the case of the ordinary vapor bath—many individuals cannot with safety make use of them. The thoracic organs must always be examined before one ventures on these baths. Collapse occurs in some subjects and the bath must be discontinued as soon as the patient begins to feel uncomfortable.

The Dangers of Saccharine.

While it is fortunate that we have such an acceptable substitute, from a gastronomic point of view at least, for sugar as saccharine, still we must not close our eyes to its dangers. Certainly it should not be placed in the hands of a diabetic who will have to use it over long periods of time, perhaps the rest of his life, without some reservations or qualifications. It should be remembered that while sugar is a food saccharine is only a chemical substance which happens to have for one of its properties an extremely sweet taste. Derived as it is from coal-tar, it would be surprising indeed if it did not possess somewhere some drawback or undesirable quality, for all the members of this family seem to have one pet failing or another. Saccharine has been accused of being instrumental in causing certain forms of cancer, the so-called pitch or tar cancer. Of course, nearly everything in the earth, sea, and sky has been accused at one time or another of producing cancer, but the evidence against saccharine of being at least a predisposing cause of certain forms of epithelioma is sufficiently weighty to make us avoid taking the risk of using it except through compulsion. Be it innocent or guilty in the cancer matter, at least we know that it is a chronic irritant to the gastrointestinal tract, particularly to the stomach; that much has been demonstrated beyond cavil by the Department of Agriculture in 1911 and published as Report No. 94. Taken internally over long periods or in excessive doses it causes various digestive disturbances, prominent among which are hyperchlorhydria and nausea. In fact any dose over five grains may be considered unsafe. We are certainly not justified then in the somewhat complacent attitude assumed by some members of the profession toward this drug, but should issue it to diabetics with the same caution and admonitions with which we would accompany the giving of any other powerful medicine.

Convalescent Serum in Treatment of Measles.

In the course of a severe epidemic of measles in Ancona during the latter half of 1914, Umberto Majoli (*Il Policlinico* September, 1915), essayed this method of treatment. It consists in the use of the blood serum of patients convalescent from measles in the treatment of other patients in the acute stage of this disease. This mode of therapy has never been tried before in measles, although convalescent serum has been used for some time in scarlet fever—by Weissbecker in 1896, by von Leyden, Huber, and Rosenthal in 1902, by E. Reiss and P. Jungmann in 1912, by R. Koch in 1913, and by Zingher in 1914. Majoli removed by venesection 250 cubic centimeters of blood from the convalescent patient in whom a negative Wassermann reaction had already been demonstrated. The serum was kept at low temperature for 24 hours and then transferred to sterile vials of 5 to 10 cubic centimeters capacity. In the treatment there were used according to the severity of the case daily injections of 5 to 20 cubic centimeters. The mixed serum obtained from several convalescents produced apparently better results than the serum obtained from one individual. The good effects attributed to this method of treatment are the lowering of the temperature throughout the entire course of the disease, the shortening of this course, and the absence of complications.

News of the Week.

Committee of American Physicians for the Relief of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7018 Jenkins Arcade Building, Pittsburgh, announces the receipt of the following contributions for the two weeks ending December 25:

Mr. [illegible]	$2.00
[illegible]	[illegible]
Receipts for the two weeks ending December 25....	$27.00
Previously reported receipts.....	7,903.86
[illegible]	$7,930.86
1,625 Standard boxes of food at $2.20...$3,575.00	
1,274 Standard boxes of food at $2.30... 2,930.20	
[illegible]	[illegible]
[illegible]	7,310.04
Balance	$620.82

War Death Rate Drops.—Official statements recently made show a remarkable decrease in the death rate of wounded and sick soldiers in both the German and the French armies. For the German army the statistics show that while in the first months of the war 3 per cent. of the wounded and sick soldiers died, 12 per cent. were discharged, and 85 per cent. returned to active service, the death rate since then has fallen steadily until now the monthly average is 1.7 per cent., the discharges average 8.8 per cent., and 89.5 per cent. are still fit for service. For the French army the official statistics give the mortality among the sick and wounded soldiers in the war hospitals during the month of September, 1914, as 45 per 1,000, and during the past months as only 18 per 1,000. In peace times, the report states, the hospitals of Paris show a mortality rate of 106 per 1,000.

Decrease in National Mortality.—The United States Census Bureau estimates that the death rate for 1914 in the registration area of the country was 13.6 per 1,000 of population, and states that this is the lowest rate on record for the United States. The returns cover about 67 per cent. of the population and are considered trustworthy. Some surprising reductions in the death rates of various cities and parts of the country are shown; thus, the death rate of New York City has fallen 25.8 per cent.; that of Jersey City, 28.5 per cent.; of Newark, 22.5 per cent.; of Paterson, 20.1 per cent.; of San Francisco, 23.6 per cent.; of Denver, 23.3 per cent., and of Pittsburgh, 21.9 per cent. Among the States, New York shows a reduction of 14 per cent.; New Jersey, 11.8; Massachusetts, 11.4; Connecticut, 3.8; Rhode Island,

17.4; Vermont, 7.4, and Maine, 1.9. Michigan alone shows an increase, amounting to 0.8 per cent. only.

Health of the Canal Zone.—The Chief Health Officer of the Panama Canal reports that during the month of October, 1915, one case of yellow fever was received at quarantine; the patient was admitted to the Ancon Hospital and died the following day. With this exception, no cases of yellow fever, smallpox, or plague originated on or were brought to the Isthmus during the month. Among employees, numbering 33,419, the total number of deaths from all causes was 20, of which 15 were due to disease, giving a death rate from disease of 5.39 per 1,000 as compared with 4.82 for the preceding month and 4.68 for the corresponding month of last year. The total number of admissions to hospitals and quarters was 821, a rate of 294.8 per 1,000, as compared with 307.34 for the preceding month, and 344.23 for the corresponding month of last year. This is the lowest rate ever attained at this season of the year. Among the population of the Canal Zone, amounting to 30,219, there was 39 deaths, 33 of which were due to disease, giving a death rate of 13.10 per 1,000. The reported births numbered 64, 19 white and 45 colored; and there were 11 deaths of children under 1 year of age. In Panama City, with a population of 60,373, there were 135 deaths from disease, a rate of 26.83 per 1,000, and 206 births; while in Colon, with a population of 29,331, the deaths numbered 56, a rate of 22.91 per 1,000, and the births 56. The general work of sanitation was carried on as usual.

Police Psycopathic Laboratory.—After preliminary experimental work extending over two months, the Police Commissioner of New York has established a laboratory for the purpose of examing prisoners so as to determine which among them are mentally defective. The laboratory will be situated at Police Headquarters and will be well equipped for the work. It will be under the direction of Dr. Louis Bisch of New York, who has also conducted the experimental work.

Dr. Witthaus' Estate.—By the will of the late Dr. Rudolph A. Witthaus, whose death was announced last week, the New York Academy of Medicine receives the bulk of his estate, amounting to upwards of $100,000, the income to be used for the benefit of the library. Dr. Witthaus also left all of his books to the library of the Academy, and expressed the wish that it might be made more accessible to readers than in the past, especially on Sundays. Under a new rule, established after this will was written, the Academy library is regularly open to members on Sundays and holidays.

Another Centenarian.—Thomas Dowling of Nyack, N. Y., said to have been the oldest man in Rockland County, died on December 20, at the age of 104 years.

To Allow Horse Meat.—The Board of Health of New York City on December 21 passed an amendment to the Sanitary Code permitting the slaughtering of horses and the sale of the flesh as food. The measure goes into effect on January 1, and revokes a prohibition which has been in force since New York became a city.

American College of Surgeons.—The American College of Surgeons announces that it has secured from its Fellows an endowment fund of $500,000, the money to be held in perpetuity, and the income only to be used to advance the purposes of the college. The college now lists about 3,400 Fellows in Canada and the United States, and is a powerful factor in the development of the art and economics of surgery. Its purposes are concerned directly with matters of character and of training, with the betterment of hospitals and of the teaching facilities of medical schools, with laws which relate to medical practice and privilege. The raising of this endowment fund assures the progress of the college towards its ideals along a number of lines of activity which have been mapped out for it.

Work for the Blind.—The New York State Commission for the Blind has issued a list of blind persons engaged in various trades and occupations, including basket makers, broom makers, chair caners, dictaphone operators, singers, masseurs, rug makers, piano tuners, printers, etc. This list will be supplied on application to the Commission at 105 West Fortieth street, New York.

Civil Service Examinations.—The New York State Civil Service Commission announces an examination on January 22, 1916, for the purpose of filling vacancies in the following positions:

Assistant physician, regular, in State Hospital and in various State and county institutions. Salary in State Hospitals, $1,200, increasing $100 each year to $1,600, with maintenance, including quarters, board, laundry etc. The examination is open to men and women who are licensed medical practitioners in this State who have graduated from a registered medical school, and who since graduation have had one year's experience on the resident medical staff of a general hospital, or as medical interne or clinical assistant in a State hospital or institution, or have been engaged for three consecutive years in the practice of medicine.

Laboratory assistant in bacteriology, State Department of Health. Candidates, either men or women, who have satisfactorily completed a systematic course in bacteriology and have also had not less than three months' practical experience in laboratory work, will be admitted to the examination.

Application blanks will be furnished before January 10 by the State Civil Service Commission, Albany, N. Y.

United States Public Health Service.—An examination of candidates for admission to the grade of assistant surgeon in the United States Public Health Service will be held on January 24, 1916. Candidates must be between 23 and 32 years of age, graduates of a reputable medical college, and of good professional and moral character, with at least one year's hospital or two years' professional work. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order. They will receive early appointments. After four years' service assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon, and after twelve years to the grade of surgeon. Assistant surgeons receive $2,000, passed assistant surgeons, $2,400; surgeons, $3,000; senior surgeons, $3,500, and assistant surgeon generals, $4,000 a year. For invitation to appear before the board of examiners' application should be made to "Surgeon General, Public Health Service, Washington, D. C."

A New Journal.—The first issue of the *Journal of Cancer Research,* the official organ of the Ameri-

can Association for Cancer Research, is announced for January, 1916. Dr. Richard Weil of New York is the managing editor of the new journal, and he will be assisted by an editorial committee composed of members of the association. The journal will be issued quarterly.

To Aid Mexico.—Because of the reported prevalence of typhus fever in Mexico, Secretary of State Lansing has made inquiries of General Carranza as to whether he will not lift the ban against the American Red Cross in Mexico and permit it, in conjunction with the Rockefeller Foundation to undertake the task of stamping out the epidemic. The Red Cross last fall gave up its relief work in Mexico at the request of General Carranza, who stated that the Mexicans themselves were able to handle the situation at that time.

Quarantined in Hospital.—The staff and the patients, numbering about 150, of the Cumberland Hospital, Brooklyn, are all under quarantine in that institution because of an outbreak of diphtheria. Three of the physicians on the staff have contracted the disease.

Wood Alcohol Inquiry.—The Department of Health of New York has requested the office of the District Attorney of Kings County to investigate the use of wood alcohol in Brooklyn. The deaths of two workmen and the blinding of a third, all of whom were employed as varnishers in a brewery in that city, have called attention anew to the dangers of wood alcohol and to the fact that it is so often mislabelled and improperly sold.

Leeuwenhoek Medal.—The Leeuwenhoek gold medal of the Royal Academy of Sciences of Amsterdam has recently been awarded to Surgeon General Sir David Bruce of the British Army for his work in parasitology. This medal is awarded every ten years in recognition of the most remarkable observations made during the decade on the microscopical organisms first discovered by Leeuwenhoek in 1675. The medal was presented to Sir David Bruce at a meeting of the Academy in Amsterdam on December 18.

Aid for State Hospitals.—At a conference on the budget for the New York State Hospitals, held in Albany on December 20, Governor Whitman approved requests for new construction and permanent betterment work at the various hospitals to the amount of $1,042,493. The Governor announced a plan to relieve the present overcrowding in the State institutions by the use of the $300,000 unexpended balance of the appropriation for the Mohansic Hospital to defray part of the cost of the construction and equipment of a hospital building to be devoted solely to the care of old and feeble persons, most of them victims of senile, dementia, now inmates of the State hospitals. A building to house 2,000 patients at least has already been planned, and it is proposed that the Legislature be asked to appropriate $700,000 so that it may shortly be erected, preferably on the grounds of the Middletown State Hospital, a site which has been chosen because of its accessibility to New York, whence more than half of the patients in the State hospitals are drawn. The use of such a building would very nearly do away with the overcrowding.

Medical Society Elections.—BROOKLYN NEUROLOGICAL SOCIETY. The following officers were elected at the annual meeting of this society recently: *President*, Dr. Siegfried Block; *Vice-President*, Dr. C. P. Frischbier; *Secretary-Treasurer*, Dr. C. P. Meagher.

TULSA (OKLA.) ACADEMY OF MEDICINE. This was organized at a meeting of the medical profession of Tulsa held on October 28, 1915, the following officers being chosen: *President*, Dr. W. Forest Dutton; *Vice-President*, Dr. R. S. Wagner; *Secretary-Treasurer*, Dr. Paul N. Atkins.

SOMERVILLE (MASS.) MEDICAL SOCIETY.—At the annual meeting held on December 2 in Somerville, the following officers were elected: *President*, Dr. F. E. Bateman; *Vice-President*, Dr. F. N. Stephens; *Secretary-Treasurer*, Dr. E. F. Sewall. Dr. Charles A. Porter of Boston was the guest of honor.

ST. LOUIS (MO.) MEDICAL SOCIETY.—The following officers were elected at a meeting held on November 27: *President*, Dr. L. C. Boisliniere; *First Vice-President*, Dr. Walter Baumgartern; *Second Vice-President*, Dr. W. H. Stauffer; *Secretary*, Dr. J. A. Seabold.

SOMERSET COUNTY (ME.) MEDICAL SOCIETY.—The annual meeting of this association was held in Skowhegan on December 2, officers being elected as follows: *President*, Dr. R. C. Brown, Bingham; *Vice-President*, Dr. J. A. Thibodeau, Madison; *Secretary*, Dr. H. W. Smith, Norridgewock.

THIRD DISTRICT (GA.) MEDICAL ASSOCIATION. At the annual meeting held in Americus on November 17, the following officers were elected: *President*, Dr. W. H. Prather, Americus; *Vice-President*, Dr. Louis Grubbs, Americus; *Secretary-Treasurer*, Dr. Charles A. Greer.

AMERICAN ASSOCIATION OF CLINICAL RESEARCH.—At the annual meeting held recently in Philadelphia the following officers were elected: *President*, Dr. Warren Coleman, New York; *vice-presidents*, Dr. William B. Snow, New York, and Dr. Leon T. Ashcraft, Philadelphia. Dr. James Kraus, Boston, is permanent secretary.

ELEVENTH DISTRICT (GA.) MEDICAL ASSOCIATION.—The following officers were elected at the annual meeting held on December 3: *President*, Dr. B. H. Minchew, Waycross; *vice-president*, Dr. Quitman Holton, Douglas; *secretary*, Dr. J. W. Simmons, Brunswick; *councillor*, Dr. C. L. Drew, Willacoochee.

KENT COUNTY (R. I.) MEDICAL SOCIETY.—At the annual meeting held on December 9 at Arctic, the following officers were chosen: *President*, Dr. P. C. Means, Apponaug; *vice-president*, Dr. C. L. Phillips, East Greenwich; *secretary*, Dr. H. B. Bryer, Natick; *treasurer*, Dr. F. B. Smith, Washington.

NORTH CENTRAL ILLINOIS MEDICAL ASSOCIATION.—At the second annual meeting held in Peoria on December 8, officers for the ensuing year were elected as follows: *President*, Dr. James A. Marshall, Pontiac; *vice-presidents*, Dr. F. W. Wilcox, Minonk, and Dr. David S. Conley, Streator; *secretary-treasurer*, Dr. George A. Dicus, Streator.

BALTIMORE CITY (MD.) MEDICAL SOCIETY.—The following officers were elected at the annual meeting on December 1: *President*, Dr. C. Hampson Jones; *vice-president*, Dr. F. H. Baetjer; *secretary*, Dr. Emil Novak; *treasurer*, Dr. W. S. Gardner.

Obituary Notes.—Dr. HERMAN PETER GERBERT of Orange, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1883, died suddenly at his home, from heart disease on December 19 aged 57 years.

Dr. JEREMIAH ELWOOD SAYRE of Red Bank, N. J., a graduate of the Jefferson Medical College, Philadelphia, in 1883, died at his home on December 11, aged 63 years.

Dr. RODERICK FRASER, formerly of New York, a graduate of the Bellevue Hospital Medical College, New York, in 1897, an alumnus of the Lying-In Hospital, formerly physician to the Bloomingdale Clinic, and a member of the American Medical Association, the New York State and County Medical Societies, and the West Side Clinical Society, died at Saranac Lake, N. Y., after a long illness, on December 13, aged 45 years.

Dr. CHARLES A. HAFFNER of New York, a graduate of the College of Physicians and Surgeons, New York, in 1896, assistant physician at the Roosevelt Hospital Dispensary, and a member of the New York State and County Medical Societies, the West Side Clinical Society, and the West End Medical Society, died at his home on December 14, aged 39 years.

Dr. WILLIAM EPAPHRODITUS THOMAS of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1895, died at the German Hospital, Brooklyn, from pneumonia on December 14, aged 42 years.

Dr. GEORGE PEARSLEE SHEARS of New York, a graduate of the New York University Medical College in 1886, clinical professor of obstetrics in the New York Polyclinic Medical School, attending obstetrician to the City Hospital, Misericordia Hospital, and the New York Polyclinic Hospital, and a member of the New York State and County Medical Societies, and the West Side Clinical Society, died suddenly at his home, from cerebral hemorrhage, on December 13, aged 55 years.

Dr. FRANCIS HENRY BARNES of Boston, a graduate of the Harvard University Medical School, Boston, in 1893, died at his home in Fitchburg, Mass., after a long illness, on December 11, aged 48 years.

Dr. WILLIAM E. SCRIBNER of Detroit, Mich., a graduate of the Michigan College of Medicine, Detroit, in 1883, and a member of the Michigan State Medical Society and the Wayne County Medical Society, died at his home on December 3, aged 56 years.

Dr. ONOFRIO ABRUZZO of Brooklyn, a graduate of the College of Physicians and Surgeons, New York, in 1882, died at his home on December 7, aged 74 years.

Obituary.

JOHN ORLANDO ROE, M.D., LL.D.,

ROCHESTER, N. Y.

Dr. JOHN O. ROE of Rochester, N. Y., one of the leading laryngologists of the country, known especially for his work in plastic surgery of the nose, died on December 24. He was born in Patchogue, Long Island, on February 3, 1849, and was graduated from the College of Physicians and Surgeons, New York City, in 1871. He was a fellow of the American Medical Association and of the American College of Surgeons, a member of the American Cliniatological Association, the American Laryngological Association (of which he was one time president), the American Laryngological, Rhinological, and Otological Association, of the Medical Society of the State of New York (of which he was one time president), and many other medical societies. He was the author of numerous articles on diseases of the larynx, nose, and ear in various periodicals and systems of medicine and surgery.

Correspondence.

ABNORMALITIES IN THE CERVIX UTERI.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I have noticed in the course of my practice two abnormalities in the cervix uteri which, so far as I have been able to find, are not mentioned in any of the textbooks. One was a sort of hypospadias of the cervix. It was in a woman about twenty-three years old, mother of one child. She came to me to be treated for a cervical catarrh. At the tip of the cervix there was a circular aperture, just as in a nullipara, but the canal ran only about a centimeter. The real os externum was about midway up the posterior surface of the portio vaginalis. There was no laceration.

The other case I came across last winter. The subject was a young woman married five weeks. She had complained of a bloody discharge ever since her marriage. On examination I found an untorn circular hymen that did not admit the finger, but that could be pushed upward for some distance in the shape of an inverted funnel. Intercourse, she told me, had taken place a number of times. To reach the cervix I had to tear the hymen, and I found the following condition: there was an intense inflammation of the vagina and cervix, which were bathed in a sanguineous secretion. On swabbing out I found that the external mucous membrane of the cervix was thrown into rugæ, like that of the vagina. These rugæ were longitudinal, converging toward the os externum, while at the cervicovaginal junction there was a circular pleat surrounding the cervix like the collar of a sweater. Has a similar condition ever been reported?

J. C. JOSEPHSON, M. D.

1330 FRANKLIN AVENUE, NEW YORK.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

MORE ABOUT PARATYPHOID—COMMON INTESTINAL PROTOZOA OF MAN.

LONDON, Dec. 10, 1915.

PARATYPHOID has continued to occupy much of the attention of the profession and there was a further discussion about it on the 23rd ult., when Sir William Osler showed the temperature charts of a case of his own, and others from the original article by Professor Achard of Paris, who first differentiated the disease.

Sir William Leishman related his experience in France, where the cases had not exceeded 1200 during the first fifteen and one-half months of war. Nor were they grave as regards life, a point also noted by Sir B. Dawson. Eighteen died, the case mortality being 1.5 per cent. only; there were 32 deaths from combined typhoid and paratyphoid A and B, the latter comprising approximately two-thirds to three-fourths of the infections. Stringent measures to prevent the spread of the disease were taken. At the clearing stations all suspicious cases were subjected to a blood test, and the officer sending the man was informed by telegram that a lookout might be kept for any further case, and if any occurred a bacteriologist carried out a thorough investigation. A spot map was kept at headquarters on which such cases were charted unit by unit. House to house visiting was carried on, infected persons being thus detected. He did not admit that mild cases were not recognized in France.

That opinion was founded on Dreyer's method of agglutination, which he thought needed "controls" before being entirely accepted. There were many cases of mild fever at the front, but it could not be held that they were all of the paratyphoid kind. Trench fever, *e.g.* gave no agglutination; it was a definite disease and he thought perhaps mosquito-borne. He was not satisfied that Castellani's evidence as to the value of mixed vaccines was conclusive; the dosage was too small to give protection and we ought not to tamper with the typhoid element. The incidence of paratyphoid was, roughly, 1 per 1000, so the need for protection against it was not very great, at any rate in France.

Fleet Surgeon Bassett-Smith spoke of naval cases at the Dreadnought Hospital, the Haslar Hospital, and elsewhere. Most of them had come from the Dardanelles. About the middle of the last year a vaccine was prepared from strains obtained in Gallipoli. A blood culture was made in every case of pyrexia. The excreta were examined and agglutination performed if sufficient blood was available. He had come to regard all cases from the near East labeled as dysentery as potential examples of paratyphoid. No patient had died. In the navy they had considered it worth while to provide immunity if possible and had used a vaccine with increasing frequency. The typhoid vaccine had been administered first in two doses, then paratyphoid in one or two. More recently a mixed or triple vaccine in two doses. No more complaint of disturbance was made than after simple antityphoid and the agglutination was satisfactory. He hoped the protection against typhoid was full, against others moderate.

Professor Castellani gave some of his experiences in Ceylon and in Serbia. In the former the most frequent type of the disease was paratyphoid A; in Serbia it was B. In general the disease was milder than true typhoid and did not last so long, but there were many exceptions. He had seen cases lasting three or four months and some proving fatal.

In treatment he adhered to the old plan of liquid diet during the fever and some days after. He had witnessed disastrous results from the modern departure from strict dieting. As to drugs he agreed with Osler: the less given to typhoid patients the better, though hexamethylenamine was useful as a preventive of both gall and urinary bladder complications. Vaccines had not given him such brilliant results as some authorities have reported. He used them in atypical cases of a low type running a protracted course. For prophylaxis mixed vaccines were our chief hope. As the use of mixed vaccine generally was based on his own work, he had answered the objections that some have made, *e.g.* that the amount of each being smaller, that for true typhoid—the most important—would give less protection than the ordinary mono-vaccine for it. But experiment was not in favor of this inference. In fact all experiment hitherto went to show that the mixed vaccine protected against all three diseases—a mono-vaccine against the one. Moreover, the reaction was not more severe. The conclusion suggested was that we should substitute the mixed (typhoid, paratyphoid A. and paratyphoid B.) in enteric prophylaxis for the ordinary mono-typhoid vaccine.

Dr. Hy. Robinson said acute onset was not uncommon. Epistasis occurred in about 30 per cent. of the cases. The leading symptoms were headache and abdominal pain, but backache and vomiting were not rare. The spleen was large, as found by percussion, but not often palpable. Spots on the subsidence of the fever, not often earlier, might be larger and more prominent than in typhoid. Abdominal reflex occurred as in typhoid; bradycardia during convalescence generally. The variation of pyrexia was great—it might last five or six days or continue for three or four months. He did not think A. and B. paratyphoid could be differentiated. He thought many mild cases were never diagnosed.

Dr. H. L. Tidy had obtained the bacillus of paratyphoid from 66 cases. In a number he got no agglutination of the *B. typhosus,* although the men had been inoculated within eight months. Pyrexia seemed to remove the agglutinins from the blood—a point for those studying the persistence of the Widal reaction. A positive Widal reaction was equally invaluable in the inoculated and in others. After disappearing the agglutinins occasionally returned; febrile conditions changed them into agglutinoids. For separating the organisms Browning's method was best; for culturing, MacConkey's.

Captain Kenny gave his experience at Taplow with eleven cases probably typhoid, twenty-two diagnosed as paratyphoid B, three as paratyphoid A. He related a case in which at the post-mortem lesions of both typhoid and dysentery were found.

Drs. Carl Browning, Scott Tebb, and Stolkind (of Moscow) also spoke and the discussion was wound up by a few words from the president, Sir W. Osler.

Dr. Wenyon has given a good description of the common intestinal protozoa of man to the Welcome Bureau. He has had the opportunity of studying them at the School of Tropical Medicine here as well as in several other countries. He reports seeing recently a good many instances in persons returned from Gallipoli in whom *Entameba coli* was common as were also the flagellates, trichomonas, tetramitus, and lamblia. Balantidium did not come under his notice but it had recently been reported from Egypt. The vegetable organism Blastocystis was met with in large numbers. Occasionally a small ameba of the limax type was found. He had seen only four cases of *E. histolytica*—probably because cases were cut short by treatment with emetine which rapidly kills the organism, thereby preventing the formerly frequent sequel—amebic abscess of the liver.

Progress of Medical Science.

Boston Medical and Surgical Journal

December 16, 1915.

1. Disinfection of Septic Joints. Frederic J. Cotton.
2. The Bacterin Treatment of Certain Chronic Pyogenic Dermatoses. Charles C. Dennis and John H. Bufford.
3. Alopecia Syphilitica. Douglass W. Montgomery.
4. Examination and Prophylaxis for Syphilitic Patients and Their Families: Methods of Examination at the Psycopathic Hospital, Boston. Helen W. Wright.
5. Estimate of the Cost of Social Work in Connection with Examination and Treatment of Other Members of Families of Syphilitic Patients Throughout the State, Based upon 147 Cases Dealt with in Eight Months at the Psychopathic Hospital, Boston.

1. Disinfection of Septic Joints.—Frederick J. Cotton declares that to-day the opening and drainage of joints should be listed not as an operation but as a crime. It is our duty to-day either to determine and declare joint infection hopeless, and then to lay the joint wide open (not drain it), or else to bend all our efforts to an optimistic attempt to save the joint; not only to get it healed but to preserve its function as well. He de-

scribes the technique which he has evolved which consists in opening the joint, irrigation for fifteen minutes by the watch with a full stream of 1-15,000 corrosive sublimate, flushing out the excess with salt solution, and then making a water tight closure of the capsule by mattress and single sutures in such a way as to leave the synovial membrane cut edge to cut edge as accurately as may be. The external wound is left wide open or nearly so. The writer cites six cases illustrating different types of infection in which he has used this method successfully and states that it has one very definite limitation and that is that he has not yet worked out any scheme for using it in infection of the closed joints, hip, shoulder, ankle, etc. Where the method is practical the results are nearly always perfect.

2. **The Bacterin Treatment of Certain Chronic Pyogenic Dermatoses.**—Charles C. Dennis and John H. Bufford selected for their experiments with the bacterin treatment 70 cases of chronic pyogenic dermatoses in which previous methods of treatment had failed. This series included 35 cases of acne vulgaris, 21 cases of furunculosis, and 14 cases of folliculitis. The 70 cases were also roughly divided into two groups one of which was to receive only autogenous vaccines and the other stock preparations. In both instances the bacterins employed were made by the writers themselves. Before instituting the treatment with bacterins strict rules were given for the hygienic care of the person, the bodily functions were regulated, and the diet revised and prescribed. The writers describe their method of preparing and administering the vaccines and tabulate their results. Sixty-four per cent. of all cases treated by bacterins were cured, 20 per cent. were benefited, and 16 per cent. received no benefit whatever. Autogenous vaccines were superior to stock vaccines excepting in the treatment of furunculosis, where no difference could be seen. In most cases a permanent cure resulted from the use of the vaccines. In acne the best results were obtained in the indurated type. The comedo type responded less favorably and the furuncular type least favorably. Of the three pyogenic dermatoses, the best results were obtained in furunculosis. The action of the bacterins in the treatment of sycosis was very erratic. The main object of all bacterin therapy is to raise the resistance of the individual to the specific organism which is responsible for the pyogenic formation, but it cannot correct those faults which underlie the formation of these lesions and for that reason the general treatment described was instituted and to this due credit is given for the part it played in the treatment of acne.

3. **Alopecia Syphilitica.**—Douglass W. Montgomery expresses the opinion that a knowledge of the peculiarities of this form of alopecia is of value in that it may lead to a search for other luetic symptoms, and so clear up an otherwise puzzling condition. Syphilis sometimes causes a baldness that is so typical as to be almost pathognomonic of the disease. It consists of thinned out, irregular, indefinitely bordered places about the size of the end of a lead pencil or less, making the hair look as though it had been cut by running the point of the scissors up into it. A spotted alopecia resembling this may be produced by pyogenic infection, but in such cases the affected area will be reddened in its entirety or there will be a red spot in the center of the thinned out patch, or even a scar as a symptom of the foregoing pathogenesis. In seborrhea and alopecia areata the bald patches are larger and less numerous than in alopecia syphilitica. The pseudo alopecia areata of Brocq is essentially different from syhilitic alopecia in that the alopecia of Brocq comes on slowly, assumes its spotted character after long years, is absolutely atrophic, and the patches remain irreparably bald, the surface being cicatricial.

New York Medical Journal.

December 18, 1915.

1. Maternity Insurance. Lee K. Frankel.
2. Soluble Radium Salts in Organic Nervous Diseases. Alfred Gordon.
3. The Roentgen Ray Diagnosis of Gastric Lesions. J. W. Squires.
4. A New Tonsil Depressor. James H. Heacock.
5. Treatment with Mixed Vaccines. Alphonse A. Thibaudeau.
6. Retroversion of the Uterus. A. N. Claggett.
7. The Allen Treatment in Diabetes Mellitus. Arthur Bookman.
8. Weight Increase. Robert Hugh Rose.
9. Tetany in an Adult Following Poisoning from Ergot. H. W. Elmsheimer.

1. **Maternity Insurance.**—Lee K. Frankel reviews the history of motherhood protection through voluntary philanthropic agencies and through maternity insurance, and discusses legislation affecting motherhood; the philosophy of maternity insurance; present methods of protecting motherhood, particularly along lines of social insurance in European countries; the cost of maternity insurance; developments in the protection of mothers in the United States, and the possiblity of organizing a scheme of social insurance under which cash benefits and medical attendance will be given to women during the period of maternity. He states that if it is deemed essential to develop a scheme of insurance under which maternity benefits be paid to working mothers, attention should be called at this time to the desirability of extending these benefits to other women as well. To do this most effectively it would be advisable not to attempt to organize a special maternity insurance, but to incorporate this into a general sickness plan. The need for sickness insurance can no longer be denied. It would be quite simple to incorporate in a plan of sickness insurance the necessary provisions under which all women, whether employed or not, could be made beneficiaries at the time of maternity.

2. **Radium in Nervous Disorders.**—Alfred Gordon, led by the claims made for soluble radium salts when injected into the circulation, has made experiments on dogs in order to demonstrate what its effects are when brought into direct contact with the central nervous system. The phenomena observed tend to prove a direct effect of radium solution on the fibers of the pyramidal tract and on the erection center in the lumbar segment of the cord. The appearance of a spastic state of the legs following an intradural injection of radium solutions in two animals was so striking that a further experiment was undertaken which gave a similar result. It seemed that no matter how feeble the emanations of radium may be they are not of indifferent character when brought into contact with living tissue. The effect of very feeble emanations of radium have a damaging effect on nervous substance, which appears to be, in animals at least, of a stimulating and irritating character. Caution consequently should be exercised in using soluble radium salts in organic diseases of the nervous system, at least by the intradural method.

5. **Mixed Vaccines.**—Alphonse A. Thibaudeau states that being acquainted with the results of experiments on laboratory animals which showed that the injection of bacterial derivatives resulted in an increase in the opsonic index of the animals, and that the increase in this index was specific, being raised to those germs only which were used in the preparation, he has endeavored to correlate these two assumptions with the opsonic theory of Wright and the phagocytic theory of Metchnikoff. He selected for his study of the blood

surgical patients who had proved refractory to regular treatment and observed the changes produced by the injection of phylacogen from which he concludes as follows: 1. The intravenous administration of phylacogen is followed by a prompt (about four hours) and marked leucocytosis, which is seen by making leucocyte determinations at two hour intervals. 2. A considerable increase in the proportion of polymorphonuclear leucocytes is also noted by the same means; therefore, the actual number of these leucocytes (phagocytes) is markedly increased. 3. The intravenous administration of mixed vaccines in these cases promptly increased the opsonic index to the infecting microorganisms isolated from the patient, even when they were of two or more species. 4. These phenomena are usually (not always) synchronous with certain characteristic changes (rises) in the pulse, temperature, and blood pressure, which are followed by a fall to normal or even subnormal. 5. Coincidental with the phenomena noted above was marked improvement in the clinical condition for which treatment had been instituted. 6. Mixed vaccines, in their opinion, represent multiple antigens, their therapeutic efficiency being due to their ability to stimulate the formation of antibodies. 7. Their action resembles in a general way that of bacterial vaccines. The action, however, is more prompt (1, 2, and 3 above), owing probably to the elimination of the delay incident to the splitting of the bacterial cell, the metabolic products (bacterial derivatives) concerned in their action being immediately available. At the same time their action is probably not as permanent as that of the vaccines, because of their more rapid absorption.

6. Retroversion of the Uterus.—A. N. Clagett makes a preliminary report on an operation which he has devised for suspension of the uterus. He describes in detail the technique by which he shortens the round ligaments and follows this by a modified Gilliam-Ferguson procedure. The result is that the uterus is suspended not only by the strong proximal portion of the round ligament, but a second suspension and normal anteflexion are obtained from the distal portion. Control examinations have shown the uterus hanging in anteflexion and freely movable. Occasionally the operation has seemed to be contraindicated by reason of the scanty amount of round ligament muscle present. The writer is unable to state how pregnancy may be affected by this procedure.

7. Allen Treatment of Diabetes Mellitus. — Arthur Bookman reports his experience in treating 24 cases of severe diabetes at Mount Sinai Hospital and the Montefiore Home and in private practice during the past year. His results agree with those of Dr. Allen and of others who have used this method. The patients have rapidly become sugar free and with few exceptions have improved in every way. The results in the juvenile cases have been most convincing. The writer believes that in the management of severe diabetes the Allen method is a great step in advance, that it brings excellent results and brings them quickly. He finds this method perfectly feasible under the ordinary condition of private practice. In the way of laboratory examinations only the usual tests for acetone, diacetic acid, and glucose are indispensable.

Journal of the American Medical Association

December 18, 1915.

1. The Kinetic Drive: Its Phenomena and Its Control. George W. Crile.
2. The Treatment of Parotid Tumors by Radium. Richard Weil.
3. Trichinosis. Report of a Case with Trichina Larvae in the Spinal Fluid. Leon Bloch.
4. Summary of Chemotherapeutic Studies in Experimental Trypanosomiasis. Jay Frank Schamburg, John A. Kolmer, and George W. Raiziss.
5. Beriberi in the Amazon Basin. Allen M. Walcott.
6. The Treatment of Paresis by Injections of Neosalvarsan into the Lateral Ventricle. Graeme M. Hammond and Norman Sharpe.
7. The Possibility of the Recovery of Motor Function in Long-Standing Hemiplegia: A Preliminary Report. Shepherd Ivory Franz, Mildred E. Scheetz, and Anita A. Wilson.
8. The Management of Pneumothorax Occurring as a Complication of Nephrectomy. William C. Quimby.
9. Report of a Case of Esophagotracheal Fistula. B. B. Finkelstone and T. Long Ellis.
10. The Differential Diagnosis of Lesions of the Labyrinth and of the Cerebellum. J. Gordon Wilson and F. H. Pike.
11. The Relation of Heat to Summer Diarrhea of Infants. Adrien Bleyer.
12. A Case of Varices of the Male Urethra. Ernest G. Mark and Harvey E. McCarthy.
13. Transfusion by the Citrate Method in a Sixty-Hour-Old Baby with Melena Neonatorum. H. Woltmann.

1. Kinetic Drive.—George W. Crile. (See MEDICAL RECORD, page 766, Vol. 88.)

2. The Treatment of Parotid Tumors by Radium.—Richard Weil says it is unquestionably a matter of importance to determine whether or not a particular type of tumor is especially suitable for radium treatment. Not all of the cases so treated have been cured, and it would make for a greater precision in treatment if it were possible to determine that certain types of parotid tumors respond to treatment whereas others do not. In the case reported a portion of the tumor was removed for diagnosis and found to belong to a type that has caused considerable discussion, that to which Billroth gave the name cylindroma. The independent position of these tumors among adenocarcinomas gives a rational ground to expect that they will react to therapeutic measures in a somewhat exceptional manner. In the instance under discussion the tumor was of seven years' duration. It was treated for a period of six weeks by the insertion of radium into the tumor. This was followed by the disappearance of the tumor which after two years shows no recurrence.

3. Trichinosis.—Leon Bloch reports a case in which trichina larvæ was found in the spinal fluid. From the observation of this case he concludes that meningeal irritation undoubtedly existed as was shown by the positive Nonne and Noguchi tests; that severe infections show a low eosinophile count during the acute stage, which increases with convalescence, and that vigorous catharsis with a view of clearing the intestinal tract of all parasites which have not yet penetrated the mucosa appears to have limited the infection. The writer points out three ways by which the parasites may enter the spinal fluid, namely, directly through the central capillaries of the choroidal villi, through the perivascular lymphatics, and directly through the cerebral cortex into the subarachnoid space.

4. Trypanosomiasis.—J. Frank Shamberg, John A. Kolmer, and George W. Raiziss give the results of their experiments on a series of rats infected by intraperitoneal injection with *Trypanosoma equiperdum* and then treated with various therapeutic agents. The only drugs which they found capable of destroying the Trypanosoma equiperdum, and indeed trypanosomes generally, in the blood of infected animals were salvarsan and neosalvarsan. They tabulate the results of intravenous injections of salvarsan and neosalvarsan, both the German product and that of the Dermatological Research Laboratory, in experimental trypanomiasis which show that the two preparations do not vary materially in their trypanocidal influence. Both products in adequate dosage are capable of producing a permanent sterilizing effect. In commenting on the clinical results obtained with their product, the writers state that they have administered their arsenobenzol intravenously over 175 times without any accident whatsoever. In a proportion of the cases there have been some reactive symptoms which passed away in the course of a few hours. The therapeutic results they

believe to be indistinguishable from those obtained with the German product. A healing influence on lesions is often evident in from twenty-four to forty-eight hours. Several hundred doses of this product have been administered by others than themselves and the reports from these correspond with the observations of the authors.

5. Beriberi.—Allen M. Walcott says that beriberi is, as yet, a very common disease in the Brazilian portion of the Amazon basin. There has been an impression that perhaps the disease in Brazil is different from that found elsewhere, but such is not the case. The disease is the same in this locality as elsewhere. Experiments with farina de agua (a product of prolonged maceration of wild or poisonous manioc, more esteemed among the Brazilians than bread and partaken of in quantity, especially by the laboring classes at all meals) have been carried on by the writer with chickens. It has been found that it produces in fowls a condition clinically the same as avian polyneuritis or beriberi. These experiments indicate a very important source of beriberi not usually met in other parts of the world. Its cause, however, is the same as that found elsewhere, a lack of vitamines in the food. The eradication and cure of the disease in this locality consists in changing the diet so that it will furnish a sufficient amount of vitamines.

6. Paresis. — Graeme M. Hammond and Norman Sharpe describe their experiments with the intraventricular injection of salvarsanized serum in paresis and believe that this method possesses certain advantages over the subdural and intraspinal routes, in that placing the serum in the lateral ventricles is placing it subarachnoidally at once, this insures an even distribution over both hemispheres in juxtaposition to the cortical cells before it is drained out of the cranium and obviates the lumbar puncture which is necessary in the subdural method before the serum is introduced. It brings the serum in contact with tissues that are not reached by the subdural route, namely, the ventricular system and the base of the brain, and finally it may reach the perivascular sheath spaces which extend between the neurons deeply into the brain substance and drain it of waste products, communicated directly with the subarachnoid space. In comparison with the deadly nature of paresis, the hazard of intraspinal treatment, by whatever method, is of little moment. The intraventricular method, with careful technique and a due regard for the anatomy of the brain and the delicate nature of the tissues one is invading is practically free from danger. If the freedom from unfavorable symptoms so far achieved in the intraventricular injection can be maintained, it will be imperative to so treat paresis in its earliest stages, with greater chance of marked improvement and perhaps permanent arrest of symptoms.

7. Hemiplegia.—Shepherd Ivory Franz, Mildred E. Sheetz, and Anita A. Wilson state that a few casual observations made some years ago, animal experiments by one of the writers, and the experimental results obtained by others, suggest the possibility that conclusions regarding the permanency of paralysis from cerebral accidents have been neither accurate nor scientifically grounded and that more attention should be paid to the possible improvement of these cases. The results in the five cases reported show clearly the possibility of a return of function in a paralyzed segment even after the paralysis has existed much beyond the time limit set by some neurologists for possible improvement. Furthermore, there appears at present no indication of a limitation of the quantity of the improvement which may be attained by suitable and sufficiently prolonged therapeutic measures. Improvement has taken place almost equally well whether the lesion was cortical or capsular. Properly used massage, passive movements, hot baths and packs, followed or accompanied by attempts to obtain on the part of the patient voluntary muscular contractions should be employed in all such cases. For the recovery of functions such as are under consideration, there are many explanations, the simplest of which is that these are not motor inabilities but exaggerated asthenias. The results of experimental lesions in animals agree with the observations on man. Such differences as exist seem to be of degree or completeness of functional loss and of time of motor recovery. In animals the residual symptoms are more commonly those of asthenia, or of ataxia, or of paratonicity, rather than complete motor inabilities and contractures.

10. Lesion Differentiation.—J. Gordon Wilson and F. H. Pike consider three symptoms common to lesions in the labyrinth and in the cerebellum, namely nystagmus, vertigo, and ataxia, confining themselves to lesions which are strictly and definitely labyrinthine and those which are strictly and definitely cerebellar. They find that labyrinthine lesions differ from cerebellar (1) in the existence of Romberg's sign in labyrinthine lesions; (2) variations in the attitude of the head influence, the lack of equilibrium of the body in labyrinthine and not in cerebellar lesions; (3) an affection of the labyrinth does not definitely involve those movements of isolated parts which result in dysmetria; (4) in labyrinthine disease movements of rotation or disorientation are not so readily perceived. In mixed cases the diagnosis is more difficult. If, however, one can exclude with these data the purely local labyrinthine and the purely local cerebellar lesions he can proceed intelligently to cases that involve both structures.

The Lancet.

December 4, 1915.

1. A Clinical Lecture on Gunshot Wounds of the Lungs. Hale White.
2. [illegible] Bacteriocide, and Its Application in the Treatment of Wounds. W. St. C. Symmers and T. S. Kirk.
3. Perforation of Gastric and Duodenal Ulcers: A Series of 40 Cases. Richard Warren.
4. An Investigation on the Nature of Ultra-microscopic Viruses. F. W. Twort.
5. A Method of Drop-measuring Liquids and Suspensions. R. Donald.
6. A Simple and Practical Method of Localizing and Measuring the Depth of Foreign Bodies. Frederick J. Stanfield.
7. Spontaneous Rupture of the Uterus with Unruptured Membranes and Accidental Hemorrhage. E. Macibone, with note by S. Lewis Graham.
8. Prolapse of Lung Through a Deficiency in the Anterior Portion of the Diaphragm. J. N. Kilner.

1. Gunshot Wounds of the Lungs.—W. Hale White says the most striking thing in connection with gunshot wounds of the chest is that their effects are not more serious. Some patients are killed at once or die soon after; others have grave results as empyea, still in dealing with large numbers he was greatly impressed with the extreme good fortune of many who were hit in the chest. Some bullets seemed almost to thread their way between important structures in the thorax and so evade them. One man had his left recurrent laryngeal nerve damaged by a bullet and yet the large vessels were unhurt. Usually there is some pain when the bullet enters the chest, but exceptionally the patient may be hardly aware that he is hit, and then he suffers neither from pain, hemoptosis, nor dyspnea. Perhaps the last is the commonest symptom. Both in intensity and duration it is most variable. Hemoptosis is very common, occurring in at least three-fourths of the cases, probably more. Doubtless it is at times immediately fatal, but if it does not kill soon, it rarely, if ever, does later. Hemothorax is frequently seen,

the physical signs being those of fluid in the chest. From the physical signs it is impossible to tell these cases from ordinary pleuritic effusion, except from the history of the wound. Pyrexia is quite common with hemothorax and does not always mean microbic infection. These patients frequently get well without removing any of the fluid from the chest by aspiration or laying it open. Microbic infection should be suspected when the evening temperature is high, the daily excursion wide, and the general symptoms more severe than in ordinary sterile cases of hemothorax. The removal of some of the fluid in the chest may accelerate the absorption of the rest, but it is usually wise to take away as much as possible. After aspiration of blood there is no reaccumulation of fluid. Although the physical signs change after aspiration as they do when clear fluid is aspirated, they do not alter as rapidly. The author is impressed with how well the cases of hemothorax do when left alone. It is probably wrong to withdraw the fluid shortly after injury; on the other hand, it may be well not to delay too long for a lung that is compressed for some time takes a long time to re-expand. In very few of the patients with bullet wounds of the chest had the bullet struck the rib and run around it. There were in this series of cases no serious external hemorrhages. The outlook for these patients is good as a number of illustrative cases shows. In cases in which there was a bullet embedded in the lung it has been left alone and in no instance has its presence done any harm.

2. **Urea as Bactericide in Wounds.**—W. St. C. Symmers relates his laboratory experience with urea as a bactericide. He concludes that in urea we have a substance which in the dry state is permanently stable, practically non-poisonous, highly diffusable, and which even in low concentration (3 per cent.) affects the growth of bacteria, is inhibitive to growth at 8 to 10 per cent., and which is markedly bastericidal to non-sporing bacteria in the higher percentages. This bactericidal effect is active in the presence of blood and like organic fluids. Moreover urea is non-irritating to living tissues; the dry substance may be sprinkled over wounds to almost any extent without any injury to the parts.

J. N. Kirk adds a clinical note to the above stating that during the past four years they have been using urea clinically and fluid that it is inoccuous to animal tissues; that in quantities that can be used in wounds it is nontoxic; that by its use at least half the labor necessitated by other methods of treatment is saved; that during its use the processes of repair are not retarded. The most striking results will be obtained by its use as a first aid dressing since it prevents suppuration arising in wounds from chronic blood infections.

3. **Perforation of Gastric and Duodenal Ulcers.**—Richard Warren bases this paper on 40 cases which have come under his care during the past six years. Of these 40 cases, 29 were men and 11 women; all were subjected to operation, with a mortality of 35 per cent. A notable feature was the excessive mortality of gastric as compared with duodenal ulcers. The mortality of the gastric ulcers was 54 per cent. and that of the duodenal and pyloric ulcers 25 per cent. The mortality bears a pretty definite relation to the time that elapsed between perforation and operation. After twelve hours the prognosis becomes grave, yet cases have survived in which perforation has apparently been present for two days or more. The author tabulates the various operations used and their results in gastric and duodenal ulcers and calls attention to the uses of jejunostomy where the patient's condition is extremely grave and every moment spent on operation is of importance. He advises in such instances simply occluding the ulcer with one or two sutures, placing a gauze drain around the site of perforation, and performing a jejunostomy for the purpose of feeding the patient early.

7. **Spontaneous Rupture of the Uterus with Unruptured Membranes and Accidental Hemorrhage.**—E. Macibone reports this case and Lewis Graham comments upon it. The patient was admitted to the hospital in a grave general condition during labor. The diagnosis was obscure, and as the patient appeared too ill to stand a natural labor, an exploratory operation was decided upon with a view to cesarean section. The uterus was opened longitudinally in front in the midline. The placenta was found at the fundus but completely detached from the uterine wall and separated from it by a large mass of blood clot. The placenta and membranes and their contents were removed without rupturing them. The foetus was dead. The uterus was found to have two transverse lacerations on the posterior wall. There were also about a half a dozen other lacerations but not so long or deep. Subtotal hysterectomy with peritonealization of all the stumps was done. The patient made an uninterrupted recovery.

8. **Prolapse of the Lung through a Deficiency in the Anterior Portion of the Diaphragm.**—J. N. Kilner reports this case which is of interest because the symptoms were all referred to the abdomen. A swelling occasionally appeared above and to the right of the umbilicus. Cough or other effort by no means resulted in the appearance of the swelling, which was first seen when the patient was lying still in bed. The movements of the tumor might easily have been mistaken for peristalsis; they were, however, too quick and irregular in volume and occurrence. The support given by dressings and bandages and later the formation of adhesions between the liver and the abdominal wall may have prevented the descent of the lung after the laparotomy. Six months after discharge from the hospital the patient reported a return of the pain but no reappearance of the swelling up to date.

British Medical Journal.

December 4, 1915.

1. An Address on Gas Poisoning. Leonard Hill.
2. The Treatment of Gunshot Wounds of the Abdomen. A. W. Mayo-Robson.
3. Field Ambulance Work at Anzac. C. Mackie Begg.
4. The Recruit's Heart. James Mackenzie.
5. Note on Supposed Soluble Toxin, Produced in Artificial Culture by the Bacillus of Malignant Edema. G. Barger and H. H. Dale.
6. The Antiseptic Action of Hypochlorites: The Ancient History of the New Antiseptic. H. D. Dakin.
7. A Splint for Compound Fractures of the Arm. George M. Giles.
8. An Adjustable and Standardized Splint for the Treatment of Fractures. W. B. Hayes.
9. A Note on the Electrical Treatment of Disabilities Due to Wounds. John J. Grace.
10. Typhus in Serbia. B. Whitchurch Howell.
11. A Case of Leprosy Diagnosed by *X*-Rays A. Neve.
12. The Goulstonian Lectures on Spinal Injuries of Warfare. Gordon Holmes.

1. **Gas Poisoning.**—Leonard Hill calls attention to the different varieties of poison gases. There are some which kill by cutting off the supply of oxygen, others which paralyze the respiratory center, and another set which acutely irritate the respiratory passages, causing exudation of lymph which drowns the subject. This last set of gases, particularly chlorine and bromine, the Germans have made use of for two reasons. First, because they put a man out of action when breathed for a shorter time and in greater dilution than any other poison gas, and, secondly, because they are heavier than air and so suitable for drifting with the wind. The effect of 1 in 10,000 chlorine is

such that no man could endure breathing it who could escape from its influence. The eyes and the mucous membranes of the respiratory tract are intensely irritated and a watery exudation takes place, the inevitable effort of the living tissues to dilute so irritant a poison. The chlorine poisoning of the lungs is comparable to extensive burns of the skin, and the same general treatment to support strength and lessen shock is required. For the severe cases the one object must be the getting rid of the exudation in the air tubes which is drowning the victim. For this purpose rhythmical compression of the thorax and artificial respiration give temporary help. Emetics have proved useful in less critical cases. The administration of oxygen relieves the cyanosis and improves the condition of the subject. Just as septic infection of the skin is the sequel of a burn, so pneumonia and bronchitis follow chlorine poisoning. In experimental animals severe poisoning has in every case had this end, and thus far no means of preventing it has been found. The most notable symptoms of a typical case of gas poisoning are cold with a subnormal temperature, restlessness, slow pulse (except in collapsed cases), intense cyanosis, jerky respirations, often numbering 40 a minute and accompanied by coughing, choking, and frothy expectoration. The writer also describes the pathological conditions found post mortem and his experimental work on animals.

2. **Gunshot Wounds of the Abdomen.**—A. W. Mayo-Robson relates his experience while serving in the Dardanelles on various hospital ships where the cases were brought in from two to four hours after being wounded. In a former experience in a base military hospital in London he had been impressed by the absence of abdominal cases in their wards; the explanation is clear, the cases seldom reached the base hospital as wholesale the expectant treatment was a failure. Some little experience of the course of cases treated by opium, starvation, and rest soon convinced him that a clean bullet wound through the abdomen, with small wounds of entry and exit, and without evidence of internal hemorrhage or extravation, might, if favorably situated, be treated expectantly; whereas a bullet wound with large openings of entry and exit, or with signs of internal hemorrhage, and with absence of liver dullness should be operated on as soon as possible if seen early and if the general condition of the patient is favorable. As nearly all shrapnel, shell, and bomb wounds are septic and produce great visceral injury, operation will give a better chance of success than expectant treatment if the patient is in condition to bear it. If the case is seen late and peritonitis has already set in, a small incision above the pubes, large enough for the insertion of a drainage tube down to the bottom of the pelvis, and the Fowler position, will give the patient a chance of recovery. (This treatment is also best for typhoid perforation.) A number of cases are cited for the purpose of giving some idea of the conditions for which operation may be required.

3. **Field-Ambulance Work at Anzac.**—C. Makie Begg writes a note on the special difficulties and dangers which beset field ambulance work. At first they did no operations except for the arrest of hemorrhage. However, on making inquiries at the hospital ships they learned that the results of abdominal wounds were extremely bad. They then erected an operating tent on the beach and tried operating on shore on almost all cases of penetrating abdominal wounds, and kept the patents on shore for twenty-four hours to four days afterward. They found in about 60 per cent. of the cases operated on the condition was hopeless, whether the wound was causel by bullet, shrapnel, or shell fragment. As a rule the gut was torn or perforated in from seven to twenty places and several of the mesenteric arteries were usually torn across. Most of these cases died in a short time, but a few of them were sent off to the ships in surprisingly good condition. About 25 per cent. of the cases gave good hopes of a favorable result. They operated on a considerable number of head injuries, principally depressed fractures and ruptured meningeal arteries. Of the latter they saw a goodly number, some of which were of special interest. From their experience the writer concludes that early operation, by which is meant any time up to six hours, is desirable in abdominal injuries and also rest at the place of operation for three or four days afterwards. With the Turkish bullets, shrapnel and shell wounds the results are extremely bad.

4. **A Supposed Soluble Toxin.**—G. Narger and H. H. Dale give an outline of certain experiments on the nature of a toxic substance occurring in the filtrates from cultures of the bacillus of malignant edema. They finally found, however, that there is no ground for supposing that the bacillus of malignant edema, in an artificial culture of the type described, produces anything in the nature of a specific toxin. The production by it of a toxic solution from meat depends on its intense proteoclastic and disseminating action. The proteins are rapidly broken down to amino acids, and from these the amino groupings are then split off, yielding ammonium salts of fatty acids, which accumulate in surprising concentration. To these must be attributed at least the greater part of the acute symptoms produced by the culture filtrate in the guinea pig. The chief interest in the observation seems to be the hint that it furnishes as to one of the factors favoring spread of infection with the bacillus in the tissues of an animal. Given injured tissues in which the growth may start, it is evident that the localized production of ammonium salts will soon be sufficient to create in the neighboring tissues conditions favoring the spread of the growth. Their conclusions seem to the writers to make clear the futility of attempting to obtain an antitoxin to the products of the bacillus of malignant edema.

12. **Spinal Injuries of Warfare.**—Gordon Holmes has during the past thirteen months made observations on 300 cases of spinal injury which form the basis of his remarks and conclusions for two lectures. He describes the clinical symptoms of this class of injuries and correlates them with the localization of the lesion. He states that the segmental level of the lesion can usually be recognized as accurately by the extent of the motor paralysis as by the upper border of the sensory disturbance. When one of the lower abdominal segments is involved the level of the lesion may be accurately determined by observing the segment below which the abdominal cutaneous reflexes cannot be obtained. He discusses reflexes, reflex tones, spinal shock, automatic movements, servical softening, palsy of the cervical sympathetic, in connection with which he calls special attention to an interesting type of cases that have been observed as a result of injury of the lower part of the cervical enlargement. These were characterized by subnormal temperature, even 80° Fahr. and below, slow pulse, low blood pressure, and scanty secretion of urine. All of the ten patients in whom these symptoms appeared died within ten days after the infliction of the wound. Polyuria was observed when the injury was in the middle of the dorsal cord, probably due to paralysis of the sympathetic fibers. The writer also calls attention to various trophic disturbances, joint changes and herpes in connection with this class of injuries.

Münchener medizinische Wochenschrift.

November 16, 1915.

Industrial Poisoning from Celluloid Varnish in the Aeroplane Industry.—Koelsch refers to the use of this varnish upon certain portions of the machines to secure the maximum of smoothness and nonresistance to air, and also to protect against the influence of weather conditions. As a rule four coats are applied with a hand brush. The varnish represents solutions of noncombustible acetyl cellulose, and it is very difficult to hit upon proper solvents. Many substances have been tested for this purpose, and the best appear to belong to the aliphatic series (chloroform, carbon tetrachloride, etc.), next in order coming acetone, acetate of amyl, formic acid, etc. Numerous commercial preparations have been placed on the market. In order to keep the formulae secret the manufacturers seem to alter them from time to time. The varnishes are by no means harmless to those who handle them. The acetylene-tetrachloride varnish, which is very largely used, appears to be injurious both from contact and by inhalation. The changes induced are general, and consist of profound metabolic disturbances. Fourteen cases of poisoning, two fatal, have been recorded. Two types are represented, one characterized by gastroenteric symptoms (nausea, vomiting, pain), and especially enlargement of the liver, with jaundice. Anemia and visceral hemorrhages were noted in certain cases. In the other type nervous phenomena predominate, as headache, paresthesiae, tremor, pareses, etc. Other solvents have also produced characteristic symptoms in isolated cases. The author relates nine cases in workmen of acetylene tetrachloride poisoning. As a rule wrong diagnoses were made at first—either lead poisoning or jaundice. The sole remedy is, of course, to forbid the use of this substance in making varnishes. Other things besides lead can cause colic in a painter, and we must no longer regard the association "painter-colic" as absolute. Even the fact that some of these victims had used no lead colors for months, the author says, was not at first rightly interpreted.

An Antitoxin for Malignant Edema.—Kathariner does not refer here to the malignant form of anthrax, but to the condition known as fulminating gangrene, progressive gangrenous emphysema, gangrenous gas phlegmon, etc. This form of wound infection agrees in some respects with ordinary gas gangrene, doubtless because of the similarity of the exciting agents, but in the main the clinical courses differ considerably. As far back as 1881 Koch described his bacillus edematis maligni, three years after Pasteur had discovered his septic vibris. Quite recently Roux has been seeking to obtain an antitoxin from the latter. After several passages of the germ on special media it was found to generate an abundance of gas. The toxin obtained was found extremely virulent. Vibriones were obtained from various localities—the cadvers of infected rabbits, the blood of patients with septicemia, and from the blood of a putrefying cow. All were equivalent in virulence. A horse was immunized carefully and without injury to itself. The antitoxin obtained worked well in laboratory experiments, and was both antitoxic and antiinfectious. This description was published originally in Compt. rend. d. l. Acad. de Sci. of Paris, several weeks before the abstract of Kathariner. The latter makes no comment whatever, nor does he allude to any work on the same subject in Germany, or to any account of tests in human subjects. Some weeks ago the lay press announced the discovery in France of a serum against gas gangrene, but as already stated, Kathariner says, the latter is quite another thing from malignant edema.

Deutsche medizinische Wochenschrift.

November 11, 1915.

Exanthem and Recurrence in Epidemic Meningitis.—Morgenstern relates the case of a patient first admitted as a typhus suspect. To complicate matters she had recently gone through an acute disease, which resembled both influenza and rheumatism. The leading symptoms had been severe cephalalgia and arthralgias with a purpuric exanthem. Only ten days elapsed before a fresh sickness appeared which suggested the possibility of a relapse. She broke out anew with an exanthem and again complained of headache. Fever rose to 40° C., and she was slightly confused and restless. The conjunctivæ were injected. Reflexes normal. No Babinski or Kernigeign. All food at once vomited. Constipation. Spleen swollen. The trunk and limbs were covered with a multiform eruption. Along with petechiae was seen a roseolous rash, consisting of both macules and papules. The petechial spots varied in size from a lentil to a penny. There was a second crop of both petechiae and roseola, and as the former grew old a slight necrotic center was sometimes noted. Diazo negative, blood sterile in attempted cultures of Eberth's bacillus. The peculiarities of the exanthem appeared to exclude typhus. The meningeal irritation originally present began to increase in severity. Lumbar puncture brought away the meningococcus of Weichselbaum. Blood cultures were again negative. The punctates later became purulent, although a specific antiserum had been injected. One intravenous injection of collargol was followed by great improvement. Patient made a good recovery and resumed her occupation. Five weeks later she again became acutely ill, and broke out exactly as in the prior attack. The general reaction was much milder. There was no meningism, and she seemed almost well again when the temperature rose with accompaniment of the meningeal syndrome and another crop of the eruption. The lumbar punctate again contained the meningococcus. Nevertheless, the patient again promptly recovered. Epidemic cerebrospinal meningitis is an affection in which true relapses are said to be absent. If this be the truth then the author might regard her case as one of remittent course of the disease, such as has often been noted.

A Recent Smallpox Epidemic in Germany.—According to Hesse smallpox has become so rare in the country about Detmold that many physicians have never seen a case. When it was introduced into this neighborhood by some Polish laborers there was no fresh virus available for vaccination, but "takings" occurred in some cases. Some patients had a mild, nonfebrile disease, diagnosed as varicella. Failure of vaccination to take in these cases is good evidence for variola. In the main building of the county hospital five typical cases developed at once, with four deaths. Two deaconesses in attendance contracted the disease, with one death, and three old men and a young, unvaccinated baby also succumbed. By this time a body of experts had reached the place, quarantine was established (but not strictly carried out), and after a general vaccination with fresh lymph, a considerable number were allowed to go home. Of twelve alleged cases of the disease nine were genuine and three doubtful. Of the former six died. Of the thirty-eight Polish immigrants but three developed the disease, and only one in its typical form. The severely ill patient, a Polish girl, died in an isolation building in the hospital. The only way of explaining the spread of the disease to the main building is by the presence of the hospital cat, which went from place to place, and had been in contact both with the Polish girl and with several of those who later developed the disease.

Book Reviews.

MARIE TARNOWSKA. By A. VIVANTI CHARTERS. With an introductory letter by Professor L. M. BOSSI, of the University of Genoa. Price $1.50. New York: The Century Co., 1915.

THIS book is practically the autobiography of the murderess, Marie Tarnowska, who is at present confined in the penitentiary of Trani. Professor Bossi takes the stand that her moral obliquity was due to some gynecological condition. The author was moved by this opinion to take a compassionate view of Marie Tarnowska's crimes, and after visiting her compiled the "autobiography." Her own story shows her to have been an egotistical, wilful, and hysterical girl. Her mother had epileptic seizures and two of her aunts are now confined in an insane asylum in Russia. She inherited a weak, nervous system and nothing was done through education to prevent her from succumbing to her abnormal desires for what she knew to be wrong. The author, however, aims to show that her criminal impulse was related to a morbid physical condition, and overlooks the real lesson that is to be derived from her case, namely, that proper training and education might have prevented her downfall.

E. V. BEHRING'S GESAMMELTE ABHANDLUNGEN. Neue Folge, 1915. Price, 10 marks. Bonn: A. Marcus and E. Webers Verlag, 1915.

THIS convenient collection of reprints covering the work on tetanus, diphtheria, and tuberculosis, which have appeared from the laboratory of von Behring in the past two years, offers an excellent review of the progress which is gradually being made along these lines. Time and a very much larger experience only will decide the practical value of the laboratory and clinical experiments herein reported.

THE DEVELOPMENT OF THE HUMAN BODY. A Manual of Human Embryology. By J. PLAYFAIR MCMURRICH, A.M., Ph.D., LL.D., Professor of Anatomy at the University of Toronto, formerly Professor of Anatomy in the University of Michigan. Fifth Edition, Revised and Enlarged. With two hundred and eighty-seven illustrations, several of which are printed in colors. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Co., 1915.

THE study of anatomy nowadays necessitates an enormous amount of work on the part of the medical student. To assimilate the facts which come under the head of descriptive in the time given to the curriculum of medicine, or to assimilate even the more essential facts is a task of great magnitude and one to which often the student is unequal. Consequently, instead of assimilation cramming is too frequently the practice with students and when they have gained their degrees their knowledge is not exact, but somewhat vague. If, however, the student step by step followed the development of the structure and relations of the organs, and thus laid a sound foundation for his subsequent work in this direction, he would be able to do this intelligently and really understand anatomy. This book was written with the idea of presenting a concise and lucid statement of the development of the human body. Dr. McMurrich has succeeded in this endeavor, and his manual of human embryology is a book which has been and will continue to be of the utmost service to medical students. The present edition has been thoroughly brought up to date.

APPLIED IMMUNOLOGY. The Practical Application of Sera and Bacterins Prophylactically, Diagnostically, and Therapeutically. With an appendix on serum treatment of hemorrhage, organotherapy, and chemotherapy. By B. A. THOMAS, A.M., M.D., professor of genitourinary surgery in the Polyclinic Hospital and College for Graduates in Medicine; instructor of surgery in the University of Pennsylvania; associate in the William Pepper Laboratory of Clinical Medicine; and R. H. IVY, M.D., D.D.S., assistant instructor in surgery in the University of Pennsylvania; instructor in genitourinary surgery in the Polyclinic Hospital and College for Graduates in Medicine, Philadelphia. Five colored insets and 68 illustrations in text. Price, $4.00. Philadelphia and London: J. B. Lippincott Company, 1915.

THE wide adoption of laboratory diagnostic methods in clinical medicine and the employment of bacterial vaccines, salvarsanized sera, and other therapeutic agents based upon laboratory investigations, have necessitated a good deal of education of the practitioner in the therapeutic limits and dangers of these forms of treatment. A good many deaths have occurred from the careless use of salvarsan and vaccines; and too much information on the subject can not be injected into the minds of practitioners and of hospital internes who so frequently use these powerful remedies with but little knowledge of their nature and effects. For this and other reasons this very practical volume will prove to be of considerable value in furnishing information on many phases of the general subject of immunology, on the methods of carrying out many of the more complicated laboratory tests, and on the preparation of vaccines and sera. It is well illustrated with useful diagrams, and is modern in the discussion of the various tests and methods.

THE STARVATION TREATMENT OF DIABETES. With a Series of Graduated Diets as used at the Massachusetts General Hospital. By LEWIS WEBB HILL, M.D., and Rena S. Eckman. With an Introduction by RICHARD C. CABOT, M.D. Price, $1.00. Boston: W. D. Leonard, 1915.

THE starvation treatment of diabetes mellitus has now been employed for some time, long enough, in fact, to test its value. In this country it was initiated and carried out by Dr. Frederick M. Allen at Harvard, and at the Rockefeller Institute Hospital with a good deal of success. More recently the staff of the General Hospital of Massachusetts at Boston have been carrying out the method and the book under notice gives details of the treatment, diet lists, and so on. The work is highly instructive and may be recommended to those practitioners who desire to try a treatment which has been attended with satisfactory results.

ORTHOPEDIC SURGERY. By EDWARD H. BRADFORD, M.D., Consulting Surgeon to the Children's Hospital, Boston, and to the Boston City Hospital; Professor of Orthopedic Surgery Emeritus in Harvard University, and ROBERT W. LOVETT, M.D., Professor of Orthopedic Surgery in Harvard University; Surgeon to the Children's Hospital, Boston; Surgeon-in-chief to the Massachusetts Hospital School, Canton. Fifth Edition. Octavo of 416 pages, with 369 illustrations. Price, muslin, $3.75, net. New York: William Wood & Company, 1915.

FOR twenty-five years Bradford and Lovett's Orthopedic Surgery has been recognized as one of the leading authorities in this branch of surgery. Furthermore, it covers the subject as briefly as is consistent with a thorough presentation of all the important points in the etiology, pathology, diagnosis and treatment of the various lesions coming under the special province of the orthopedic surgeon. To accomplish this end, extensive references to the literature have not been indulged in, nor have the authors incorporated extended discussion of the views of other writers, especially upon controversial subjects. This plan was pursued "not in a spirit of ignorance or disparagement of the work of others, but simply in the need of condensed statement" and the reader, in our opinion, is the gainer; for he gets a clear and concise presentation of facts based upon the author's extensive experience in this line of work, and is not confused in the attempt to pick the wheat from the chaff, as would often be the case were a variety of theories and methods of treatment put before him. Without doubt the authors are better able to judge of the merits of a multiplicity of theories and methods of treatment than is the average reader; and while the result of this method of handling the subject is that the authors seem at times to be severely dogmatic, it is certain that one who follows out the plans of treatment outlined in this book will seldom go far astray and will generally be employing that form of treatment which is approved by the majority of orthopedic surgeons. Those who wish to pursue the study of any individual subject further will usually be in a position to consult orthopedic works of the unabridged type.

In addition to an extensive consideration of tuberculous processes in the bones and joints, there are chapters covering infectious osteomyelitis, synovitis, and arthritis; arthritis deformans; the deformities of rickets; coxa vara and coxa valga; torticollis; infantile, spastic and other paralyses; congenital dislocations; flat foot; metatarsalgia and other deformities of the foot; and a number of other subjects which may properly be classed as belonging to the domain of orthopedic surgery.

There is no doubt that the present revised edition of this work will hold its place as one of the best condensed treatises on orthopedic surgery extant.

Society Reports.

THE PRACTITIONER'S SOCIETY OF NEW YORK.

The Two Hundred and Seventy-Third Meeting Held, Friday, Nov. 4, 1915.

DR. JOHN S. THACHER, PRESIDENT, IN THE CHAIR.

Case of Paget's Disease. — Dr. JAMES ALEXANDER MILLER presented this patient, a man of sixty-three years, who was admitted to Bellevue on July 3, 1915. For twenty years he had been very markedly alcoholic and gave a history of both syphilis and gonorrhea. For the past nine years he had complained of pain in his back, more marked in the lumbar region. He had also in the past two years noticed that his head was growing a little larger and that his height was somewhat less. These were his chief complaints until a few weeks previous, when swelling of the right shoulder was noted with some pain. Physical examination on admission showed the conditions noted in the photographs displayed. The head was large; the clavicle prominent and thickened in the right shoulder, also swollen and somewhat tender with distinct limitation of motion. The bones of the lower extremities were thickened, especially the tibiæ which were bowed forward. The patient was up and about the ward and felt comfortable. Since admission there had been increased swelling in the shoulder with marked pain, more in the past month. There was very marked edema of the whole right arm and distention of the superficial veins of the shoulder and upper right chest. About three weeks ago a firm swelling was noted in the anterior surface of the tibia in the middle third. A small section from this tumor, which was firmer than the shoulder swelling, showed spindle-cell sarcoma. Within the past few weeks a small cystic swelling appeared over the left clavicle in the junction of its middle and outer third and also in the right occipital region. These swellings were not tender. The Wassermann test was positive. The urine was normal and negative for Bence-Jones albumin. Physical examination was otherwise negative excepting for cardiac hypertrophy with evidence of mitral regurgitation and considerable pulmonary emphysema with chronic fibrous tuberculosis at both apices. *X*-ray examination showed an involvement of practically all of the bones of the body. The cranium was very markedly diseased and the right humerus was almost entirely destroyed. A rarifying osteitis was shown in all of the bones of both arms, in most of the ribs, in the pelvic bones, in the vertebræ and in the tibia. The femur showed marked thickening of the bones without rarification. Apparently the only bones not involved were the fibula and the small bones of the hands, feet, and face. The *x*-ray of the left clavicle showed that the bone was almost entirely gone under the site of the swelling noted. Comparison of the *x*-ray taken recently with those taken soon after admission showed a very marked increase in the extent and severity of the lesions.

Dr. ABBE asked if the inner table were involved, if the hearing was affected, and if the foramina were blocked. He said it was the most extreme development of the sarcomatous element that he had ever seen.

Dr. DANA asked if there were any signs of tabes.

Dr. GILMAN THOMPSON asked if one plate showed fibrosis of the lungs, and when the symptoms first appeared. He referred to the case of a patient in Bellevue Hospital with osteitis deformans whose condition he had reported in the MEDICAL RECORD of May 10, 1913. This woman, although greatly deformed, was in good general health and there was no sarcoma. A similar case was recently studied in Bellevue by Dr. Nammack. Dr. Miller's case was remarkable because of the universal involvement of all the major bones with sarcoma.

Dr. MILLER, in answer to Dr. Abbe, said that the inner table was apparently not involved. There was no interference with the special senses. In reply to Dr. Thompson he said that there was fibrosis of the lungs. There was emphysema, enlarged heart, and probably an old tuberculosis. He added that in the literature seven or eight cases had had sarcomata; five had had carcinomata.

Morbid Somnolence and Its Relations to the Endocrine Glands.—Dr. CHARLES A. DANA read this paper. (See page 1).

Dr. L. A. CONNER said he would like to ask Dr. Dana a little more about the endocrine blood changes, whether these changes were really characteristic enough to be of any real service in making a diagnosis. So many minor variations were seen in normal people under all sorts of conditions, and a number of things Dr. Dana had mentioned seemed to be so slight as to be of doubtful value. A blood pressure of 100 to 110 in normal individuals was not uncommon. Temperature was frequently slightly subnormal. Thus one often had the greatest difficulty in these confusing symptoms in finding sufficiently marked ones to justify a diagnosis.

Dr. WALTER B. JAMES said his attention was caught by Dr. Dana's term "minor blood changes of the endocrine type." He was going to ask what the changes were. He thought the changes referred to were far from uncommon. In his own laboratory he expected to find this blood picture in many young individuals who were "run down" or "below par" and he expected to find lymphocytosis in this condition. He had not associated this condition with the endocrinal glands.

Dr. ROBINSON said that Pickwick's fat boy must have belonged to this type.

Dr. LONGCOPE expressed surprise at the statement that one patient had taken 700 grams of glucose. How had this been accomplished? Was it by mouth? In his experience it was most difficult to get 200 grams into some patients.

Dr. ABBE said that if there were glandular growth, how was it possible that some cases improved after a while? He knew of one case, of a lady who fell into short sleeps of half a minute. She would drop asleep in the middle of talking, though she had apparently perfect health. During the last year or two she had not done this. If this improvement occurred, it could not have been enlargement of the pituitary. This woman was fifty-five years of age.

Dr. BRANNAN asked was it a case of petit mal?

Dr. NILES said that the Bellevue Hospital case detailed by Dr. Dana had very curious mental symptoms. The boy would follow the physicians around the wards, and when they stopped at a bedside would go to sleep while standing up. He was given 200 grams of dextrose without glycosuria. His blood serum and spinal fluid gave positive Wassermann reactions, and there was an excess of lymphocytes in the latter. Dr. Niles had studied four cases of posterior lobe insufficiency, and in all of them there was a very distinct slowing of the mental processes with hypersomnia. The picture was that of Pickwick's fat boy, as Dr. Robinson had suggested. One boy of thirteen weighed 185 lbs. He took 250 grams of levulose without gycosuria. It, however, gave him marked urticaria and the parents objected to further tests of his tolerance. He was under observation for a year, his carbohydrate intake being decreased and being fed on extract of the posterior lobe of the pituitary. His temperature reactions were marked. Previous to treatment, his average temperature was about 96°. With proper doses of the extract it would become normal, only to decrease when it was discontinued. The boy lost 60 lb. in weight in about six months. His temperature became normal and his mental activity became greatly increased, so that the following year he was first in his class in school, whereas before he had been distinctly backward.

Dr. DANA asked Dr. Niles whether the injection of extract of anterior or posterior lobes would help with diagnosis. Cushing injected anterior lobe and if there was a thermic response he considered it diagnostic.

Dr. NILES said Cushing thought that injections were of very great value and his own experience corroborated it.

Dr. THACHER said that some twenty years ago, in the days before the functions of the pituitary body were understood, when the endocrine glands had not been properly introduced to the profession, and the Roentgen rays were not yet discovered, he had a patient who probably belonged to the group described by Dr. Dana. The man was extremely somnolent and fell asleep several times in Dr. Thacher's office. He was a civil engineer and still at work. He had also severe pains in his head. From these and certain eye symptoms Dr. Thacher concluded that he had an interpeduncular tumor. Dr. Starr came to the same conclusion. Dr. Hartley advised an attempt at removal by operation, but the man refused. Later Dr. Thacher heard indirectly that the trouble proved to be the morphine habit. Some years later, however, the man's brother, who was a physician, reported that the patient had died, and an autopsy was held. An interpeduncular tumor was found.

Dr. DANA, in reply to Dr. Conner, said that he did

not feel at all sure of this subject himself. He only knew that for six years he had been continually examining and comparing the records of blood examinations in people that had presented the phenomena that suggested pituitary or thyroid disease. Dr. Kaplan had always insisted that there were certain rather characteristic forms of blood change and he had come to think there was something in it. For example, in a case of hypothyroidism in a boy of seventeen, six blood counts during the month of March showed an average of white blood cells, 11,600, neutrophiles 47, large and small lymphocytes 44, eosinophiles 4. After two months treatment with thyroid extract, and after eight months treatment with marked clinical improvement, the formula was—white blood cells 10,500, neutrophiles 69, large and small lymphocytes 35, eosinophiles 5. In reply to Dr. Longcope, Dr. Dana said that 700 grams of glucose injected gave no trace of sugar in the blood; 500 grams was taken by mouth. In reply to Dr. Brannan, Dr. Dana said that if the case mentioned by Dr. Abbe had been petit mal, there would have been other attacks. Cushing had reported improvements in cases with anterior lobe lesions, but they were cases of hypophyseal tumor.

Case of Acute Omental Torsion.—Dr. CHARLES H. PECK made this presentation. He stated that in October, 1915, a patient, forty-eight years of age, known to him for fifteen years, came to his office, complaining of right-sided abdominal pain at the level of the umbilicus. It had been present for about two days, had increased slightly, and was associated with some tenderness, which seemed superficial. The patient did not feel especially ill, except for the pain. His temperature and pulse were normal. Pressure over the appendix region elicited no tenderness, nor did pressure over the gall-bladder region. There was slight rigidity at the site of the maximal tenderness, which seemed partly voluntary. According to Dr. Peck's knowledge, the patient had always been well, had led a regular life, with regular exercise, lately horseback riding. There was no history of indigestion, and no symptoms suggestive of appendicitis. Years before he had a supposed inguinal hernia, but if this had existed, it had undergone spontaneous cure. Considering the patient's known good health, Dr. Peck thought it probable that the pain was some superficial process in the abdominal muscles, perhaps induced by riding. The patient was told to go home, keep quiet, and have the family physician report on the symptoms. At 3.30 A.M. the folowing morning, the physician reported great increase in the pain, tenderness, and rigidity. When examined at 9 A.M. that morning, the tenderness and rigidity had greatly increased and had spread to the right lower quadrant. There was no elevation of temperature or pulse and no vomiting. A provisional diagnosis of acute perforating appendicitis was made and the patient was removed to Roosevelt Hospital for operation, which was performed at 11.30 A.M. Examination showed a diminutive, atrophied appendix, with no acute process. It was necessary to search for some other explanation of the symptoms. The incision was enlarged and, sweeping the hand upward, a rather hard, irregular mass was felt within, which, in being drawn downward, proved to be a mass of strangulated omentum which had undergone torsion of its pedicle. This was clamped off above the site of the torsion and removed. It consisted of about the middle third of the entire omentum. The portion to the left was entirely normal; that to the right somewhat hypertrophied, and adherent in places along the ascending colon and lateral parietes. The defect caused by the removal of the twisted portion was closed by suturing together the lateral edges of the remaining portion of the omentum. Some veil-like adhesions between the lateral abdominal wall and the ascending colon and cecum were the only other anomaly found. These did not have the appearance of having been caused by any pre-existing acute inflammatory condition. The omentum had no attachment in the region of either inguinal ring, and could have borne no relation to a possible pre-existing hernia. No cause for the torsion could be demonstrated, except that the central twisted portion gave the impression of having been tongue-like in form, partly separated, perhaps, from the lateral portion, before torsion occurred. The abdomen was closed without drainage, and an uneventful recovery occurred. Other cases reported from time to time were—by Dr. Peck, in the MEDICAL RECORD of March 3, 1909, a case of torsion of the whole omentum, with beginning gangrene, in which the pre-operative diagnosis was that of an infected pelvic cyst. This patient had a hernia, but the sac was empty at time of operation, and the twisted omentum was not connected with it. The whole omentum was involved. In 1909, in the *Annals of Surgery*, Wiener reported seven cases, including one of his own. In 1903 Blake reported a case with hernia present. In 1904, Studder reported a case of torsion of the entire omentum, in which hernia had been present. He stated that only two cases had been reported, not associated with hernia. The condition was one of sufficient rarity to deserve report, and added one more condition to be considered as a cause of acute abdominal symptoms. The case presented to-night should be classed as one not associated with hernia.

Dr. MEARA asked were there adhesions to the parietal peritoneum, and was there very much rigidity when the parietal peritoneum was not involved?

Dr. PECK said that in this case there was rigidity, due to acute plastic peritonitis.

Dr. CONNER asked if there was beginning fresh peritonitis.

Dr. PECK said yes; what one would get around strangulated omentum.

Dr. ABBE asked if the patient was obese.

Dr. PECK said no; not especially so. He was in good condition and had had excellent health, with no suggestion of abdominal trouble.

Dr. CONNER asked if the twist was a single complete one.

Dr. PECK said the pathologist had thought there were two turns.

Dr. THACHER asked how that could be if it was so adherent.

Dr. PECK said he thought the adhesions came after the shutting off of the circulation. The twist caused little pain and began to tighten up before he saw the patient. After the circulation was shut off the early stages of gangrene commenced.

Dr. THACHER then asked if the condition could be clinically recognized.

Dr. CONNER said that nothing but peristaltic movement could have caused the twist.

Dr. PECK said the diagnosis was made of acute appendicitis. In his first case there was a mass in the cul-de-sac behind the uterus. They believed that an infected pelvic cyst existed, and found the whole omentum twisted. The diagnosis had seldom been made before opening the abdomen. Only seven cases were reported before 1900. In this case the lateral peritoneal adhesions were a little abnormal, more like an exaggerated Jackson's veil. He first opened a part where the peritoneum was not free. The right border was not strangulated. He thought the omentum must have been three-leaf shaped, and the central portion was tonguelike before the torsion occurred.

AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY.

(*Continued from Vol.* 88, *p.* 1112.)

Wages and Employment as Factors in Infant Mortality.—Mr. SHERMAN C. KINGSLEY of Chicago drew attention to the fact that districts with the largest measure of poverty presented a higher mortality from all causes than did localities better circumstanced. While it was difficult to assess baby deaths definitely against low income poverty involved housing, overcrowding, quality and amount of food, sunlight, air, and wholesome leisure for mothers, he pointed out that infant welfare work had many aspects in common with the early antituberculosis crusade, and that the achievements of the former were the result largely of overcoming the difficulties of circumstance and environment. The correction had come through wisdom and advice, the gifts of the community, communicated to mother and child by the doctor and nurse. Deep-seated and obstinate difficulties still remaining, however, were those due to inadequate wages. With the baby, as with communities, life and health were purchasable; figures showed that babies living in one room had less than half the chance of those living in four; the infant whose father made less than ten dollars per week had about half the chance of life of the one whose father earned twice the amount. Life saving advice to the mother must be accompanied by an industrial order which gave a living wage to the father.

Maternity Insurance.—Dr. LEE K. FRANKEL of the Metropolitan Life Insurance Company, New York City,

presented an historical account of the development of organized protection for motherhood which showed that from the thirteenth century provision either in the home or in hospital was made under the auspices of philanthropic agencies for the care of indigent women in childbirth. Changed industrial conditions had necessitated legislation protecting women working prior and subsequent to maternity. In practically all European countries legislation had been enacted which forbade women to work for from two to six weeks before and after confinement. In the United States in only four States—New York, Vermont, Massachusetts, and Connecticut. The next logical step to be taken in such compulsory legislation was the development of a scheme of insurance for the lying-in period to replace the wages lost. Such schemes also had been organized in nearly every European country. In Italy alone had the insurance plan developed as a distinctly maternity insurance to which both employee and employer contributed. In other countries insurance against maternity was a phase of general sickness insurance, the dues being paid by all members of the scheme. Under a sickness insurance scheme in which practically all of the working element were members maternity benefits were possible for from four to six weeks, medical care and medicine at approximately from ½ to 1½ per cent. of the wages. A general sickness insurance scheme rather than a strictly maternity system the author thought a wiser plan, were such to be developed in the United States.

To What Extent May the Mother Substitute Proprietary Preparations for the Advice of a Physician?—Dr CARL L. ALSBERG of Washington, D. C., regarded the question as of vital interest to the mother, the physician, the welfare worker, the dealer, State and Federal officials. The mother in giving proprietary remedies was governed by false ideas of economy and convenience, and the truth should be presented to her by all possible means. The physician had a public and professional duty in the education of the public upon this vital question. The dealer was concerned solely from the business standpoint, and the solution was said to lie in an educated public opinion.

Infant-Saving Activities.—At the annual business meeting held Thursday morning reports were received from affiliated societies. Through its affiliated membership the Association was in touch with baby-saving activities in seventy-one cities, representing twenty-eight States, the District of Columbia, Canada and the Philippine Islands. Among the activities covered were prenatal care; infant feeding conferences; milk stations; instruction of mothers in care of babies, well and sick; hospitals for babies; care of homeless babies; social service work in connection with hospital care of mothers and babies; visiting nursing, town and country; city and State Departments of Health.

The Value of Negative Genetics.—Prof. E. G. CONKLIN of Princeton University in answer to the query "How the number of births of children receiving a faulty heritage from their parents may be reduced," said that theoretically, the number might be slightly reduced by segregation or sterilization of the parents; practically, this could be applied only to the most defective individuals who were usually under the care or duress of the State, but it would not greatly reduce the number of defective children. Many such children born of normal parents still carried the taint in their blood; if such persons could be prevented from leaving offspring, a much larger reduction in the number of defective children would result. In many defective children, born of apparently normal lines, the defects might be traced to adverse environment, but in many cases their cause was wholly unknown. If the methods of animal and plant breeders could be rigidly applied to man, there was no doubt that a great improvement would be effected in the human race, but for many reasons these methods could not be closely followed.

Mr. HOMER FOLKS said that while in New York State there was a law looking toward the sterilization of the undeniably defective, it had not been urged by the social workers of the State and had remained a dead letter. He thought it the consensus of opinion among social workers in New York that the segregation of the mentally deficient should be brought about.

Dr. CHARLOTTE ABBEY of Philadelphia believed that the fact that 30 per cent. of normal parents bore defective children was due to lack of responsibility and ignorance of the laws of nature. When teaching emphasized the fact that the act which brought a child into the world should be kept sacred, as nature intended, children would be well born.

Professor CONKLIN, in closing, said that undoubtedly the best method of the prevention of reproduction by the seriously defective was in one of the two methods suggested. Segregation would probably be less offensive to the public mind and more readily enforced than sterilization and was in large measure being done. The segregation of none but the dependent class could be brought about, but this could and ought to be done. Coming now to the positive side of eugenics, he said it was probable that much more could be done than on the negative side. The rate of breeding among the seriously defective was not very high. On the other hand, the great danger was that the good stock would disappear; the good heredity lines were running out. A campaign of education was needed, emphasizing to every man and woman that they lived not unto themselves; that their most important duty was to leave in the world wholesome, happy children who would perpetuate their ideals. The saddest thing he knew was to see splendid families from which our great men had come disappearing. The maxim is sometimes heard, "As rare as a dead mule or a Quaker baby," and certainly the fine stocks were running out in many places. If the reproduction of the best were prevented and the reproduction of the worst allowed the race was doomed.

The Problem of Prenatal Life and Influences Which May Favorably Affect This Period of the Child's Growth.—Mrs. MAX WEST, of the Federal Children's Bureau, Washington, D. C., said it had been abundantly demonstrated that the proper and adequate care of prospective mothers decidedly increased the probability that the babies of such mothers would be born healthy and normal. The problem is first one of education, for until a sufficient proportion of the "effective public" appreciated the importance to the race of the prenatal period, it would be needless to look for widespread work of this nature. An important function of this Association should be the reporting from time to time upon the most practical working methods of giving prenatal care and of popularizing the work. Medical care, though conspicuously important, could produce only a part of the desired result since the social conditions surrounding women at this time very largely determined their welfare.

Preparation for Motherhood.—Dr. FLORENCE H. RICHARDS, Medical Director of the William Penn High School for Girls, Philadelphia, said that if it was true that "the women held the destiny of the nation" it behooved us to prepare our girls to be good wives, mothers, and home makers. This knowledge came by careful training which was given by but few parents to their growing girls, either because of ignorance or of false modesty. Of necessity, therefore, it must be done in the higher schools by women physicians able to speak with authority. A broad course in eugenics for girls should include a study of the family and the home and their value to the State; home nursing, a consideration of adolescence, marriage, reproduction (from the biological standpoint), care of the baby, the racial poisons, prostitution, etc. Girls receiving such a course of study would realize more fully the sacredness and responsibility of marriage and their duty to the next generation.

Dr. GREGORY of Philadelphia said the well-trained biologist was needed to give to girls and mothers the information outlined by Dr. Richards. Special stress should be laid upon the importance of the right attitude toward right. It was beautiful to watch the development of a flower, but the attitude toward human life had been abnormal, and that which was the highest and most beautiful of all was looked upon as something to be ashamed of. Mothers, as well as daughters, were capable of correct training in this respect, and with this training given to mothers much would have been gained without waiting for the next generation.

Are Babies Worth Saving? Infant Welfare Work: Its Progress, Opportunities, and Agencies.—Mr. HOMER FOLKS of New York delivered the President's address. He said the only contribution he might hope to make to the meeting was an attempt to interpret some phases of the work of the Association to the general public. Being one of that general public, he might, perhaps, sense some of its difficulties more clearly than the professional members, considering the matter from the layman's point of view under (1) the underlying pur-

poses of infant welfare work; (2) the largeness of opportunity; (3) agencies upon which the chief reliance must be placed. Under the first heading he found the outstanding fact to be that the work was preventive rather than remedial. In a very few years the infant welfare movement had changed from the dealing with the few for curative purposes to dealing with the multitude for preventive purposes. From every point of view infant welfare must be regarded as raising the level at which the struggle for existence occurred, and not simply as a concession to humanitarian instincts. From the point of view of the largeness of opportunity great encouragement was found from the history of recent years that infantile illness and mortality were preventable with relatively little effort and expense. Compared with other large public health movements the reduction of infant mortality was simplicity itself. The New York State Health Department stated that there were about 300,000 deaths per annum in the United States among infants under one year of age and that 150,000 of these were preventable. For this work elaborate institutions were not required. The need was chiefly for plenty of paper, printer's ink, and trained nurses. To one of his associates he was indebted for the suggestion that printer's ink, rightly and continuously applied, would save many babies. Baby saving was the bargain counter of philanthropy. Infant welfare work was the great opportunity of the moment to do something in which everybody must believe. Just how much could be done was uncertain because of many factors, chief among which was the lack of vital statistics. Concerning the agencies for this work, he found that the bulk of effort was being done by private initiative, in many cases some public aid having been received; with the tendency toward the transference of the work to public responsibility. It seemed to him that the work was clearly a public one. Public health generally was certainly a public function, and infant welfare an integral part of the public health problem.

The Possible Reduction of Mortality Among Subnormal Institutional Babies.—Dr. S. JOSEPHINE BAKER, Director of the Bureau of Hygiene of the Department of Health of the city of New York, said that her paper was a combined experimental study of the Bureau of Child Hygiene of the Department of Health of New York, the Child Helping Department of the Russell Sage Foundation, and the New York Foundling Hospital. The high mortality of infants in so-called "foundling asylums" was well known, but in properly supervised placing-out systems this mortality had been reduced. Available statistics of the relative value of institutional versus placing-out care had been generally founded upon a mass consideration of all infants in the institution and a broadly selected group of the better physical type of infants placed out. The present study was based upon the placing out of the physically poorest type of institutional infant. These included the premature infants, severe cases of marasmus, and other nutritional disorders. The selected group included only the type in which the institutional mortality had previously been approximately 100 per cent. The results of this procedure showed a mortality rate decreased to 52 per cent. The experiments covered a period of sixteen months.

Institutions as Foster Mothers for Infants.—Dr. ALFRED F. HESS, New York City, stated that the sweeping denunciation of the institutional care of infants was not justified. If the administration were poor the babies would suffer whether in homes or in asylums, and there was nothing inherent in either system which led to health or to disease. Dr. Hess said that at present there was no established statistical basis of approach to the questions as there was no approved method of calculating the death rate in an institution. The Association, he believed, would perform a valuable service if it devised a method having the approval of experts. It would then become possible to carry out comparative investigations of this important subject in various large cities of the United States.

A Study of Selected Communities Where Infant Welfare Nursing Is Done on a Small Scale.—Miss BESSIE S. LELACHEUR of New York said that no large city in the United States could consider itself up to date without a well-defined program of infant welfare work. There were also countless smaller communities with needs as great and infant mortality greater. The report considered the work in 215 small towns and villages where many were doing infant welfare work and general nursing. She said that the general nurses were eagerly asking for suggestions upon effective infant welfare work to be fitted into their daily duties and responsibilities. The committee therefore concluded that a suggestive and flexible program should be worked out for the general nurse in which the health of the family rather than that of the individual became the responsibility of the nurse.

A Community Program of Public Health Nursing and Social Service as Worked Out in Fall River, Mass., and in Dayton, Ohio.—Mr. RICHARD P. BORDEN of Fall River thought that social agencies should be co-ordinated so that each would work in its special department and all work together. Health was fundamental in community efficiency. Hospitals were expensive, and it paid to avoid the necessity of hospital care. Therefore visiting nurses were necessary adjuncts of hospitals. Sources of accident and disease were ignorance and improper methods of living. Settlement houses taught the family that it was cheaper to prevent disease than to cure it, and in consequence hospital costs were reduced. Day nurseries, children's societies, and other social organizations were directly related to the hospital and its kindred agencies. While it was valuable to preserve entities of social organizations, business and benevolence should combine.

Miss ELIZABETH GORDON FOX of Washington, D. C., believed that the old plan of specialization in public health nursing was wasteful, confusing, and inefficient. In 1914, the Visiting Nurse Association, the Tuberculosis Society, and the Department of Health of the city of Dayton, Ohio, "pooled" their interests and combined the three staffs of nurses into one under one superintendent, in one headquarters. While each governing body retained its own autonomy and raised its own budget, the work of the three was administered as a unit. The nursing specialties were eliminated, the city was divided into small districts, one nurse to a district, and each nurse did all kinds of nursing in her own district. The infant welfare work was greatly increased in quantity and quality as a result of this plan of centralization and generalization. The infant mortality rate fell from 133 during the four summer months of 1913 to eighty-five during the same period of 1914. This was felt to be largely due to the efficiency of the new plan of administration.

Dr. H. J. GERSTENBERGER said that which was most desirable to be accomplished was the adoption of a plan which would bring the best results to the individual and to the community. He had believed for many years that the best results in public health and social work were to be secured by placing all the work of a district in the hands of one worker who should be supervised and directed by a physician who upon the basis of knowledge and common sense was competent to so supervise and direct.

Miss MARIE PHELAN of Chicago said that the infant welfare nurse must be interested in the family and in the sanitary conditions of the home that she might create a proper environment for the baby. It was through her influence that the father was referred to the tuberculosis clinic and the nurse welcomed to give information concerning the conditions of the home. She thought that the question of more than one nurse coming into the home had been greatly overestimated; in reality there was little fear of overlapping. In only two families in eighteen districts were the infant welfare nurse and the district nurse visiting at the same time. She said but few nurses were capable, mentally and physically, to look after every branch of nursing.

Dr. S. JOSEPHINE BAKER said she took issue absolutely with Mr. Borden that the function of the public health nurse was nursing the sick. She said those who heard Mr. Folks' address could not but be impressed with the emphasis he had placed upon the primary function of the Association being the prevention of infant morbidity. Just so far as that note was emphasized would there be success. The nurture of the well had its place in contradistinction to the nursing of the sick. If nurses were going to deal only with the sick baby their ideas would be so diverted from the main purpose that the well baby was going to stand in the background. In municipal work when nurses had tried to keep the well baby well the mortality had dropped sharply. The public health nurse from the point of view of the Department of Health was a sanitary officer with the education of a nurse. She was a teacher, but not like the district nurse, a nurse of the sick. She thought there was danger of overspecialization, but not necessarily, if ideals were kept clearly in mind.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

STATE BOARD OF MEDICAL EXAMINERS OF SOUTH CAROLINA.

June, 1915.

(Concluded from page 1078, Vol. 88.)

GYNECOLOGY.

1. Mention two common causes of hemorrhage from the non-pregnant uterus. How would you differentiate them?
2. Give the causes and treatment of retrodisplacements of the uterus.
3. Differentiate salpingitis in the right side from appendicitis.
4. Describe an operation for removal of the uterus. When is it indicated?
5. Give the causes and treatment of amenorrhea.

SURGERY.

1. Differentiate between acute synovitis of knee joint and acute osteomyelitis about joint, and give treatment of each.
2. In excision of knee joint give details of operation and after treatment. Outline flap used.
3. Describe and outline various flaps used in amputating in different regions from ankle joint to middle of thigh.
4. Make a preparative diagnosis in a woman suffering with tenderness in right side of abdomen from ribs to pelvis, with occasional paroxysms of pain; daily slight rise of fever with albumin in urine.
5. Give indications for enucleating an eyeball and describe an enucleation.
6. Describe the anesthetic state from ether and chloroform.
7. Operate for necrosis of shaft of tibia. If you found all of a section of the bone destroyed and the periosteum intact what would you do?
8. What organs and regions does a right rectus incision allow access to. Describe the technique of making the incision and the closing of it.
9. Give the varieties of hemorrhoids and give in detail the operation of removal of internal hemorrhoids by both suture and clamp and cautery methods.
10. Treat fracture, both impacted and unimpacted, in a very old person.

PEDIATRICS.

1. How would you diagnose and treat flatulent colic in an infant? What food constituent is the usual cause of this condition?
2. Give the causes, consequences and treatment of otitis media.
3. What diseases may diphtheria simulate and how would you differentiate them?
4. Give the symptoms and treatment of pertussis. What is its most serious complication?
5. Give the symptoms and treatment of acute anterior poliomyelitis.

URANALYSIS MICROSCOPY, TOXICOLOGY, AND MEDICAL JURISPRUDENCE.

1. In the examination of urine, how would you differentiate precipitates of urates, earthy phosphates and albumin?
2. Name several drugs that render the urine alkaline; give their indications and methods of administration. What class of acids would you give to acidify alkaline urine?
3. What casts are frequently found in albuminous urine and what do they denote?
4. What is hematuria? What conditions cause it and how does it appear microscopically?
5. Name four conditions in the physical organism which would modify the effects of poisonous drugs.
6. What two remedies are especially indicated in chronic lead poisoning? Describe the action in said condition.
7. How would you differentiate between true poisoning and diseases which simulate poisoning?
8. In examining vomited matter or a stomach suspected to contain phosphorus, what simple methods would show its presence?
9. How would you distinguish between intentional and accidental abortion?
10. What are the signs of death?

HYGIENE.

1. Discuss briefly artificial heating in its relation to ventilation.
2. What are the general rules for ventilating a room by providing inlets and outlets, as to size, location and number?
3. What are the sources of water supply?
4. Discuss milk as a factor in the spread of disease.
5. What diseases are transmitted by mosquitos?
6. (a) Describe the mosquitos causing malaria. (b) What measures would you adopt to destroy them?
7. (a) Discuss room disinfection. (b) Municipal quarantine.
8. What diseases threaten soldiers and civilians in the tropics?
9. If you were a surgeon of a post or camp, what measures would you adopt to prevent disease among the troops?
10. How would you deal with an epidemic of cerebrospinal meningitis?

BACTERIOLOGY AND PATHOLOGY.

1. How do bacteria multiply? What is meant by the terms aerobic and anaerobic bacteria?
2. What are the staining peculiarities of the *Bacillus tuberculosis?*
3. Describe the *Diplococcus intracellularis.* Where is the organism found and how is it identified?
4. What are the causes, results and terminations of thrombosis?
5. Describe the microscopical structure of sarcomata and carcinomata and give the usual mode of extension of each.

ANSWERS.

GYNECOLOGY.

1. Two common causes of hemorrhage from the non-pregnant uterus are endometritis and adenocarcinoma. To differentiate these, microscopic examination of the scrapings may be necessary. The following table (from Dudley's *Gynecology*) may help:

GLANDULAR HYPERTROPHIC ENDOMETRITIS.	GLANDULAR HYPERPLASTIC ENDOMETRITIS.	ADENOCARCINOMA
1. Glands increased in size but not in number.	1. Glands increased in size and number.	1. Glands very greatly increased in size and number.
2. No proliferation of gland epithelium.	2. Proliferation of gland epithelium.	2. Very great proliferation of gland epithelium.
3. Gland structures nearly or quite typical in outline.	3. Gland structures more tortuous in outline.	3. Gland structures very atypical in outline.
4. Hypertrophied epithelium confined within the limits of the tunica propria.	4. Proliferation confined within the limits of the tunica propria.	4. The proliferating gland epithelium has broken through the tunica propria and is in direct contact with interglandular connective tissue, and is multiplying in an atypical manner.
5. Gland tissue does not invade muscularis deeply.	5. Gland tissue does not invade muscularis very deeply.	5. Gland tissue may very deeply invade muscularis.
6. Can trace tortuous glands.	6. Can trace tortuous glands.	6. Glandular labyrinth; can not trace tortuous and atypical gland.
7. Stroma normal in quantity.	7. Stroma decreased in quantity, but clearly defined from glands.	7. Great rarefaction of stroma, so that glands touch one another. Glands have broken through basement membrane and invaded intraglandular spaces and muscularis.

2. RETROFLEXION. *Etiology:* Tight lacing and tight clothing; congenital conditions; pressure by tumors; metritis and parametritis with adhesions; atonic conditions of the uterus following labor, and the conditions that cause retroversion. *Treatment:* If there are no adhesions, the flexion should be corrected by digital manipulation and a pessary introduced; hysteropexy may be necessary.

RETROVERSION.—*Etiology:* Relaxation of uterine ligaments; increased weight of fundus; subinvolution; ovarian or other tumor pressing on front of uterus; distended bladder; peritonitis or cystitis; prolonged

dorsal decubitus and tight bandaging in the puerperium. *Treatment:* Remove the cause, if possible; replace the uterus and keep it in position by pessaries, tampons, and knee-chest position; pelvic massage and vaginal douches; proper hygiene, particular attention being paid to the bowels, clothing, and exercise. *Curative treatment:* The choice lies between ventral suspension of the uterus and shortening of the round ligaments.

3.—

APPENDICITIS.	SALPINGITIS.
1. No previous local disturbances.	1. Genitourinary functions previously disturbed. Usually a history of gonorrheal or puerperal infection.
2. Chill usually absent.	2. Chill may precede fever.
3. Pain in right iliac region, sudden onset, acute, and not radiating to thighs.	3. Gradual onset, pain dull, continuous, and radiating.
4. Fever of variable degree.	4. Fever often entirely absent.
5. Muscular rigidity on right side of the abdomen.	5. No muscular rigidity unless complicated by peritonitis.
6. Inflammatory exudate about appendix three to five days after onset of symptoms.	6. Inflammatory exudate in the pelvis felt by vaginal examination at the onset of the symptoms.
7. Vaginal examination is rarely painful in appendicitis.	7. Always painful in tuboovarian disease.

—(Findley.)

4. "*Indications for Hysterectomy.*—Hysterectomy is indicated if the disease is limited to the uterus. Such limitation will be inferred: 1. By the normal mobility of the uterus. 2. By the absence of any enlargement of the lymphatic glands in the parametria. 3. By the absence of the disease on the vaginal walls. Enlargement of the glands is evidence that the disease has extended beyond the uterus. This does not positively contraindicate hysterectomy, but renders the prognosis less favorable. Whether enlarged or not the glands should, if practicable, be removed. Extension of cancer to the vaginal walls, if slight, does not definitely contraindicate hysterectomy, provided the diseased portion of the vagina can be removed with the uterus. Extensive involvement of the vagina and fixation of the uterus in surrounding cancer contraindicate the operation.

"When the disease has passed beyond the hope of radical cure, but not beyond the limits of palliative hysterectomy, hysterectomy is sometimes performed for the temporary relief of symptoms; its benefits, however, are not usually sufficient to overbalance its dangers."—(Dudley's *Gynecology.*)

Abdominal hysterectomy.—"The patient must be carefully prepared as for any other abdominal operation, but in addition the pubes and vulva must be shaved and thoroughly purified; the vagina should be douched for some days previously, and an antiseptic dressing worn, and if need be the uterine canal should be curetted and disinfected with some powerful antiseptic.

"After anesthesia has been induced the Trendelenburg position is adopted, and an incision of suitable length made in the median line. The parts are then carefully explored, and if no adhesions exist an abdominal cloth is packed in over the intestines in order to protect and keep them from exposure and injury. If adhesions to omentum or gut are present they must be carefully divided; it is, of course, most desirable that a complete peritoneal covering should be secured for any adherent organs; omental grafts may be sometimes useful in this direction. The broad ligaments are then examined, and a decision made as to whether or not the ovaries and tubes are to be saved.

"A pedicle needle carrying a sufficient length of well-boiled silk is carried through the round ligament so as to secure the ovarian artery and veins, and tied as far away from the uterus as possible. A broad ligament clamp may then be placed in position close to the uterus, so as to prevent venous regurgitation, and the broad ligament is divided half-way down. It is often possible and desirable to pick up the divided end of the ovarian artery on the face of this section and secure it separately, while the little artery which accompanies the round ligament should also be carefully secured. The ovarian artery on the other side is next dealt with in a similar fashion. A transverse cut is now made across the front of the uterus, involving merely the serous membrane and connecting the two ends of the incisions in the broad ligaments; the peritoneum below this transverse cut is detached, together with the bladder, from the cervix, and the intraligamentary space is thereby opened up on either side. In this will be found the uterine vessels, and it may be possible to see and isolate the uterine artery before securing it by ligature. Care must be taken in this part of the operation to keep close to the uterus, as the ureter comes forward from behind under the uterine artery to reach the bladder, lying about the level of the os internum. The uterine vessels are in this way carefully secured and divided.

"The uterus is now merely held by the connection between the vagina and cervix and the peritoneal reflection in Douglas' pouch. If a supravaginal operation will suffice, the surgeon cuts across the neck of the uterus in such a way as to fashion two flaps, and finally the peritoneum behind is divided. A few small vessels will probably need to be secured on the face of the uterine stump. This having been effected, the uterine flaps are stitched carefully together so as to bury the open cervical canal; the uterine stump is then covered in by uniting the divided portions of peritoneum. This line of sutures is carried up on either side so as to secure the two layers of the broad ligament; the final result is that the pelvic floor is covered in by a continuous layer of peritoneum, showing a sutured incision which runs transversely from one side to the other. The usual peritoneal toilette follows, and the abdomen is generally closed entirely, no drainage being required."—(Rose and Carless' *Surgery.*)

5. AMENORRHEA is *physiological:* Before puberty, during pregnancy and early lactation, and after the menopause. It may also be due to: Absence or imperfect development of the generative organs; also to stenosis, obstructions, or atresia of the genital tract; also to operative removal of the uterus or its appendages. Other causative factors are: Acute infectious diseases, anemia, chlorosis, obesity, drug habits, alcoholism, overstudy, lack of exercise, exposure to cold, and various emotional causes. *Treatment* consists in: (1) Removing the cause, if possible; (2) general treatment by means of proper hygiene, rest, diet, bathing, attention to the bowels, exercise, etc.; (3) drugs reputed to be emmenagogues, such as iron, manganese, aloes, strychnine, apiol, oxalic acid, savine, rue, and tansy.

SURGERY.

1. In *acute synovitis of the knee-joint*, the joint is swollen, tender, hot, and painful; there is a bulging on either side of the patella, and the patella is floated away from the condyles; fluctuation is felt from side to side, and the patella may be made to tap on the femur; the joint is fixed in a slightly flexed position, and movement is resisted by the patient.

In *acute osteomyelitis*, the swelling is not localized to the limits of the synovial membrane of the joint, as is the case in acute synovitis; fluctuation, if present, is not so pronounced nor is it "from side to side" behind the patella; pain is more severe, and symptoms of toxemia may be present; rigors and high fever are noticed.

In *synovitis of the knee-joint* the treatment consists in immobilization of the joint, bandaging, application of lead and laudanum lotion, ice is of use in the very early stages, later on (if pain is present) hot applications are of service; if the tension is very great leeches or aspiration may be of benefit. Later on, massage and passive movements are serviceable.

In *acute osteomyelitis* treatment must be prompt; an incision must be made through the periosteum and the pus evacuated, the surface of the bone removed, and the cavity exposed, washed out, and drained.

2. *Excision of the knee-joint.*—"A semicircular incision is to be made, with the convexity downward, commencing at the side of one condyle of the femur and passing immediately above the tubercle of the tibia to a corresponding point on the opposite condyle. This incision divides the patellar ligament, and the patella is turned up in the flap; the crucial ligaments should then be cut across, and any remaining lateral attachments divided. The limb must now be forcibly flexed

and the knife carefully applied to the posterior part of the head of the tibia; a blunt pointed resection knife is best for this purpose. The articular surfaces are to be sawed off. The lower end of the thigh bone should first be removed; the division must be made accurately at right angles to the shaft of the femur, in the antero-posterior direction. A thin slice is next taken off the tibia; the section must be accurately at right angles to the shaft of the tibia. Care must be taken not to remove more of the bones than is aboslutely necessary, especially in young subjects. If the patella is much diseased, it should be removed; if it is only slightly carious, it may be scraped or gouged out; if healthy, it should be left to consolidate and strengthen the joint. But the articular surface should be destroyed to favor firm union with the femur. To keep the bones in position they should be drilled obliquely at the anterior part, and secured by two strong sutures of catgut. If the wound is septic, wire sutures are the best. Before the wound is closed all hemorrhage must be thoroughly arrested. Ligatures must be applied to the articular arteries, if necessary. The patellar tendon should be stitched in place with catgut and the wound drained for one or two days by tubes or numerous strands of silkworm gut. The limb must be kept at perfect rest for the first few weeks; a narrow, properly padded splint extending from the hip to the heel, will meet all indications. It should be fixed in position by a flannel bandage above and below the knee, over which a firm plaster of Paris bandage must be applied. An interrupted plaster splint with connecting side irons allows free access to the joints for dressing and prevents soiling of the splint. The first dressings should be changed after 24 hours. After that the dry, antiseptic wool dressings should be used, which can be left untouched for two or three weeks."—(*Cyclopedia of Medicine and Surgery.*)

3. VARIOUS FLAPS USED IN AMPUTATIONS.—*Ordinary circular amputation:* The soft parts are divided by a series of circular cuts, retraction of the parts taking place between each circular sweep of the knife, so that they are cut partly through at different levels the sawed bone forming the apex of the funnel left upon the proximal end of the limb, and the skin margin the base, the distal part removed being cone shaped.

Cuff method of circular amputation: A circular division of the skin is made, which is turned over and upward upon itself as a cuff and, upon a level with this retracted cuff of skin and fascia, the muscles are divided to the bone, generally with one circular sweep of a long knife.

Modified circular amputation: Two equal flaps, composed of skin and fascia, of varying length, and having bases equal to one-half of the circumference of the limb at their upper ends, are cut and dissected up a short distance followed by a circular sweep of the knife through the retracted superficial muscles—and by a circular sweep at a higher level through the retracted deeper muscles—and completion of the operation as in the ordinary circular amputation.

Oval method of amputation: A modification of the circular method. The skin incision is in the form of an oval, with one of its ends more prolonged and pointed —the soft parts between skin and bone being divided by cutting from without inward—and the lips of the wound being sutured in a single line parallel with the long axis of the wound.

Racket method of amputation: A modification of the circular method. The same, in principle, as the oval amputation—with the addition of a longitudinal vertical cut prolonged from the apex of the oval forming the "handle of the racket"—thus giving a better exposure of joints without sacrifice of tissue and securing a better covering for the bone in the upper part of the wound.

Amputation by single flap of skin and muscles: A method of amputating whereby the stump is covered with a single flap derived from one aspect of a limb— and consists of skin, fascia, and muscles. Such an amputation involves the maximum sacrifice of bone.

Amputation by single flap of skin: The features of this operation are practically the same as those of the amputation by a single flap of skin and muscles, except that the covering here consists entirely of skin.

Amputation by equal flaps of skin and muscle: Coverings for the stump are gotten from two opposite aspects of the limb in the form of two flaps composed of all the soft parts covering the limb—having equal bases and lengths—and the allowance of skin being sufficiently in excess to well cover the muscles.

Amputation by equal flaps of skin: This operation is the same, in general contour and dimensions of the flaps, as the last—except that the covering here consists of skin only.

Amputation by unequal flaps of skin and muscles: Coverings are furnished by two flaps taken from opposite aspects of the limb—each flap having a base equal to one-half circumference of the limb at the saw line —and one flap having a length greater than the other. One flap usually furnishes one-third or two-thirds of the covering, and the opposite flap two-thirds or one-third—the longer flap generally coming from that aspect of the limb most thickly muscled. The flaps may bear any relation to each other in relative length —but the two flaps combined furnish a covering equivalent to 1½ diameters of the limb at the saw line.

Amputation by unequal flaps of skin: Coverings are of skin and fascia alone and are furnished by the two opposite aspects of the limb, in the form of two flaps having equal bases and unequal lengths. This amputation is identical throughout with the amputation by equal flaps of skin, except as to the length of the flaps.

Amputation by unequal rectangular flaps of skin and muscles: The general method of performing this operation is similar, in principle, to that for amputation by unequal flaps of skin and muscles—with the exception that the flaps are rectangular (instead of rounded) and of special dimensions.

Elliptical method of amputation: This is not a distinct form of amputation. It may be considered a variety of the circular method (an oblique circular), or, equally, a variety of single flap amputation—and may be held in an intermediate position. It is circular, as to skin incision; and flap, as to its manner of covering the stump and in the suturing. The skin incision is in the form of an ellipse, or a lozenge, the upper part of the ellipse being upon one aspect of the limb and the lower part upon the opposite—the lateral limbs of the figure crossing the lateral aspects of the limb to be amputated. The idea of the ellipse is brought out by imagining the outline projected upon a flat surface.

Best methods of amputation about the leg: Oblique elliptical for the supramalleolar region. Large anterior and small posterior flaps for lower third, between supramalleolar region and lower limit of middle third. Large posterior and short anterior flaps for middle third. Large external flap for upper third. Bilateral hooded flap for "place of election," or upper part of upper third.

Best methods of amputation through the thigh: Shorter anterior and longer posterior flaps for transcondyloid region. Longer anterior and shorter posterior flaps for supracondyloid osteoplastic operation. Long anterior and short posterior flaps for thigh throughout, where the tissue is limited. Oblique Circular, or elliptical, method for lower third.—(From Bickham's *Operative Surgery.*)

4. The case is one of either pyelitis, pyelonephritis or beginning cholecystitis or stone in the kidney. In the case of the two latter the paroxysms of pain will increase an intensity, and in the case of cholecystitis the pain will radiate to the shoulder whereas in stone in the kidney it will radiate down the course of the ureter. Urinary examination and catheterization of the ureters will show if it is pyelitis or pyelonephritis.

5. The *indications for enucleation of the eye* are: "(1) Injuries of the ciliary region when the eye is completely blind, or the traumatism so extensive that the form of the eyeball cannot be preserved; (2) traumatic iridocyclitis, to prevent or cure sympathetic ophthalmia; severe pain in a blind eye; (4) iridocyclitis, phthisis bulbi, and glaucoma, when accompanied by severe pain or inflammatory symptoms, and when the eye is blind or is certain to become so; (5) malignant tumors, either intraocular or epiocular, if they cannot be removed with retention of the eyeball; (6) anterior staphyloma, if the eye is blind, troublesome, and disfiguring; (7) panophthalmitis, after the suppurative stage is passed; (8) foreign bodies in the eye when they cannot be removed and cause irritation, or the eye is blind."

Enucleation of the eyeball is performed as follows: "A general anesthetic is generally given. After introduction of the speculum, the conjunctiva is divided all around the cornea, as close to its border as possible, and dissected back as far as the insertions of the recti muscles. A squint hook is passed beneath the tendon of the internal rectus, and the latter is divided with the strabismus scissors close to its insertion; then the other straight muscles are cut in the same way, together

with the subconjunctival connective tissue for some distance beyond the equator. The points of the scissors must always be directed toward the eyeball and the latter stripped as clean as possible to avoid any unnecessary removal of orbital tissue. Instead of commencing with a circumcorneal division of the conjunctiva, we may begin with a tenotomy of the internal rectus and then divide the conjunctiva as we pass from tendon to tendon. The hook is passed around the globe to make sure that the attachments of the muscles have been completely divided. The eyeball is then dislocated forward by pressing the speculum backward, and thus the optic nerve is put on the stretch. A pair of enucleation scissors, closed, are passed between sclera and conjunctiva, feeling for the optic nerve; they are withdrawn, slightly opened, and the nerve is divided close to the sclera. The eyeball is held between the thumb and index finger of the left hand, and the oblique muscles and other unsevered attachments are divided. The orbit is plugged for a few minutes to control hemorrhage, and the conjunctiva is usually closed with a single suture, which is passed through its edge at intervals and tied like the string of a pouch. The eye is bandaged and the patient kept in bed for a day." (May, *Diseases of the Eye.*)

6. *Ether anesthesia:* "During the *first stage* of anesthesia, which ends with the loss of consciousness, the pulse is accelerated, the pupils large and mobile, and a rather pleasant feeling of drowsiness, and tingling in the extremities, is experienced. Many patients breathe deeply, others hold their breath; in the latter instance all that need be done is to remove the cone for a moment. Cough is rarely annoying if the drop method be employed. With the onset of unconsciousness there is a short period of analgesia (primary anasthesia), during which brief operations may be performed. The *second stage*, or the stage of excitement, extends from the loss of consciousness to the loss of reflexes. Memory, volition, and intelligence are abolished, while laughing, shouting, and struggling may occur. Slight movements of the extremities should not be restrained unless they interfere with the anesthetist, as such often evokes greater struggling. The pulse is rapid, the pupils are dilated and react to light, and the muscles may be rigid or thrown into clonic contractions. At this time the breathing may be irregular or temporarily suspended. The face is congested, sometimes cyanotic, and often covered with perspiration. More or less frothy mucus is present in the mouth and throat, and sometimes it becomes excessive. During the *third stage* the breathing is deep and audible, the pulse full and regular, the muscles relaxed, and the corneal reflex abolished. Touching the cornea with the finger, however, may produce irritation, and it is much better simply to separate the lids and notice the presence or absence of flaccidity. The pupils are of moderate size and react to light. Dilated pupils failing to react to light indicate a dangerous degree of anesthesia. During this stage a transient roseolous rash may be noticed.

Chloroform anesthesia: "The phenomena of chloroform anesthesia are in the main similar to those of ether. The *first* and *second stages* are shorter, the vapor is more pleasant, and being less irritating than ether, not so much mucus is poured out. An excess of chloroform causes the patient to hold his breath, and if the inhaler is not withdrawn at this time, the patient may take a deep inspiration and get an overdose. This accident has resulted in death, and should be recalled when chloroforming crying children, and when a surgeon attempts to operate before the third stage is reached, thus causing the patient to breathe deeply. During the stage of muscular excitement, which is less marked than with ether, the respirations should be watched with great care. Chloroform vapor is not inflammable, but in the presence of a naked flame gives off irritating products (phosgene and hydrochloric acid), which, in a small room, may cause irritation of the eyes and respiratory passages. The *third stage* is characterized by quiet respirations which are often difficult to appreciate. The pulse is sluggish and feeble in contrast to the full and rapid pulse of ether. The pupil is moderately contracted unless the anesthesia is profound, when it dilates. As with ether, dilated pupils, failing to react to light, indicate a dangerous degree of anesthesia." (Stewart's *Manual of Surgery.*)

7. The *treatment of central necrosis* comprises free incisions for drainage, antiseptic dressing, frequent cleansing, rest, nourishing food, stimulants, and tonics. When the sequestrum becomes loose the operation of sequestrectomy or necrotomy is performed, the extremity is drained of blood, an Esmarch band is applied, the bone is exposed by a longitudinal incision, the periosteum is reflected on each side, and the involucrum is broken through and the opening is enlarged with the chisel, gouge, and rongeur. The dead bone should be removed by sequestrum forceps, the cavity scraped by a sharp spoon, the lateral edges of the involucrum cut down until the cavity which formerly contained the sequestrum is very shallow, the wound is irrigated with hot salt solution, dried, painted with pure carbolic acid and then with alcohol, again irrigated with salt solution and firmly packed with iodoform gauze. Remove the Esmarch band, tie the vessels in the soft parts, suture the wound, and apply dressings. The simple removal of a sequestrum *i.e.*, the operation of sequestrectomy, often fails to effect a cure, and even in the most satisfactory cases healing requires a very long time. . . . If the periosteum is found not to be infected, it may be stitched together at the gap where the bone has been removed, so that a periosteal cord exists between the two ends of the bone; and the soft parts above this may be closed. . . . The cavity that is left by the removal of a sequestrum and the chiseling of the walls of the involucrum, if large, may be filled by various methods more or less satisfactory. In some cases of widespread necrosis, due to diffuse infective osteoperiostitis, or to osteomyelitis, extensive resection or even amputation, may be necessary." (DaCosta's *Surgery.*)

8. A right rectus incision gives access to the gall bladder and ducts, duodenum, ascending colon, right kidney, ureter, liver, appendix, stomach. A vertical incision is made in the skin and fascia, about three inches long, and calculated to fall about three quarters of an inch internal to the outer border of the rectus; clamp vessels; retract overlying tissues, and expose the rectal sheath. Incise the anterior sheath of the rectus. Retract outwards the outer portion of the divided sheath of the rectus, so as to expose the outer border of the rectus muscle, and then retract the intact rectus muscle inward. Incise the posterior layer of the rectal sheath somewhat nearer the median line than in the case of the anterior layer. Or, in operating in the neighborhood of the deep epigastric artery, in order to avoid this vessel, the incision in the posterior layer may be made somewhat further outward than the incision through the anterior layer. The artery may, however, be readily ligated if in the way. In the same line as the division of the posterior layer of the rectal sheath, incise vertically the subjacent tissues which will consist of transversalis fascia, subperitoneal aerolar tissue, and peritoneum, except below the similunar fold of Douglas, below which line the posterior layer of the sheath itself consists of transversalis fascia alone, and the subjacent tissues consist of subperitoneal areolar tisue and peritoneum. Having accomplished the object of the operation, the structures are to be sutured in the following layers—peritoneum, subserous areolar tissue, and posterior layer of the rectal sheath, with interrupted or continuous catgut suture; —anterior layer of rectal sheath with interrupted gut sutures, which also pass partly through the rectus muscle (the displaced border of the rectus should also be sutured to the outer margin of the rectal sheath);—the fascia, with gut—and the skin with subcuticular silk, or interrupted silkworm gut sutures (or skin and fascia may be sutured together). (Bickham's *Operative Surgery.*)

9. The varieties of hemorrhoids are external, internal and mixed. *The application of a ligature* is the operation most often performed. The patient is placed in the Sims position, and after the field of operation has been rendered aseptic, the sphincter is divided. The rectum is irrigated with a mercuric chloride solution, 1:5,000. A needle carrying a ligature is passed through the base of the tumor. The thread is cut and the ligature is firmly tied on each side. At least two-thirds of the pile should be excised by the scissors. Iodoform gauze is inserted, and a T-bandage is applied. Morphine (gr. ¼) is then given. The bowels should be moved on the third day. (*Pocket Cyclopedia.*)

Clamp and cautery. Radical treatment is advisable when there is much pain and bleeding. It must be ascertained first that the piles are not due to disease elsewhere, as cirrhosis or stricture, or to pregnancy. The bowels are emptied and the patient is placed in the lithotomy position. The sphincter is then dilated with two thumbs, to expose the piles, which are caught up

with ring forceps. A clamp is applied to the piles in turn, and they are removed by the cautery. The bowels are kept confined for five or six days, when castor oil is given. Very little pain and no bleeding follow this operation. Removal can be done by snipping the mucous membrane around the pile and ligaturing its base. Crushing is also done. (*Aids to Surgery.*)

10. In the case of very old persons the impacted fracture should be left impacted; the unimpacted fractures should be reduced; both fractures should be retained in position by a splint; but it is unadvisable to keep the patient for any length of time on his back. The dangers to old people are hypostatic pneumonia and the formation of bed sores; in the case of the impacted fracture the fixation should not be as thorough as is practised in young people, and massage may also be employed. Ambulant treatment should be instituted as early as possible.

PEDIATRICS.

1. *Flatulent colic* comes on rather suddenly; the child cries, and has a distended abdomen; the thighs are flexed on the abdomen, and the extremities may be cold. The treatment consists of hot applications to the abdomen, hot rectal and colonic irrigations with saline solution; the abdomen may be massaged with warm olive oil; a mixture containing chloral hydrate, sodium bicarbonate and peppermint water may be of service. It is frequently due to an excess of sugar in the food.

2. *Otilis media* generally occurs during one of the exanthematons diseases, or following diphtheria, tonsillitis or typhoid; it is due to a streptococcus. It may lead to perforation of the drum membrane, sinus thrombosis, or meningitis. The treatment consists of hot irrigations with saline solution, and early incision of drum membrane.

3. *Diphtheria* may simulate follicular tonsillitis and non-diphtheritic laryngitis or croup. In both cases a smear taken, and followed by proper culture and bacteriological examination will show absence of the Klebs-Loeffler bacillus. Further, the follicular tonsillitis is accompanied by a high fever (diphtheria is not); and in diphtheria the membrane is adherent to the underlying tissues, is removed with difficulty, bleeds when removed, and reforms; whereas in other similar conditions the membrane is easily removed, does not bleed, and does not form again.

4. In *pertussis* the incubation period is from 4 to 14 days, and is followed by a stage in which catarrhal symptoms, loss of appetite, fever, and restlessness are present. The paroxysms begin about the second week and consist of a number of short, spasmodic, expiratory coughs, succeeded by a long-drawn inspiration and a peculiar whoop, often terminating in vomiting. The eyes are suffused and the under lids are swollen and pinkish in color. The number of paroxysms may be very great, and this stage lasts from 3 to 4 weeks or longer. The symptoms then gradually ameliorate, and the stage of decline lasts 2 or 3 weeks longer. Convulsions, vomiting, bronchitis, and bronchopneumonia are the chief complications.

5. *Acute poliomyelitis* is a disease peculiar to childhood, and characterized by sudden paralysis of one or more limbs or of individual muscle-groups, and followed by rapid wasting of the affected parts, with reaction of degeneration and deformity. The onset is sudden and marked by fever, vomiting, convulsions, or even coma. Paralysis and atrophy of the muscles, with reactions of degeneration, then present themselves. It occurs usually during the first three years of life and most often during the summer months. It sometimes occurs in epidemics.

The treatment during the initial stage consists in rest in bed, restricted diet, fractional doses of calomel, and sponging, or small doses of phenacetin if the fever and nervous symptoms are marked. An ice-bag should be placed along the spine, or mild counterirritation to the spine by mustard plasters may be practised. After the acute symptoms have subsided, electricity and passive movements may be employed. Deformities may result and will require the application of mechanic apparatus or the performance of surgical operations for their correction. (*Pocket Cyclopedia.*)

URANALYSIS MICROSCOPY, TOXICOLOGY, AND MEDICAL JURISPRUDENCE.

1. *Urates* cause a pinkish deposit, dissolve when the urine is warmed, and are generally amorphous.

Both *phosphates* and *albumin* are precipitated if the urine is boiled; on the addition of a few drops of acetic acid the phosphates dissolve, but the albumin does not.

2. *Drugs that render the urine alkaline:* Potassium and lithium salts; they are given in cases of gout, lithemia, when diuretics are needed, in cases of strongly acid urine. They are given largely diluted with water. To *acidify alkaline urine,* one may use vegetable acids, benzoic acid, and salicylic acid.

3. CASTS. *Epithelial,* are found in desquamative nephritis. *Blood,* are found in acute renal hyperemia, acute nephritis, renal hematuria, and hemorrhagic infarction. *Pus,* in suppurative nephritis. *Bacterial,* in pyelonephritis, and suppurative nephritis. *Granular,* in chronic or degenerative nephritic processes. *Fatty,* in large white kidney, subacute or chronic nephritis with fatty degeneration. *Hyaline,* in all inflammatory conditions of the kidneys, also in circulatory disturbances (without organic change) of the kidneys. *Waxy,* in chronic nephritis.

4. *Hematuria* is the presence of blood in the urine when voided. It may be caused by: Infectious diseases, scurvy, purpura, pernicious anemia, congestion of the kidneys, traumatism or inflammation in any part of the urinary tract. On miscroscopical examination red blood corpuscles can be distinguished.

5. *The effects of poisonous drugs may be modified by:* Race, age, sex, weight, condition of health, and idiosyncrasy or tolerance.

6. In *lead poisoning,* magnesium sulphate is given: this converts the lead into the insoluble lead sulphate. Potassium iodide is also given, to aid in the elimination of such lead as is absorbed.

7. "In order to raise a valid inference in the mind of a medical attendant that poison has been administered to a patient, certain facts must be brought under his notice; and without the concurrence of at least two or more of these, the actuality of poisoning cannot be maintained. The sources of evidence in cases of suspected poisoning are the *symptoms;* the *post-mortem appearances; chemical analysis* of articles of food or drink, or of the body and the excretions; and *experiments upon animals.* The evidence derived from these sources, being compared with the known properties and effects of various poisons in authenticated cases, will enable the physician to form a correct opinion as to the probable administration or not of a poison. It is rarely that the symptoms exhibited during life do not afford some clue to the cause of illness; and most frequently the symptoms are all that the medical attendant has to guide him to a diagnosis of the nature of the case, during the lifetime of the patient. Sometimes, however, persons are found dead as the result of poison, concerning the manner of whose death nothing whatever can be learned; a suspicion of poisoning arising from the circumstances under which the corpse is found. Here the aid of chemical analysis ought invariably to be invoked; and fortunately in these cases the delay involved in making an analysis is of comparatively little moment. . . . The general conditions which should excite a suspicion of poisoning are the sudden onset of serious and increasingly alarming symptoms in a person previously in good health, especially if a prominent symptom be epigastric pain; or where there is complete prostration of the vital powers, a cadaverous expression of the countenance, an abundant perspiration, and speedy death. In all such cases the aid of the chemist is required, either to confirm well-founded, or to rebut ill-founded suspicions." (Quain's *Dictionary of Medicine.*)

8. If the vomited matters are agitated in the dark they are luminous.

9. "As natural abortion usually occurs at about the third or fourth month of pregnancy, and as this period is also the one at which a criminal operation is performed, the fact that the fetus comes away entire would indicate that abortion was due to natural causes, or at least not to instrumental violence. If, however, the fetus be expelled first and the ruptured membranes afterward, the conclusion would be that instruments had been used.

"If death follows within three days after abortion, the post-mortem examination will generally establish the fact that an abortion was committed. If several weeks, however, have elapsed, little or nothing will be learned by the autopsy, as the parts involved will have usually reassumed by that time their usual condition." (Chapman's *Medical Jurisprudence.*)

10. *Phenomena and signs of death,* are: The complete and permanent cessation of circulation and

respiration, rigor mortis, loss of body heat, pallor of the body, putrefaction.

HYGIENE.

1. "The principal methods of heating houses and rooms are: 1. Open fires. 2. Stoves. 3. Furnaces. 4. Hot-water pipes. 5. Steam pipes. The method most applicable in any particular case will depend upon the size of the room and the number of rooms in the building. In general, it may be stated that the smaller the space, the more simple the method. For a single room, an open fire or a stove will be sufficient; for a small house, stoves or a furnace; for a large one, one or more furnaces or hot-water or steam apparatus; and for large buildings—office buildings, for instance—'direct' or 'indirect' steam." (Harrington's *Hygiene.*)

2. *Principles of ventilation:* "(1) There must be a constant stream of pure air admitted into the room. (2) The inlets and outlets should be placed as far apart as possible, so as to allow of proper diffusion throughout the room. If possible they should be placed on opposite sides of the room with natural ventilation, but on the same side with artificial ventilation. (3) The inlets for cold air must discharge some five or six feet above the level of the floor, and the outlets for vitiated air must be near the ceiling. (4) The admission of warm air can be permitted near the floor. (5) The incoming air should be itself pure and of sufficient quantity. (6) The inlets for each person in the room must equal in total area 24 square inches, and the outlets should contain the same area. (7) The incoming air must not produce a draught. (8) The ventilation of a large room is always easier than that of a small one. (9) A large room will not compensate after the first hour for a proper system of ventilation. (10) If proper inlets and outlets are constructed, all other means for the admission of air should be closed. (11) The windows of all unoccupied rooms should be opened wide so that they may be flushed with a stream of pure air." (From Evans' *Student's Hygiene.*)

3. *Water supply* from: (1) *Rain water* collected immediately as it falls as rain, dew, snow, etc. (2) *Surface water* collected in ponds, lakes, streams, etc., and in free contact with air. (3) *Ground water, or sub-soil water,* derived from the rain water of the district, but which percolates through the subsoil, and so is not directly exposed to the atmosphere. (4) *Deep or artesian water,* which is separated from the ground water by one or more impermeable layers.

4. *Diseases specially liable to be conveyed by the ingestion of milk:* Tuberculosis, typhoid fever, scarlet fever, diphtheria, tonsillitis, cholera, and gastrointestinal disorders.

The milk may come from a diseased cow; it may become contaminated by the milker, the container, the surroundings, the water used to wash the cans or to adulterate the milk; or it may become contaminated at the dealer's or purchaser's house by being left uncovered, exposed to flies, etc., or by not being kept in a cool place. The only way to prevent the transmission of disease by milk is to insist on a thorough inspection of all dairies and sources of milk supply, and to educate the public in the care of milk between the time of its purchase and its consumption. The inspection should include: the color, reaction, specific gravity, sediment, taste, odor, acidity, total quantity of solids and of water; the percentage of cream, fats, lactose, casein, and ash; the presence or absence of preservatives, coloring matter, added solids, dilution, pathogenic microorganism, dirt, or other foreign matter. There should also be thorough investigation as to its source, the cows and their environment, the method employed in caring for, milking, storing, and transporting the milk.

5. *Diseases transmitted by mosquitoes:* Malaria, yellow fever, dengue, and filariasis.

6. The mosquito which transmits malaria is the *Anopheles.* Its wings are usually spotted; in the resting posture, the axis of the head, proboscis and body are in the same straight line; its body is of a dark gray or brown color; the female alone bites and transmits the *Plasmodium malariæ;* the larvæ float on the surface of water.

"The most efficient way of getting rid of mosquitoes is to make it impossible for them to breed. The eggs of a mosquito are laid in water, and water is absolutely necessary for the larval and pupal stages, which must be passed through before the adult mosquito is produced. Fish destroy developing mosquitoes and large sheets of water are too rough for them; so mosquitoes must have, for breeding, rather small collections of fresh water free from fish. Mosquitoes will soon disappear from a locality if all such collections of water, within a quarter of a mile of it, are filled up, drained, or covered with a film of coal oil so as to make it impossible for the mosquitoes to breed in them. Those who live in a malarious district should protect themselves from mosquito bites by the careful use of mosquito netting. By the simple observance of these evident indications, malaria has already been banished from several localities in which it was formerly endemic." (Marshall's *Microbiology.*)

7. *Disinfection of Rooms:* "Practical disinfection is a process which needs scientific precision and attention to details. The disinfection must be adjusted to the form and nature of infection and the infected materials and objects, each of which may need a different method of handling and disinfection. The room air needs no disinfection, for whatever germs may be found in dust of the air in a room will settle upon the surfaces whenever the room is closed and left undisturbed. The room walls if covered with paper may be efficiently disinfected by thorough rubbing with stale bread. Painted surfaces of walls and ceilings may be disinfected by washing with 3 per cent. solution of carbolic acid or a 1 to 500 solution of sublimate of mercury. Floors and other surfaces of rooms may also be conveniently scrubbed with hot water and a solution of carbolic acid or sublimate, or one of the cresols. Carpets, rugs, etc., may be efficiently disinfected by a strong solution of formalin, by gaseous disinfection with formaldehyde, or may be taken up and subjected to superheated steam under pressure. Curtains, hangings, etc., within the rooms are disinfected with formaldehyde, and may also be washed in boiling water. Wooden bedsteads may be washed with a 3 per cent. carbolic solution or a 5 per cent. formalin solution. Bedding, linen, etc., may be disinfected by steam, by formalin, and also by formaldehyde. For the successful disinfection of rooms with a gas it is necessary to close all openings, cracks and crevices, keyholes, etc., completely, and especially the crevices about windows and doors. This is done by means of cotton, or, better, by means of gummed paper strips. Raising the temperature of the room assists disinfection. The room is then closed and all openings and crevices sealed with gummed paper, and the room is left for at least twenty-four hours." (Price's *Hygiene and Public Health.*)

Sulphur and formaldehyde are the two commonest agents used to disinfect rooms.

"*Municipal quarantine* comprehends measures for isolating those sick with certain of the infectious diseases, such as scarlet fever, diphtheria, and smallpox, keeping others under observation, and disinfecting rooms and houses and objects contained therein which may be capable of harboring infection. It is beyond dispute that public safety requires that certain sick should be shut off from free communication with the outside world. The isolation is most complete and entails less hardship when it can be carried out at a special hospital for contagious diseases, but generally it is enforced, if at all, at the patient's home. Room and house quarantines are commonly difficult or impossible of enforcement, especially in tenement districts among the very poor, for it is among this class that danger of infection is least understood and mutual help and neighborly visiting most extensively practised, and thus the foci of infection may become increased indefinitely. In hospitals, on the other hand, where indiscriminate egress and ingress are under control and facilities for the disinfection of discharges are at hand, the danger of spread is reduced to a minimum. Especially difficult and productive of hardship is the isolation not only of the patient, but also of the other members of his family. This is commonly practised in the case of smallpox, but is unnecessary if the other members have undergone recent successful vaccination, and their clothing and other effects are disinfected and they are then separated from all possible contact and communication with the patient. But even then, they should be kept under surveillance for a time equal to the period of incubation. In times of epidemics of yellow fever in the South, house quarantine of entire families has proved to be the cause of much hardship and anything but an unqualified success. It causes great popular dissatisfaction, leads to concealment of cases, and tends, therefore, to spread rather than restrict the disease. Treatment of the sick in isolation hospitals and removal of those who have been exposed to infec-

tion to camps of detention for five full days have been found to give far better results. In some outbreaks of infectious diseases, it is necessary or advisable to conduct a house to house inspection for the discovery and isolation of unreported cases. When such a course is undertaken, the visits should be repeated at intervals equal to the period of incubation. The making of regulations for municipal quarantine and inspection is subject to no general rule, each local authority being a law unto itself. In some cities, the rules governing notification, isolation, and disinfection are exceedingly thorough and strictly enforced; in others, they are inadequate in varying degrees and enforced with laxity." (Harrington's *Hygiene.*)

8. In addition to many of the diseases which are found in temperate climates, people in the tropics are liable to: Ancylostomiasis, beriberi, cholera, blackwater fever, dengue, dysentery, filariasis, leprosy, malaria, Malta fever, pellagra, plague, tick fever, trypanosomiasis, yaws.

9. To prevent disease among the troops, the surgeon should see that, as far as possible, the soldiers have pure air, pure water, and good, suitable and digestible food; that personal cleanliness is the rule; that dissipation and excesses are avoided; that protective inoculation is practised where possible; that the soldiers are instructed as to the dangers of venereal diseases; that frequent and thorough inspections are made, and that those who have any infections or communicable disease are isolated. Powers of endurance should be increased by suitable exercises; and undue fatigue and idleness must be prevented.

10. Those suffering from cerebrospinal meningitis should be quarantined till recovery; all bodily discharges, especially those from the nose and throat must be disinfected. "Carriers" must be sought for, as in diphtheria; and if found must be isolated. The public must be instructed as to the nature and seriousness of the disease.

BACTERIOLOGY AND PATHOLOGY.

1. Bacteria multiply by division or fission, and also (indirectly) by spore formation. Cocci may divide in one, two, or three directions of space. Bacilli divide transversely to their long axis. Spirilla divide transversely to their long diameter. A bacterium about to divide seems to be larger than normal, and if it is a coccus it becomes more ovoid; changes occur first in the nucleus, and the bacterium thus simply falls in two.

It has been calculated that a single bacterium could, by fission, produce two in one hour. Fortunately they seldom obtain food enough to keep up this process for any length of time.

Aerobic bacteria are such as cannot ordinarily live and grow without air or oxygen. *Anaerobic bacteria* can usually live and grow only in the absence of air or oxygen.

2. *Staining peculiarities of the tubercle bacillus.* It does not stain readily with the usual anilin dyes, but take the stain only when the staining solution is heated, or the exposure unduly prolonged. When once the stain is taken it is held tenaciously and even resists the action of acids. Hence it is said to be "acid-fast," and this property is made use of in staining sputum or other material for the tubercle bacilli, when other bacteria are counterstained after having the first stain removed by acid. It is Gram-positive.

3. The *diplococcus intracellularis meningitidis* is a non-motile, non-flagellated coccus, does not form spores, is aerobic and optionally anaerobic, pathogenic, stains by ordinary methods, is Gram-negative; it is a biscuit-shaped diplococcus somewhat resembling the gonococcus. It can be grown on blood-serum and on glycerin agar.

4. A THROMBUS is a blood clot formed in the blood vessels during life. The process of formation of a thrombus is called thrombosis.

Causes: Changes in the blood current; changes in the vessel wall; anything within the blood current not covered with endothelium. Generally more than one of these conditions are present.

Results: Among the consequences of thrombosis may be mentioned the formation of emboli; infarction; heart clot, and sudden death; cerebral softening; the thrombi may become organized, liquefy, soften, become calcified, putrefy, become discolored, or they may undergo revolution.

5.

	SARCOMA	CARCINOMA
1. *Origin.*	Entirely mesoblastic (connective tissue type).	Epiblastic and hypoblastic. (Epithelial tissue type.)
2. *Stroma*	Intercellular. Rarely forms alveoli.	Vascular connective tissue, which surrounds and forms the walls of the alveoli; these communicate with one another, and contain masses of epithelial cells.
3. *Cells*	Granulation tissue or embryonic connective tissue cells; shape and size vary.	Epithelial cells contained within alveoli; shape and size vary.
4. *Intercellular substance.*	May be present.	Absent, or merely fluid.
5. *Vessels*	Embryonic in character. They are in direct contact with, or may be formed by, the special cells, slightly modified, of which the tumor is composed.	Well developed; entirely contained within the connective tissue stroma, and supported by the walls of the alveoli. Seldom in contact with the cells.
6. *Spreads.*	Primarily and secondarily by blood vessels, rarely by the lymphatics.	Primarily by lymphatics, except in the later stages, when it may also spread by blood vessels, in which case it spreads with very great rapidity. Secondarily by blood vessels.

(*Cyclopedia of Medicine and Surgery*)

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

BACTERIOLOGY FOR NURSES. By HARRY W. CAREY, M.D. Published by F. A Davis Company, Philadelphia, Pa.; 144 pages. Price, $1.00 net.

HOSPITALS AND THE LAW. By EDWIN VALENTINE MITCHELL. Published by Rebman Company, New York; 178 pages.

A BRIEF BIBLIOGRAPHY OF WORKS ON LATIN AMERICA. By PETER H. GOLDSMITH. Published by The MacMillan Company, New York; 107 pages.

MAKERS OF MODERN MEDICINE. By JAMES J. WALSH. Published by Fordham University Press, New York. Catholic University edition, enlarged by the addition of the Life of Virchow; 441 pages. Price, $2.00 net.

THIRTY-EIGHTH ANNUAL REPORT OF THE BOARD OF HEALTH, of the STATE OF NEW JERSEY, 1914, and REPORT OF THE BUREAU OF VITAL STATISTICS. Published by News Printing Company, State Printers, Paterson, N. J.

"SPEAKING OF OPERATIONS." By IRVIN S. COBB. Published by George H. Doran Company, New York. Illustrated by Tony Sarg; 64 pages. Price, 50 cents net.

DINNER. Tendered to Irvin S. Cobb, Waldorf-Astoria Hotel, April 25, 1915. Published by George H. Doran Company, New York; 61 pages.

ANNUAL REPORT OF THE SURGEON GENERAL OF THE PUBLIC HEALTH SERVICE OF THE UNITED STATES. For the fiscal year 1915. Published by Government Printing Office, Washington, 1915; 398 pages.

A HANDBOOK OF COLLOID-CHEMISTRY. By Dr. WOLFGANG OSTWALD. Published by P. Blakiston's Son & Co., Philadelphia, Pa; 278 pages. Price, $3.00 net.

NITRO BY HYPO. By EDWIN P. HAWORTH. Published by The Willows Magazine Co., Kansas City; 117 pages.

PRINCIPLES OF GENERAL PHYSIOLOGY. By W. M. BAYLISS. Published by Longmans, Green & Co., London; 850 pages.

DISCURSOS ledidos ante la REAL ACADEMIA DE MEDICINA. Del Dr. D. JUAN PESET Y ALEIXANDRE. Sevilla.-Tipografia de Girones.-Francos, 49; 108 pages.

LABORATORY METHODS. By B. G. R. WILLIAMS and E. G. C. WILLIAMS. Published by C. V. Mosby Company, St. Louis. Third edition. Illustrated with forty-three engravings; 214 pages. Price, $2.50.

Miscellany.

To Combat Alcoholism.—The following resolutions adopted in Nova Scotia, the first by the Medical Society of Nova Scotia, and the second by the Conference of Medical Health Officers of Nova Scotia, are of general interest:

"That since it has been established that alcohol is not a food, in that none of its elements is incorporated into the tissues, and since the heat it produces by oxidation is over-compensated for through heat lost from the blood vessels of the skin, and since alcohol is not required to aid any physiological process, and since by its excessive use all systems of the body are injured and the moral nature so altered as to lead to crime, this meeting desires to impress the community with the benefits to be obtained by abstinence from alcohol as a beverage, and recommends its use only under medical advice. This meeting would warn the public that many patent medicines containing large amounts of alcohol are neither foods nor stimulants as advertised."

"*Whereas*, it has been absolutely proven that alcohol has a pernicious and injurious effect on the public health of our country, in that it lowers the resistance of the individual to disease, thereby disposing to tuberculosis and other infectious diseases; and *Whereas*, it is one of the chief contributing factors to poverty, misery, and crime; Therefore, we, as Health officers of the Province of Nova Scotia, place ourselves on record as opposed to its use as a beverage and strongly recommend its use only upon medical prescription."

Treatment of Chronic Tube Cases.—The Bulletin of the New York City Department of Health reports an interesting successful experiment in the treatment of patients suffering from chronic laryngeal stenosis following intubation performed in the course of laryngeal diphtheria, which affords striking evidence as to the value of fresh air in cases of affections of the respiratory tract. On July 1 eighteen of the "chronic tube cases" in the wards of the Willard Parker Hospital, together with the necessary physicians and nurses, were sent to Otisville and housed in a farm house. Their ages varied from 2 to 19 years, and they had been inmates of the hospital for from two to eight years, during all of which time none had been without a laryngeal tube for more than two months at a stretch. On July 15 four other children were sent to join the original party, and all were allowed the greatest possible freedom, as it was felt that the country air and the removal from the hospital environment might result in so great an improvement that they would be better able to withstand operative procedures in the fall. The end of the first month, to everyone's surprise, found all but four of the children doing without their tubes and nearly half of them giving no evidence of difficulty in respiration. The children remained on the farm until driven back to the Willard Parker on September 25 by the cold weather at which time eighteen were without tubes. At the time of the report thirteen of them were still without tubes and were apparently cured. As a result of this experiment the hospital authorities are planning to equip the farm house at Otisville so that it may be made an annex for the care of all chronic tube cases during at least one-half of the year.

The Horror of It.—Prof. Ludwig Schleich has spent some months at the front and also a considerable time in charge of a military hospital in Berlin. In his impressions now published he speaks of a strange, almost awful look in the faces of those released from the firing line. They are still willing soldiers, some of them eager to go back to the trenches, but the more highly civilized a man is, Professor Schleich says, the better educated, the deeper his feelings, the more does he bear that indelible something in his face, the sign that he has seen terrible things. Physically, these soldiers may be hard as iron, yet they are not intact. The officers nearly always develop an uncanny marble staring look, as though they had been accustomed to gaze unshudderingly at all the terrors and desolating orgies of destruction, as though they had been obliged to witness this with unblinking eyes, and finally felt that their eyes had become a mirror of the horrible. It is as though the claw of a demon had seized their faces and made their eyes sink deeper into their hollows. They are all changed, says Schleich, they have all seen the head of the Gorgon in the Region of Night, they have all been beaten by the pinion of the iron bird of Destiny.—*The Evening Post.*

Ambulance Dogs.—The 1,700 ambulance dogs now employed by the German army are said to have saved 4,000 lives. Each ambulance man possessing a dog must keep a diary of the dog's performances in order that the authorities may know which of the several breeds used proves to be the best. At Jena a special dog hospital exists, where the exhausted embulance dogs may recuperate. Ambulance dogs are trained never to bark when they find wounded, but to return and fetch their masters.

An Effective Temperance Measure.—The "no-treating" order recently put in force in London has, the London *Times* says, had a marked effect on the habits of a considerable section of the people. The police report generally that less drink is now being sold, fewer people visit public houses, and those who do stay for a shorter time than before; and there is less drunkenness, especially among women.

The Chief Medical Examiner.—Dr. Wells, in the discussion of a paper read before the fifth mid-year meeting of the Medical Section of the American Life Convention at French Lick, Ind., said that the duty of the medical examiner is a very important one. His company had in each town what was termed a "chief examiner" and insisted on his use. They believed that they got better service in this way. If the chief is not available then an "alternate examiner" may be used. When the agent employs a doctor other than the designated chief he is required to submit in writing his reason for so doing. This presents an element of danger. The party in his home town is known. Possibly the chief examiner is the applicant's physician and consequently when taken to a strange doctor, perhaps twenty miles away, one loses the personal touch that comes from the doctor in the home town. In order then, to protect the society and its examiners as well, the referee will make inquiry of the chief examiner in the town where the examination should have been made, requesting an explanation as to his non-use, and also his opinion of the applicant, should he be able to give one. The doctor may think it presumptuous on the part of the company to write him for information when he did not make the examination, but, on the other hand, the chief examiner is protected in his right and this informs him of what the agent is doing, thus protecting his interests as well as those of the society, and the examiners are appreciating the system.

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Original Articles.

THE PERIOD OF LIFE AT WHICH INFECTION FROM TUBERCULOSIS OCCURS MOST FREQUENTLY;

HOW MAY WE DIMINISH THE FREQUENCY OF THOSE INFECTIONS AND PREVENT THEM FROM BECOMING TUBERCULOUS DISEASES?*

BY S. ADOLPHUS KNOPF, M.D.,

NEW YORK.

PROFESSOR OF MEDICINE, DEPARTMENT OF PHTHISIOTHERAPY AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; VISITING PHYSICIAN TO THE NEW YORK HEALTH DEPARTMENT'S HOSPITAL-SANATORIUM FOR THE CONSUMPTIVE POOR, ETC.

FOR a soldier, whether in time of peace or war, whether fighting in defense of his country and obliged to kill or fighting an insidious enemy like tuberculosis and thus seeking to save life, the first duty is to obey. Even if in his own judgment the task assigned to him seems impossible, if his superior officer commands it he must do the best he can.

These were about the thoughts that came to my mind when my superior officer, Dr. W. S. Rankin, the chairman of the program committee, assigned to me the above topic to present before the Public Health Officials' Section at this meeting. I asked myself, who knows anything about the period of life at which infection from tuberculosis occurs most frequently? I was sure I did not. My own statistics tell only of the occasionally recalled exposure to infection during adult life and of the cases of tuberculosis of either parent where there was a likelihood that infection had taken place some time during infancy or childhood, or even later, but at what exact age I had no way of knowing. In fact, I always thought that while it is possible to get statistical data of the period at which the tuberculous disease manifests itself, it is utterly impossible to determine the exact period of infection. But I was not going to be discouraged because of my own ignorance, and the fact that I did not know the period of life at which infection from tuberculosis occurs most frequently did not at all mean that others might not know a good deal about it. So in order to carry out the program, I determined to find out what information I could get on this subject.

I wrote forty letters to well known specialists on tuberculosis and to internists who see a good deal of tuberculosis in their consultation practice, and twenty letters to well known authorities on diseases of children.

I asked for the percentage of children infected with tuberculosis in general, at what age in particular, and what organs were most frequently involved. I then asked for the method of invasion and how often the infection could have been considered prenatal. I tried to ascertain at what period of life an infection, contracted in infancy or childhood, had the greatest likelihood to become active, and at what period of life in general tuberculosis had been found most frequently in the adolescents and the adults. Lastly, I asked my correspondents, in case no statistics were available, to favor me with their general impressions on the subject.

Many of my correspondents did not fail to impress upon me the difficulty of the task I had undertaken; some wrote encouragingly and some discouragingly, but all agreed on the great vital importance of such a study. Following are quotations from a few of the letters I received:

From our beloved Dr. E. L. Trudeau, the great scientist and scholar, friend and beloved physician, whose recent passing away deprived us of the greatest American authority on tuberculosis, but who, let us hope, has left with us his spirit, his enthusiasm, his devotion to the cause and inspiration to go on and on with the work, I received the following kindly note: "You must excuse me from answering the questions you are asking the rest of the profession. To be accurate it would involve an amount of work which I really don't think I can give to it. I hope the result of your inquiries will throw some light on this very obscure question."

Dr. Lawrason Brown of Saranac Lake said: "Really an inquiry such as your question would indicate would settle the whole matter, but it seems to me almost impossible to determine the answer to question 6 (concerning mode of invasion). This would be largely guesswork, but if it could be based on scientific research would settle many vexed questions. I might say that I feel that the whole subject of etiology should be gone over again and some of us here are planning to do a little work in the matter."

Prof. S. Solis-Cohen of Philadelphia said: "I shall be much interested in the result of your studies, and especially in your conclusions from your own statistics, which to me would be of vastly more importance than the guesses of all the rest of us put together." (I wish the good doctor were half right in this assertion.)

Prof. Theodore C. Janeway, of Johns Hopkins, University, Baltimore, wrote me from his summer home: "The problem you have taken up seems to me one of the most fundamental for our understanding of the mode of infection in tuberculosis and for the

*A revised and enlarged article which was originally read by invitation before the American Public Health Association at its 43rd Annual Meeting in Rochester, N. Y., September 8, 1915. Since the date of the reading of the address, many answers to letters of inquiries have come in and important events have transpired which made a revision and some changes necessary.

selection of effective measures of prevention. Exact statistics from a large number of sources on each of the points you raise will be of great help towards its solution. I wish I might contribute some, but I am entirely out of reach of my data, which are in Baltimore. I am most anxious for light on this problem and shall await the results of your study with great interest."

Prof. William P. Lucas of San Francisco, makes the following significant statement: "I should be very glad to see your report lead to some immediate and definite attempt to really take up the subject from a statistical and scientific standpoint on a large scale throughout this country including all the children's hospitals in at least the university centers."

Dr. David R. Lyman of the Gaylord Farm Sanatorium wrote me: "I greatly regret that it is impossible for me to find time to go through my records for the data for which you ask. I recognize the great importance of the question and the need for its presentation and discussion."

Prof. John L. Morse of Boston, writes: "It seems to me that in general a great many statements are made regarding tuberculosis in infancy and childhood on an insufficient basis. It seems to me, moreover, that a great deal of the discussion which is now going on about tuberculosis in childhood is in relation to entirely unimportant points and that there is danger of overlooking or neglecting the few important points."

Dr. Joseph E. Winters, professor of Clinical Medicine, New York, writes: "My experience at Cornell and elsewhere convinces me that the diagnosis of tuberculosis in children is at present too hastily made and on insufficient evidence. Tuberculosis in childhood is not a latent disease as in adults. With the exception of glandular tuberculosis, it is an active and rapidly progressive disease. Its symptoms and signs are distinct, clear, and unmistakable. Would that I had the time to devote to the subject which it merits."

My good friend, Dr. Charles L. Minor of Asheville, N. C., does not think a lifetime enough to go over his statistics, and this is what he says concerning them: "I have a vast amount of carefully kept histories, but I have no time to get up statistics out of them, and I expect I will be dead before that opportunity offers. In fact, I think we could have a very nice time in Heaven going over and catching up with the work we had begun on earth." May Dr. Minor be spared a long time to continue his work on this earthly sphere, but when the time does come for him to pass to his heavenly abode and reward, I hope he may find more pleasant work to do in the other world, unless, of course, he should find working on tuberculosis statistics the most congenial heavenly occupation.

I must quote from another letter received a few months ago, not amusing and cheerful like the foregoing, but, on the contrary, deeply sad and depressing, coming from the war zone where they are trying to do the very reverse of that for which we are assembled here. While we are bending all our energies to save life, prevent untimely death and to further human happiness and peace, in Europe at this very moment they are sacrificing their best and most virile youths, killing and maiming thousands and sowing the seed of hatred and enmity among the nations. This must have been the thought of the Regius Professor of Oxford, Sir William Osler, when he wrote to me. This great man, though far removed from us, still takes the keenest interest in the work of his American pupils and friends. After giving me most valuable bibliographical indications, he says: "I am afraid I would not have time to look over my material and answer those questions intelligently. We are all working hard here. It is an awful business. One of the worst features is that it will dig an intellectual gulf between Germany and this country for generations. Let me have the results of your studies." May the great doctor's prophesy not come true and an early and lasting peace again unite the nations.

Prof. A. Jacobi, that grand old man, 85 years young, sent me from his summer home a five-page letter, closely written in his own hand, giving me a wealth of information. At the end of this remarkable document full of bibliographical references and narrations from his own vast experience, he modestly says: "I am sorry I cannot contribute anything to your work, being in the country and having nothing in this desert that will add to your riches." Of course the good doctor refers to the riches of information I was supposed to have gathered from other sources since I have confessed to having none of my own.

Many other letters began with the usual regret not to be able to answer all my questions or some of them, or even any at all, because of lack of statistics, but from what follows you will see that a goodly number of my correspondents have most kindly aided me by letting me have whatever statistics they had or giving me the general impressions resulting from their vast experience. Adding to this whatever important enlightenment I could find by the perusal of the more recent current literature, I believe I have after all been able to come to some conclusions, and from them we may perhaps be able to outline some effective measures to diminish the sources of infection and to prevent the tuberculous infection from becoming tuberculous disease.

The answers to my first question, concerning the frequency of tuberculosis in childhood, would give an average of about 36 per cent.

Prof. Norman Bridge of Los Angeles gave it as	22 per cent.
Prof. S. Sehs Cohen, Philadelphia, gave it as	10 per cent.
Dr. Alfred F. Hess, New York, gave it as	38 per cent.
Prof. Godfrey R. Pisek, New York, gave it as	65 per cent.
Dr. Bertram H. Waters, New York, gave it as	26 per cent.
Hamburger and Monti, in Amer. Jour. of Dis. of Child., Vol. 9, No. 6, June, 1915, gave it as	59 per cent.
Veeder and Johnston, in same issue, gave it as	34 per cent.

From the interesting opinions given in answer to this inquiry I desire to quote the following:

Prof. Vincent Y. Bowditch of Boston thinks latent tuberculosis is more frequent in children than has hitherto been supposed, only to become active in young or adult life.

Prof. Edward O. Otis of Boston writes: "I believe a large number of children have a tuberculous infection but comparatively few develop active clinical pulmonary tuberculosis before adolescence. Such I should say had been my experience."

Prof. William P. Lucas of San Francisco, feels strongly that it is time to differentiate between infection and disease in children. He believes that most city children become infected and in most cases produce definite immunity.

Dr. Alfred Meyer, New York, thinks the percentage higher than usually supposed in febrile cases without superficial evidence, such as lymph-node and joint lesions, and that these cases are wrongly regarded as typhoids (even three or four attacks).

Prof. John L. Morse, Boston, says tuberculous infection is of course very common, while tuberculous disease is relatively rare.

Newsholme, in *Lancet*, June 12, 1915, in the section referring to inaccurate diagnosis in children, quotes striking figures from Coates and Landouzy on the question of the prevalence of tuberculosis in children and also in relation to deaths. He states that "in children the term bronchopneumonia not infrequently conceals acute tuberculosis, especially when the "bronchopneumonia" occurs after imperfect recovery from such diseases as whooping cough and measles."

Concerning the various ages at which infection has most likely occurred, I received the following replies:

Dr. Alfred F. Hess, New York:

Under 1 year	5 per cent.
1 to 2 years	33 per cent.
2 to 5 years	75 per cent.

Prof. John L. Morse, Boston. Infection and disease increase steadily with age.

Prof. Godfrey R. Pisek, New York:

1st year	14 per cent.
2nd year	50 per cent.
3rd year	65 per cent.
5th year	60 per cent.
7th-14th year	70 per cent.

Prof. Geo. M. Tuttle, St. Louis: Most frequent under 5 years of age.

Prof. J. A. Miller and Dr. I. O. Woodruff (Jour. of A. M. A., March 27, 1909): In children of tuberculous parents who live in close association with them, between 2 and 15 years, 51 per cent.

Prof. Hamburger of Vienna, in "Handbuch der Tub., Bd. V, 1915," gives the following table:

1st year	1 per cent.
2nd year	9 per cent.
3 to 4 years	27 per cent.
5 to 6 years	51 per cent.
7 to 10 years	71 per cent.
11 to 14 years	94 per cent.

My own statistics reveal the following: Infection occurred apparently in children.

1 to 5 years	9 per cent.
5 to 10 years	34 per cent.
11 to 15 years	12 per cent.

Prof. Theodore Le Boutillier's remarks in answer to this question are likewise of intense interest. He says that he found that infection occurs with comparative infrequency during early infancy when the child has been removed from the infected surroundings. He never found it to occur under these conditions. Where, however, the child remains in the infected surroundings, he thinks that, as a rule, these infants become actively tuberculous within the first year of life. It occurs most frequently during the second five years of life and then at puberty.

To the question which of the organs were most frequently involved, nearly all my correspondents united in the opinion that in children the lungs and lymph nodules were primarily and most frequently involved; secondly, bones; thirdly, intestines; fourthly, meninges.

I will quote from the comment I received on this question as follows:

Dr. E. R. Baldwin of Saranac Lake referred me to his article in Osler's System of Modern Medicine, last edition, in which he says: "In the majority a previous focus must be regarded as essential, although infection through the tonsils or by way of the cribriform plate of the ethmoid may be possible. The most frequent lesion is in the lungs (50 per cent.), glandular tuberculosis probably comes next in frequency, and then joint, bone, genitourinary, and pleural lesions."

Prof. Theo. Le Boutillier of Philadelphia thinks that the younger the child the more likely it is to be meningitis, next in frequency miliary tuberculosis; in older children, pulmonary, glandular and bone.

Prof. William P. Lucas says that acute tuberculosis, in his experience, is nearly always found in infancy and rarely during childhood unless the infection is very virulent or quantitatively large. After 5 years of age the number of acute cases even of tuberculous meningitis or miliary tuberculosis diminish very rapidly. He has no absolute percentage from his own experience but thinks that practically all the infections are glandular, either peribronchial, peritoneal, or cervical, and that the other forms of tuberculosis, bone, etc., are secondary to the glandular involvement.

Dr. Alfred Meyer has always been surprised at the comparative rarity of acute military and of meningitis considering the very favorable conditions for dissemination.

Prof. John L. Morse supposes that tubercuous meningitis and military tuberculosis are always secondary to some previous infection.

As to the method of invasion, Prof. John Howland of Baltimore gave 95 per cent. through close personal contact with tuberculous individuals. Prof. Godfrey R. Pisek of New York, 75 per cent. Professors Hermann M. Biggs and Henry D. Chapin of New York, William P. Lucas of San Francisco, and George M. Tuttle of St. Louis, concur in the opinion of Dr. Howland.

In our Health Department's clinics, Dr. Bertram H. Waters traced the majority of infection to the respiratory tract. My own statistics made me come to the same conclusion.

Somewhat divergent is the view expressed by Prof. Frank Billings of Chicago, who says it seems to him that the most common source of the infection in the child and adolescent is through the digestive apparatus, either from infected milk or other food substances or quite as frequently from actual contact with tuberculous adults and the contamination of hands, lips, etc., and with tubercle bacilli which gain entrance through the mucosa of the throat. He often wondered if this method of contact infection is not frequently present even in the adult rather than infection through infected air as is the commonly accepted mode. In other words, the last named mode of infection it seems to him is a very common one in both children and adults.

Prof. L. Emmett Holt, on the other hand, says that it has always been his belief that the dangers from tuberculous milk have been greatly exaggerated, certainly with infants and young children.

Prof. John L. Morse says that he has seen a considerable number of cases in which children with tuberculosis had taken the milk from tuberculous cows. He does not know, however, whether their infection was from the tuberculous milk or whether it was acquired in some other way.

As appertaining to this question we must add the following: Prof. William Charles White of Pittsburg writes that in no way could he see that it is possible for us to trace the origin of infection from without, although, in most of our general tuberculous cases, on which we have had autopsies, it is possible to trace infection from some glandular source of infection within the body.

Prof. Godfrey R. Pisek says, infections with human bacilli, in all probability are the latent types; the bovine type of infection does not seem to remain latent and to develop in later life; perhaps this type even confers a certain immunity.

Dr. Beverley Robinson of New York says: "The pulmonary organs are those most frequently involved, as I believe, and that is also the impression of very many general practitioners."

My question concerning the frequency of pre-

natal infection received the least number of responses. Prof. Norman Bridge thought he had seen two cases; Prof. John Howland also two cases; Prof. A. Jacobi reported one case. Myself I believe to have observed two distinct cases of prenatal infection. Professor Pisek believes that only fifteen authentic cases have been reported. And yet, it seems to me this rarity is perhaps only apparent and the reason for it is to be found in the fact that autopsies in children are not made nearly as frequently as in adults. There have been a sufficient number of cases on record, however, to make it necessary to consider this direct bacillary transmission from the mother as one of the means of tuberculous infection, particularly when the mother has been acutely ill at the time of conception or during pregnancy.

This prenatal infection may also explain the occurrence of tuberculosis in early infancy, that is to say before the first year. Gärtner, of Jena, ("Ueber die Erblichkeit der Tuberkulose," Zeitschr. f. Hygiene u. Infektionskrankheiten, Bd. XIII), who made very extensive animal experiments in the endeavor to remove all doubts about this much disputed question, comes to the conclusion that the experiments with rabbits and guinea pigs disprove the possibility of the transmission of the tubercle bacillus from the father to the fetus. When bacilli are very numerous in the semen, the mother becomes infected but never the offspring. On the other hand, the clinical reports and his own animal experiments have convinced him that tubercle bacilli are frequently transmitted from the mother to the child during the latter's prenatal existence.

Some time ago I had the honor of a conversation with Prof. William H. Welch of Johns Hopkins Medical School, on the subject and he, too, was of the opinion that a direct bacillary transmission, that is to say, prenatal infection, takes place much more frequently than is generally believed.

Prof. S. Solis Cohen says it is difficult to distinguish between prenatal infection, hereditary tendency, and infection early in life. He does not see a sufficient number of very young infants to be able to exclude the latter method in any instance.

Prof. A. Jacobi says that while direct heredity is rare, hereditary predisposition to tuberculosis is quite frequent, and is transmitted even by such parents as appear to be in fair health. It is evident that the newly-born cannot be safe with its consumptive mother.

As to the certainty that predisposition is frequently inherited from a tuberculous mother or a tuberculous father, an anemic parent, or parents of feeble health or generally below par, there is, of course, not the slightest doubt. Any inherited weak system which might be more properly called a physiological poverty, renders the child naturally more susceptible and less resistant to the invasion of tuberculosis or other infectious diseases. When the mother is the tuberculous parent, this predisposition is all the more likely to be inherited because of the impregnation of the cells of the fetus by the toxins of the tubercle bacilli, even if the latter have not been found in sufficient numbers in the cells to demonstrate direct bacillary transmission.

To the question at what period of life a tuberculous infection, contracted in infancy or childhood, was most likely to become active, I received the following answers:

Dr. W. Jarvis Barlow, Los Angeles, at	15 years
Prof. Hermann M. Biggs, New York, between	6 and 25 years
Prof. S. G. Bonney, Denver, between	18 and 25 years
Prof. Vincent Y. Bowditch, Boston, at	15 years
Prof. Norman Bridge, Los Angeles, between	15 and 18 years
Dr. E. S. Bullock, Silver City, N. Mex., between	18 and 25 years
Prof. S. Solis Cohen, Philadelphia, between	18 and 50 years
Prof. Theo. Le Boutillier, Philadelphia, at	15 years
Prof. Wm. P. Lucas, San Francisco, at	15 years
Dr. Alfred Meyer, New York, at	10 years
Dr. Charles L. Minor, Asheville, before	16 years
Prof. Wm. P. Northrup, New York, between	3 and 12 years
Dr. Bertram H. Waters, New York, most frequently under	2 years
next in frequency between	15 and 20 years
In my own experience early infection became active between	10 and 30 years

The remarks on this question are significant and I will quote the following:

Dr. Alfred F. Hess of New York does not believe that the age is such an important factor as regards making an inactive process active, as is the general condition of the individual. Independent of age, if a person has measles, marked anemia, or malnutrition from whatever cause, there is liability of the lighting up of the tuberculous focus.

Dr. G. W. Holden of Denver thinks a latent infection will not develop until such a time as the natural resistance has been broken down and vitality lowered, due to overwork or overplay, or a combination of both.

Prof. L. Emmet Holt, New York, thinks that age seems to have much less influence on this point than other conditions, such as season of year—winter and spring—and the development of intercurrent diseases, such as measles, whooping cough, influenza, and bronchitis.

Dr. David R. Lyman of Wallingford, Conn., says that his own general impressions based chiefly upon the histories of his cases is that where an intelligent history is obtainable a very large percentage of our adult cases can be traced back to early youth or childhood, and that our future work must be devoted mainly to the prevention of tuberculosis in childhood.

Prof. William Charles White thinks that there is no period in life when tuberculosis may not be contracted.

Prof. Godfrey R. Pisek thinks the period of life in which latent tuberculosis is most likely to become active begins about the fifth year; this includes no observations after the fourteenth year of life.

To my last question, what was the age at which tuberculosis was found most frequently in the adolescent and the adult, I received the following answers:

Dr. W. Jarvis Barlow, Los Angeles, gave the age at	20 to 29 years
Prof. Hermann M. Biggs, New York, gave the age at	16 to 25 years
Prof. Frank Billings, Chicago, gave the age at	15 to 25 years
Prof. Vincent Y. Bowditch, Boston, gave the age at	20 to 40 years
Dr. E. S. Bullock, Silver City, N. M., gave the age at	18 to 25 years
Dr. G. W. Holden, Denver, gave the age at	20 to 25 years
Prof. S. Solis Cohen, Philadelphia, gave the age at	18 to 22 years
Dr. Alfred Meyer, New York, gave the age at	15 to 40 years
Dr. Chas. L. Minor, Asheville, gave the age at	20 to 40 years
Prof. Edw. O. Otis, Boston, gave the age at	18 to 35 years
Dr. Bertram H. Waters, New York, gave the age at	25 to 40 years
Prof. Wm. Chas. White, Pittsburg, gave the age at	20 to 40 years
In my own experience I found tuberculosis to be in evidence most frequently between	15 to 40 years

Of 1,000 private cases of adults of which I kept careful records, only 14.5 per cent. recalled an evident exposure to infection outside of their family circle during their adult existence as a possible cause of their disease. On the other hand, 33 per cent. stated that either father, mother, brother, or sister had died of tuberculosis or had been ill with the disease. In these cases we have reason to believe that infection occurred most likely during infancy or childhood.

The general impressions which were kindly given me by my correspondents concerning my inquiry as to when a tuberculous infection became a tubercu-

lous disease, or when the disease was first noticed in the adolescent or the adult, are to my mind fully as valuable as the statistical data.

Dr. Herbert M. King, physician in chief of one of our largest sanatoria where the vast majority of patients come from the well-to-do classes, writes as follows: "Speaking very generally, I think I share a widespread impression, amounting to almost conviction, that most of the cases of tuberculosis developing in adult life may be traced to infection received before adolescence."

Dr. Lawrence F. Flick of Philadelphia says: "From my experience in tuberculosis and from the studies I have made of the subject, I am led to believe that ordinary tuberculosis is implanted in early life and either remains dormant or grows very slowly until adult life is reached. My histories of cases taken as a whole would indicate that ordinary tuberculosis has existed for many years when a case comes under observation for the first time. The implantation undoubtedly most frequently takes place in the home, through prolonged intimate contact with an open ulcerative case of tuberculosis in the intimacy of family life."

Prof. William C. Hollopeter of Philadelphia writes: "I am a great believer in the early implantation of tuberculosis in children and believe that all children have it with very rare exceptions; the adult form is simply a recrudescence, or an expression due to lowered resistance."

Prof. John Howland of Johns Hopkins says: "We have had, in the dispensary and hospital, since I have been in Baltimore, 8,293 patients. Of these, 469 had tuberculosis recognizable in some form or other and we have not made the diagnosis of tuberculosis unless, in addition to the symptoms, tuberculin tests showed the presence of the disease. I have not included in this those patients that, without other evidences of tuberculosis, gave positive von Pirquet reactions."

Dr. Martin F. Sloan, superintendent of the Maryland State Hospital for Consumptives, writes: "I do not remember having seen one adult with a so-called acute invasion in whom a chronic lesion was not demonstrable in one of the apices. My limited experience leads me to believe that practically all cases of pulmonary tuberculosis in the adult are of endogenous origin. A carefully obtained history from an observing patient most frequently reveals one of a number of several manifestations of tubercle bacilli infection in early life, viz., nasal catarrh or middle ear trouble, tonsils and adenoids, 'white swelling,' malnutrition, 'winter colds,' enlarged cervical glands at puberty, amenorrhea, or irregular menstruation, nervousness, and poor development; and later, pleurisy, chronic bronchitis, 'typhoid pneumonia.' In other words, we find stepping stones, if you will, connecting an infection in early childhood with the pronounced case of consumption in adult life. This leads me to say, parenthetically, that I consider the critical periods of a woman's life, in so far as tuberculosis is concerned, are puberty, puerperium, and the climateric; of a male's, puberty and about 30 to 35 years.

"Again, a careful history nearly always shows that at least one brother or sister, or maybe more, has had suspicious symptoms. I know several families that have been exterminated by consumption, though the members had been separated since childhood, all of which would seem to indicate an infection through a common carrier in early life, very likely a parent, nurse, or housemaid.

"On the other hand, I know of no employee about the sanatorium who has become a victim of the disease. After seven years' exposure I myself show no signs or symptoms of the disease. I must confess I am somewhat dubious of the frequency of adult infection, except in cases of the closest contact, such as is to be found in marital life."

Dr. Charles L. Minor of Asheville writes: "In my own experience I have found in the adolescent the largest number of cases of tuberculosis appearing at about sixteen. In the adult the large majority have been between twenty and forty."

Prof. William S. Thayer of Baltimore wrote: "As time has gone on I have been very much impressed in a purely general way with the feeling that most tuberculosis was acquired in childhood, but, alas, when it comes to a question of proof or even of strong evidence to support my feelings, I have it not. I have a very general feeling that glandular tuberculosis is especially common in childhood and I would be inclined to believe that most pulmonary tuberculosis was rather largely an autogenous infection from such early glandular foci, but as I have said, I cannot feel that I am justified in expressing more than an impression with regard to the question. I shall be much interested to see your final conclusions."

Prof. John L. Morse of Harvard Medical School writes: "Both tuberculosis infection and tuberculosis disease are far more common among the poorer classes than among the well-to-do."

This statement that tuberculosis infection as well as tuberculosis disease is the lot of the child of the poor is borne out by the statistics furnished me, particularly those of Dr. Alfred F. Hess, who writes: "Among the children at the Infant Asylum who may be considered about the average of those living in the tenements, we have found that three-fourths of those under the age of 5 years give a positive von Pirquet test."

In these children 75 per cent. means not infection but tuberculous disease, more or less active, for below the age of 5 the infection has rarely had a chance to become latent and the slightest additional pathological process, such as measles or anemia, or simply malnutrition, is sufficient to produce a general and often fatal tuberculosis.

To make a brief summary of results from this little study, we would have to say that tuberculous disease in childhood, compared with tuberculous infection, is relatively rare (36 per cent.); that, on the other hand, tuberculous infection is exceedingly frequent, generally speaking, and according to exact statistics as well as general impressions given by men of vast experience, the majority of the cases in the adult had their origin in an infection during infancy or childhood.

The frequency of infection increases with the age of the child, and of course is also affected by the environments the child comes from.

Under 1 year, the lowest percentage is 1 per cent., the highest is 9 per cent.
From 1st to 3rd year, the lowest percentage is 9 per cent.; the highest is 50 per cent.
From 3rd to 5th year, the lowest percentage is 27 per cent.; the highest is 75 per cent.
From 6th to 10th years, the lowest percentage is 34 per cent.; the highest is 75 per cent.
From 11th to 15th years, the lowest percentage is (private) 12 per cent. the highest is (hospital case) 94 per cent.

As to what organs are primarily most frequently involved, statistics and impressions both give lungs and lymph nodules. Prenatal infection, while considered rare, is perhaps much more frequent than statistics show.

The age at which a tuberculous infection, con-

tracted in infancy or childhood, becomes active is, according to the majority of my correspondents, at or shortly after 15 years; next between 18 and 30 years.

The ages at which tuberculosis was diagnosed and apparently contracted most frequently in later life were given as between 20 and 35 years.

Nearly all the authorities consulted unite in the opinion that in order to combat tuberculosis successfully in the young and the old, we must diminish the sources of infection in childhood.

And now, in conclusion, let me rapidly enumerate the measures which I hope and believe may tend to diminish this frequency of infection and, when it does occur, prevent the disease from developing.

1. We must seek to amend the federal and State laws which make it a criminal offense for a duly licensed physician in good standing to give advice concerning the means of preventing conception. We must be allowed fearlessly and openly to instruct tuberculous parents how not to procreate a tuberculous race.

2. All cases of open tuberculosis, particularly the pulmonary and laryngeal types, should be required by law to be reported to the health authorities who in turn should be authorized to send the patient direct or through the attending physician carefully worked out instructions to prevent infecting others.

3. Cases which cannot be properly taken care of in the home, or when it is evident that they constitute centers of infection, should be transferred to sanatoria, special hospitals, or at least to special wards in general hospitals. Every community should have sufficient facilities to take care of such cases. The Board of Health of every community should have police power in order to be able to isolate all cases which wilfully disseminate bacilli by indiscriminate expectoration or by other unclean habits, thereby exposing other members of the family, particularly children, to contracting the disease.

4. For the pregnant tuberculous woman there should be a maternity sanatorium or a special ward in existing maternities where prolonged antituberculous treatment can be effectually carried out and where mothers can receive such instructions as will guard their offspring from postnatal infection.

5. Where there is the slightest suspicion of tuberculous infection of the infant by the mother, the child should have a healthy wet-nurse or should be bottle-fed. The preparation of the milk and bottles, tasting the milk to judge of its sweetness and temperature, etc., should be attended to not by a tuberculous mother, but by an intelligent and conscientious healthy person, unless the mother is scrupulously clean and knows how to take every proper precaution against infection. For infants whose mothers for one reason or another are unable or not intelligent enough to care properly for their tuberculous offspring, there should be established special preventoria. The need of such institutions has been very ably set forth in a recent contribution by Dr. Alfred F. Hess of New York, entitled "The Neglect to Provide for the Infant in the Antituberculosis Program."*

6. Enterprises similar to the one inaugurated by my regretted teacher, the late Professor Grancher of Paris, for the purpose of providing medically supervised country homes for poor tuberculous mothers and their children until they can safely return to city environments, should be helped by private philanthropy, or better yet, by the aid of the municipality.

7. All children under five years of age, be they of poor or rich parentage, should be subjected annually, or even semi-annually, to the von Pirquet test, and all who react positively and have symptoms and physical signs in addition should be placed under proper treatment at home, in preventoria, or sanatoria.

8. All children between 5 and 15 years of age, particularly those attending public schools, should be subjected to a careful physical examination on entering as a pupil and an annual re-examination thereafter, always accompanied by a von Pirquet test. Those reacting positively and showing physical signs, those evidently strongly predisposed to tuberculosis, anemic, highly nervous, or afflicted with cardiac disease, should, according to their condition, be placed in open-air classes, open-air schools, preventoria, seaside or inland sanatoria. This will probably mean that open-air schools must become the rule and the indoor class the exception, which, indeed, would be a great blessing. It goes without saying that all physical defects, such as adenoids, enlarged tonsils, deviated septi, must be removed so that the child's upper respiratory tract may be as nearly perfect as possible. Defective hearing and eyesight, as well as bad teeth, must, of course, also receive proper attention.

9. Open-air instruction should be practiced whenever feasible. Singing, recitation, geology, botany, etc., should be taught out-of-doors. Calisthenics, breathing exercises, and swimming lessons should constitute a part of the curriculum of every public and private school. No public school should be without its swimming pool. A drill in swimming, so as to know how to save one's own or perhaps other lives, should be as essential as fire drills in public schools. Wherever shower baths and swimming tanks (the former to be used prior to entering the latter) form a part of the public school equipment, pedagogues have observed a better morale and better work done by the pupils. The curriculum of our schools should be arranged so that the mental and intellectual training is not carried to the extent of becoming detrimental to the physical development and well-being of the children.

10. The school authorities should have the right to investigate the home of any child attending public school when the teacher or school physician thinks that underfeeding, bad sanitary home environments, or child labor at home are responsible for a poor physical condition of the pupil which might develop into tuberculosis.

11. Child labor in factories, mines, canneries, stores, workshops, in the street, or at home must be done away with if we wish to raise a non-tuberculous race. Up to the age of 14 every boy and girl should have the right and privilege to play and not be forced to work. When arriving at the age of puberty, the boy or girl should be in the best possible physical condition or else there is a great likelihood that a latent tuberculosis or inherited predisposition will develop into tuberculous disease. Playgrounds and parks should be in abundance in every civilized community. The roofs of schools and tenements should be converted into roof gardens when the ground is scarce and expensive, as for example in New York City.

12. There should be an obligatory examination for tuberculosis and other serious diseases of every

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boy or girl prior to entering college, the store, the workshop, the office, mine, factory, or any occupation for his or her career in life. The physical and mental test at such a time should be used as a guide in the choice of trade or profession.

13. There should be periodical examinations for tuberculosis of all employees in whatever sphere of activity—in office, factory, workshop, hotels, households, schools, municipal or federal departments, etc.

14. For those weeded out as tuberculous or afflicted with other diseases which incapacitate them for their usual work under ordinary conditions, there should be agricultural and industrial colonies where these semi-invalids will have nevertheless an opportunity to earn a livelihood. There also the graduates from sanatoria should be sent for an opportunity to regain strength and vigor, to make their cure more lasting, and above all to learn again to earn their living.

15. There should be State insurance or obligatory private insurance against accident, old age, and diseases, including tuberculosis, for all earning less than $1,000 per annum, so that those fearing temporary or total loss of earning capacity will not be afraid to seek proper treatment in tuberculosis institutions.

16. Although the investigations, the replies from eminent authorities, and the literature consulted seem to show that the bovine type of the bacillus of tuberculosis at a maximum estimation is not responsible for more than 10 per cent. of tuberculosis in childhood, we must not allow ourselves to lessen our efforts to combat the disease in animals. We should not have individual and widely differing State laws, but instead uniform bovine laws enforced by federal authorities in all States of the Union alike. Only thus will we be able to combat the source of infection for human beings which comes from the bovine race.

17. With all this there must be a continued propaganda for the education of the masses concerning the prevention of tuberculosis, alcoholism, and other social diseases; for the improvement of housing conditions, including the supervision and better sanitation of city and country schools, of lodging houses, boarding houses, factories, workshops, stores, offices, asylums, prisons, and reformatories; for the prevention of injurious overwork; for healthful recreation of the masses in city and country; for the return to the soil from our overcrowded cities; and above all, for a living wage for all who labor honestly and efficiently and a rational and speedy solution of the problem of unemployment.

I grant that this is an elaborate and extensive program, but if you take into consideration the financial sacrifices this nation is annually making to combat tuberculosis, you will perhaps see the justification of it. In spite of all our efforts, we are still losing about 200,000 people annually from tuberculosis in the United States, of which, I venture to say, 50,000 are children. Estimating the average duration of life of these 50,000 children at about seven and one-half years, and figuring the cost to parents and the community for each life as only $200 per annum, the financial loss thus represented is $75,000,000. These children have died before they have been able to give any return to their parents and the community. What a useless sacrifice of life and of money! How much needless sorrow and heartaches caused to parents! Besides all this, many a tuberculous mother has had her life shortened because she bore one of these children.

According to the report of the Commissioner of Education, there are at this time about 20,000,000 children attending public schools in the United States. Placing the proportion of tuberculosis among them as low as only 3 per cent. would make 600,000 children afflicted with tuberculosis who are at this time in urgent need of open-air instruction or sanatorium treatment. According to available statistics, we can at present provide instruction in open-air classes for about 2,000 tuberculous children. The anemic, the nervous, and the children suffering from cardiac diseases, who are in equally great need of outdoor instruction, are not included in the 3 per cent.

The 150,000 adults who die annually of tuberculosis have on the average been ill and incapacitated for work for at least two years, and figuring their cost to the commonwealth (either to municipality or individual family) at only $1,000 per year, would mean $300,000,000 uselessly spent in caring for people afflicted with a disease that might have been prevented or cured. Of these 150,000 adults, a large number have been married and in many instances leave either widow or orphans depending upon public support. The annual maintenance of these widows and orphans must, of course, also run into the millions. We have thus an annual expenditure of well-nigh $400,000,000. Yet this by no means represents all the actual loss to the community from tuberculosis. Our social economists tell us that between the ages of 16 and 45 every adult life with an average earning capacity represents an asset of $5,000 to the community. Now, as two-thirds of all deaths from tuberculosis in adults occur between these ages, we have an additional loss of $500,000,000. Thus, the actual direct and indirect loss caused by deaths from tuberculosis in the United States amounts annually to something like $900,000,000, and this amount we spend on a preventable and curable disease!

We must also bear in mind the fact that we have at least eight times 150,000 tuberculous adults, for it is well known that for every individual who dies of tuberculosis there are eight living with the disease, still up and about, and the majority of them with an opportunity of spreading infection. Besides these, there are 400,000 to 600,000 tuberculous children. By reason of lack of open-air schools, preventoria, sanatoria, special hospitals, and horticultural, agricultural, and industrial colonies, the vast majority of nearly 2,000,000 tuberculous individuals continue the chain of infection and keep up our fearful morbidity and mortality at an expense of $900,000,000 per annum.

To carry out the program I suggest will not cost us $900,000,000 a year. If at first it should even approach this vast sum, within a very few years the expenditure as well as the morbidity and mortality from tuberculosis will be reduced to a minimum.

This little study, inadequate and doubtlessly defective in some respects, has nevertheless convinced me that there never will be a solution of the tuberculosis problem if we do not attack tuberculosis in infancy and childhood. This must be done first by diminishing the sources of infection; secondly, by curing the curable.

While I am willing to grant that an early and benign infection may be an immunizing factor, we know that it is neither universal, permanent, nor complete, hence we must spare no efforts to dimin-

ish all sources of infection. It is the safer way. The measures outlined will prevent a benign infection from becoming disease and render the young child or adolescent more immune to future infections by increasing the natural resistance. The most expedient way to carry out the suggested program would of course be by a Federal Commission on Tuberculosis which I have ventured to suggest a number of times, but the need of which has been set forth very recently and most convincingly by Lee K. Frankel, Ph.D., sixth vice-president of the Metropolitan Life Insurance Company, in a paper entitled "A Plea for a Federal Commission on Tuberculosis." This paper was read before the Mississippi Valley Conference on Tuberculosis, September 30, 1915. This conference as well as the South Atlantic, New England, and North Atlantic Tuberculosis Conferences have unanimously adopted resolutions endorsing such a commission.

The child of to-day is the man of to-morrow. If we wish to have a non-tuberculous race, a nation stronger physically, mentally, and morally than we have ever had before, the solution of the tuberculosis problem will bring us nearer this goal.

16 West Ninety-fifth Street

THE MEDICAL ORGANIZATION OF SICKNESS INSURANCE.

By MICHAEL M. DAVIS, JR., PH.D.,

Boston, Mass.

Director of the Boston Dispensary

THE remarkable Report of the Judicial Council of the American Medical Association, presented last June at the San Francisco session of that body, is timely and important at a moment when much consideration is being given to extensions of the insurance idea as measures of public welfare. "In pursuit of its functions to investigate general professional conditions," says the Report, "the Judicial Council considers it a duty to bring before the Fellowship of the American Medical Association a report of certain economic conditions that are arising in this country."[1]

"Some form of workmen's compensation law has been already passed in more than half the States of the Union, and there is small doubt that before long such laws will have been passed in the majority of the States if not in every one. The passing of these laws does not mean that some new or special law has been passed to compensate an injured workman under the old common law system, but it means an entirely new legal and social conception of compensation for injury and is, in fact, the beginning of a new social and economic condition in this country. These new economic conditions affect very materially the medical men in a community. It is certain to bring up the questions in new forms of contract and lodge practice, of health and accident insurance, of State aid and State medicine. It will also affect the relationship between the boards of trustees and the attending physicians and surgeons in private and municipal hospitals. Economic changes such as these must be of concern to the general profession, and the Judicial Council feels that it is timely to describe in general what these workmen's compensation laws are and what are their social and philosophic foundations, and what the trend at present seems to be in their relation to the profession."

Following this introduction, the Council's Report surveys briefly the steps taken by practically all the countries of Western Europe in providing compensation for industrial accidents, insurance against sickness, old age, maternity, etc. The Report points out that while the United States has been the last of the great nations to enter this field, the movement, once started here, has been rapid, no less than thirty-three States having adopted workmen's compensation laws within the past five years. In most countries such laws, providing for compensation for industrial accidents, have been the first step, preceding the establishing of sickness insurance. The Council refers to the probability that State laws for sickness insurance will be presented to various legislatures within the next few years. "In the near future," says the Report, "the majority of medical men in this country must face a new social condition in connection with the laws of workmen's compensation in accident and probably in sickness."[2]

"Once the old social and legal equilibrium has been upset, society tends to follow to the logical conclusion until it reaches a new equilibrium under a new social system. We have in this country a disjointed mass of insurance schemes and pensions represented by life insurance, fraternal societies, so-called industrial insurance, which is in this country but burial insurance, and health and casualty insurance. There is the huge pension fund of the United States, which has really become the old age pension of those who fought on the Northern side in the Civil War. There are various industrial pensions for invalidity and old age, as in certain railroads or in certain large industrial establishments. In several large cities in the Union there is a rapidly growing expansion and extension of activities in the health board which constitutes State medicine.

"All these, at present, form an unrelated mass, all tending to give social aid in time of varying needs, to different members of the community. In several countries abroad the same various social elements have been combined into some form of workable adaptability by which various accident and sickness insurance, invalidity and old age pensions have been brought together to form social forces which have tended to reduce the destitution of large masses of human beings. These forces unquestionably tend to improve the social condition in any given community; and for the carrying out of any scheme tending to human betterment, the medical profession must necessarily be included, whether it be to judge of sickness or health insurance, whether it be for the prevention of the intensity of injury in the individual from accident, or for the prevention of the spread of disease in the community at large."

These far-sighted leaders of the medical profession thus look forward, like many laymen, to adaptations in existing medical service to meet new social conditions. Since a bill establishing sickness insurance will be introduced into the New York Legislature in 1916, and since more than one other State will doubtless experiment with sickness insurance within the next few years, it may be of interest to consider points in which the United States may possibly avoid some difficulties which foreign countries have experienced in dealing with the medical organization of sickness insurance.

In 1911, Great Britain adopted the most comprehensive system of sickness insurance yet extant. The act came into operation on July 15, 1912. It was aimed, as the official statement says, "to provide for insurance against loss of health and for the prevention and cure of sickness and for insurance against unemployment." The emphasis upon prevention is significant. An official summary says:[3]

"Insurance against ill-health is compulsory under the National Insurance Act for all employed persons who were sixteen or over, and under seventy, on the 15th July, 1912, and whose rate of remuneration is not over £160 a year; and all persons (within these age limits) employed by way of manual labor must be insured whatever may be their rate of remuneration. . . . The number of persons thus insured in the United Kingdom is nearly 14,000,000, and since the Act also affects their dependants, it may be said to influence either directly or indirectly the health of three-quarters of the whole population.

"The contributions in return for which insured persons receive benefits under the Act are payable jointly by employers, insured persons, and the State, the amounts ordinarily due being weekly sums of threepence from the employer, and fourpence from insured men and threepence from insured women; the State contributing two-ninths in the case of men and one-fourth in the case of women, of the cost of benefits and their local administration, as well as bearing the whole cost of central administration."

The collection of contributions, a huge task when millions of persons are involved, is made simple by the use of insurance stamps which are affixed to contribution cards at the time of the payment of wages. The stamps are purchasable at all post offices and the employers of insured persons must put them on the cards at the proper intervals and to the right amount. The employer pays the whole amount of the contributions in the first instance, but recovers from the employee the latter's share by deducting this from his wages. Persons must ordinarily obtain insurance through the Friendly Societies, which correspond, in a general way, to the fraternal orders in this country.

In return for the insurance payments, the benefits provided for the working men and women are as follows:

1. *Medical Benefit.* Treatment in illness by a qualified medical practitioner and necessary medicines and appliances.

2. *Sickness Benefit.* Weekly cash payments of 10s. for men and 7s. 6d. for women, for a period not exceeding twenty-six weeks. The payment begins on the fourth day of an illness which incapacitates the person from working. If the insured person remains incapacitated at the end of the twenty-six weeks, a disablement benefit of not over 5s. a week is allowed.

3. *Maternity Benefit.* The payment of a sum of 30s. on the confinement of insured women or the wives of insured men.

4. *Sanatorium Benefit,* providing for care of cases of tuberculosis.

In Germany, which began with compulsory sickness insurance in 1883, the administration of the system is supervised by the State, but is left primarily in the hands of local societies, chiefly organizations formed along occupational or industrial lines. The employee contributes two-thirds, the employer one-third of the payments. Medical care is provided, and the sick benefits are based on one-half the average wages of the class of employees to which the person belongs.

In the United States there has been an enormous development of so-called "industrial" insurance, now reaching some fifteen million policy-holders in private companies. This is practically nothing but burial insurance, providing, at high cost to the insured, a fund for funeral expenses. Insurance against sickness has appeared under private auspices in a few industrial establishments. Invalid pensions and old-age pensions have been worked out in some large industries, notably certain railroads. Fraternal societies have provided for a certain proportion of the working population the questionable lodge doctor. The only satisfying and striking development in the United States, as the Report of the Judicial Council says, has been the sweep of workmen's compensation laws, or accident insurance, which has spread into two-thirds of the States of the Union within the past five years. Except for this, social insurance is in its infancy in this country. Its future lies ahead; and in planning for this future Americans may well observe and profit by the experience of other countries.

The point of greatest difficulty in Germany and England has been the organization of the medical service for the sickness insurance. In both countries there have been severe conflicts between the insurance organization and the medical societies. In Great Britain, at the commencement of the war, there were, however, fully nine-tenths of the 22,000 physicians of the country on the insurance "panels" —that is, these 20,000 physicians were accepting insurance cases in their several districts. The doctor is ordinarily paid on the basis of so much per year for each person on his "panel." Allowance is made in addition for provision of medicines and appliances. The patient is free to select his physician from the "panel" of the district, subject of course to the consent of the doctor to act.

The financial outcome for the medical profession has been excellent. During the eighteen months following the initiation of the National Insurance Act, the payments to British physicians under the Act amounted to $20,500,000. This was an average of $1,150 for each physician on the "panels." The average payment per visit has worked out to be about one dollar. The average cost per patient per year for medical service for the first eighteen months was about $1.87. "It is claimed," declares the Report of the Judicial Council,[4] "that the insurance act has raised the level of remuneration in the profession, that the average income of physicians has been increased by from $750 to $2,000 a year. It seems to be the general opinion that individual physicians may have suffered and received less remuneration under this act than they formerly received under some special form of contract work; but the general amount of moneys paid to the physicians working among the industrial classes has greatly increased, and the average income of the physicians has evidently much increased."

What of the effects of the Insurance Act on the people? Previous to its passage, the situation was like that which now exists in this country. Millions of people have either no medical attendance at all or secure it only in grave emergencies. Such was the situation in Great Britain. The Insurance Act worked a revolution by making medical service accessible to the whole working population. The well-to-do classes have not, of course, been especially affected by the Act, nor have those physicians and specialists in the large cities, whose practice has been among the well-to-do.

The Act has vastly extended the reach of medical practice. It has not greatly affected the medical organization of practice, and this is its substantial defect from the standpoint of medical efficiency. The German system has been no better in this respect. Neither system has recognized the profound change which the advance of medical science has brought upon medical service. Exact laboratory methods of diagnosing many diseases have been substituted for guess-work. The applications of bacteriology, physiology and chemistry have revolutionized methods of diagnosis, treatment and prevention. The field of medical knowledge and the technique of practice in medicine and surgery, have become far too large and too complicated to be mastered by any one man. Specialists in a great variety of medical branches have been created. The general practitioner has largely lost his place

in the medical service utilized by the well-to-do. For general illnesses the wealthy call in the internist, who may be a sub-specialist in lungs or in gastrointestinal disease; for operations the surgeon, and here again a choice may be made among men each of whom gives himself to the surgery of a particular region; for a confinement, the specialist in obstetrics is called; in eye or throat trouble the oculist or laryngologist; the babies and little children of the family are under the care of a man who treats only children. The orthopedist is sought when indicated, while the laboratory worker and the *x*-ray man are frequently called upon to aid many of the specialists. The members of a single fairly healthy family might call upon five or six different specialists in the course of six months, while for a single obscure disease, two to ten men might be utilized. Should the patient go into a hospital, the same would be true: a group of the specialists who compose the hospital staff would work together on his case. There is, however, one essential difference between the situation in the hospital and that outside. In private medical practice the inter-relations among the various specialists, and between them and the patient, are not organized, except through those mutual understandings between physicians which are crystallized in certain sections of the code of medical ethics. In hospitals and dispensaries, on the other hand, these relations have been organized. Moreover, in private practice each physician has his independent equipment in his office, or depends for laboratory and *x*-ray work upon the offices of other men, who are remunerated for each case. In the hospital or dispensary there is organization of equipment as well as of personnel; duplication of instruments and apparatus is avoided, and each unit is put to the maximum use. It is, in fact, to the hospitals and dispensaries that we must turn to-day if we are to study medical service at its best.

The principle under which the medical organizations of the best general hospitals and dispensaries are organized is that of medical teamwork. In such varied institutions as the factory, the university and the hospital, we see exemplified the now familiar principle that specialization is necessary to the maximum of efficiency and that specialization requires organization if this end is to be achieved. The medical care of a patient includes two essential stages: the establishment of a diagnosis and the carrying out of treatment. In both stages the co-operation of specialists is important, but particularly in making the diagnosis. Even where the diagnosis is readily established, treatment often requires one who is especially expert in a particular service. When, as is not infrequently the case, several different specialists are needed for a single patient, their co-operation in working together is of the highest importance. Confusion in the mind of a patient in private practice today is not infrequent and the expense to the patient is enhanced by lack of organization.

The modern hospital is an institution for the organization of specialists for the care of patients who are sick enough to be in bed. These specialists utilize equipment in common. A dispensary similarly is an organization of specialists for the treatment of patients whose diseases do not prevent them from going out to see the doctor, that is, ambulatory cases. The relation between the hospital and dispensary from this standpoint is essentially that between the practice of a private physician in the homes of his patients and at his office. A dispensary is essentially an organized system of office hours; a hospital, an organized system of caring for patients in bed.

The advances of medical science have enormously increased the technical equipment necessary for the diagnosis and care of disease. Merely mentioning modern requirements of laboratory and *x*-ray service, not to speak of operating facilities and instruments, is enough to illustrate the point. This elaborate equipment is beyond the reach of the individual physician, even those dealing with the well-to-do. The hospital or dispensary can provide equipment for the use of many. Through organization it saves the time which physicians and particularly specialists spend between the intervals of seeing patients. An organization such as the famous Mayo Clinic at Rochester, Minn., exemplifies a dispensary organization which has been most carefully worked out with the maximum of medical as well as business efficiency in mind. Seventy-five picked men constitute its medical staff. The organization of the whole clinic is designed to aid in establishing diagnoses of disease and in providing or supervising its treatment by organizing the teamwork of its specialists with a minimum expenditure of time and maximum utilization of scientific aids to medical work. It also minimizes through organization, the confusion to which contact with a variety of specialists often leads in private practice among the well-to-do.

The same principles can be seen illustrated in the best dispensaries managed by charitable institutions and treating patients free or for nominal charges; and in the best hospitals giving care to bed cases.

Hospital service in America has developed enormously within recent years; dispensary service at an even faster pace. A million persons now receive treatment in hospital beds annually in the United States, and three million ambulatory cases are treated in dispensaries. The number of dispensaries has increased at least seven-fold in the last fifteen years. A report published in 1914 by a Committee of the American Hospital Association may be quoted:[5]

> "In 1900 there were about 100 dispensaries in the United States, 80 to 90 of these being general dispensaries. The number increased, year by year, with considerable rapidity, so that, in 1904, the Census Bureau, which then made a survey, reported 156 institutions, the actual number, allowing for probable omissions, being toward 200. Most of these, again, were general dispensaries, the remainder being for diseases of special organs, chiefly eye, ear, nose and throat. The growth of general dispensaries has continued, as may be seen from the preceding figures, the number of these having multiplied four times since 1900 and two and a half times since 1904.
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> "One of the reasons for this growth has undoubtedly been the increasing demand of medical men for clinical material, both for experience and for teaching purposes. Another reason is the growing demand on the part of the public, particularly the part of the public receiving low wages, which, in the large cities, has been put under heavier and heavier pressure by the rising cost of living. A third and very important reason is the growing interest in public health, which has taken up the dispensary as an agent in its campaign. This has undoubtedly played some part in the development of dispensaries treating general diseases. It has been the chief cause leading to the establishment of a very large number of out-patient clinics treating special diseases, particularly tuberculosis."

The justification of these references to the development of dispensaries and hospitals lies in the

fact that until very recently this development, particularly that of dispensaries, has been little called to the attention of the public. The application to the problem of sickness insurance is not far to seek. If a system of sickness insurance is to provide medical service for a large part of the working population on the financial basis provided by insurance payments, surely the medical organization of the system ought to be in line with the most advanced forms of medical work; or at least the system should contemplate development in that direction. Neither the British system nor the German organizes the medical service beyond the stage of individualistic private practice. The British system has failed to utilize the important existing centres of medical organization provided in the larger cities by the hospitals and dispensaries. Before sickness insurance was established in Great Britain, three years ago, a great part of the population suffered from a lack of medical service. It is a great gain to have met this deficiency but much still lies ahead. America should build upon foreign experience and go Great Britain one better. The developing movement for sickness insurance in the United States should provide or look forward to the best form of medical organization.

Practical suggestions to this end must be considered. Conditions of medical service in smaller communities or in rural districts are so different from those in cities that it is unwise to expect uniformity of system throughout. Within the boundaries of a single State such as New York or Massachusetts, conditions vary over such a wide range that a state system of insurance ought to provide for local variations and be sufficiently flexible to admit of development as local communities themselves advance.

In the larger centres the existing facilities of the hospitals and dispensaries ought to be utilized by the sickness insurance system. The dispensary is of especial importance to sickness insurance because its special field is prevention. Serious diseases in their earlier stages, minor diseases which sap vitality or reduce working efficiency, serious but not incapacitating diseases such as syphilis, gonorrhea, various diseases of the throat and other special organs, are examples which fall within the special field of the dispensary. People need to come to the doctor earlier so they may be kept at work or at least be sent back to work with a minimum of lost time.

The task of organization here is a large one. Experiments are now in order to test out various methods, each of which may be applicable to one or another set of local conditions. For example:

In the German and in English sickness insurance systems, voluntary organizations (such as are known in this country as trade unions, fraternal orders or establishment funds including the employees of a particular company) are allowed to make their own insurance arrangements with medical men under the supervision of the State Insurance Department. Undoubtedly, under any sickness insurance plan adopted in America, such approved societies would be similarly recognized. Such societies should be allowed to make contracts for their medical services under the insurance system with a dispensary or hospital. The physicians who provide the medical service through the medium of the institutions should receive the same compensation as the physicians who work outside as individuals.

Time and money will be saved if the care of patients who do not require confinement in bed can be so organized that the patients come to the doctor instead of the doctor traveling to the homes of the patients. This means either at the offices of the doctors or at a central place, namely a dispensary, to which the ambulatory cases come. Enough has already been said in this paper on the advantage of so organizing the service that the material and personal equipment of the dispensary can be used for these ambulatory cases. Merely utilizing the individual practitioner and therefore requiring many visits at the homes for the treatment of ailments which do not confine the patient to the house, is not economical and is not the most efficient medically, even disregarding its extra expense. The utilization of a dispensary also provides for the services of a medical team of specialists, but it would be decidedly unfortunate to utilize the dispensary for such specialists' services only. Existing dispensaries should be adapted or new dispensaries established to meet the conditions of the insurance system.

A large part of the sickness insurance is necessarily carried by other than the voluntary societies previously referred to. In this country these groups will necessarily be local associations of the insured persons. Such local health associations may, like the approved societies, make arrangements with an existing dispensary and hospital, or with an organized group of doctors who might either start a dispensary or arrange to utilize the equipment of one already established. By organized group of physicians is meant a body of men who have so selected themselves as to include a variety of medical interests or specialties, and who have agreed to work as a team rather than as individual practitioners.

Under the British and German insurance systems, persons above a certain grade of income are allowed to take sickness insurance as so-called "voluntary insurers," while all persons having less than a specified minimum income come under compulsory insurance and must join. Voluntary mutual insurance groups should be encouraged. The strongest encouragement, so far as sickness insurance is concerned, will be the possibility of securing high grade medical service at lower cost than would be possible without co-operation. Abroad, the voluntary insurers have been relatively few in number. In the United States there is a growing recognition of the difficulty with which the middle classes—professional men, small business men and moderately salaried positions of all kinds—can secure enough of the same kind of medical service which is now open to the rich and to the poor. By co-operation on the part of the patients, making up a volunteer insurance group, such a service could be financed; and by co-operation on the part of the physicians using the principle of medical teamwork and a joint diagnostic equipment, the service could be made medically efficient. If such an economic inducement can be offered to the middle classes, we may perhaps hope for the development of many voluntary health insurance groups.

To test out methods of medical service on the teamwork plan through such voluntary groups is of high importance. Either the equipment afforded by an existing hospital or dispensary, or that newly provided by a group of doctors associating themselves co-operatively, should be utilized. The former would usually be the more economical plan, the latter might better fit localities where hospitals

and dispensaries are poorly developed, and would meet the prejudice of those who have been accustomed to think of hospitals and dispensaries as only for "objects of charity."

In summary, the argument of this paper leads to the suggestion that a sickness insurance law should permit medical service on *either* the co-operative or the individualistic basis. The sickness insurance system should of course enable the present British plan to be followed of utilizing individual physicians (or the members of a district medical society) on a panel system, but as an alternative plan, it should also allow and encourage local societies or associations of the insured to make suitable arrangements for medical service with a dispensary or hospital, or if necessary, to establish such an institution. Only by utilizing a joint diagnostic and thereapeutic equipment, and the teamwork of a group of physicians, can the maximum service of modern medical science in the cure and prevention of diseases, be made financially accessible to the mass of the community.

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MERCURY ELIMINATION IN BICHLORIDE POISONING.*

By KARL M. VOGEL, M.D., and O. IVAN LEE, B.S.,
NEW YORK.

Medical literature abounds in references to the elimination of mercury after prolonged courses of treatment by this agent, and in reports of the results of analyses performed on the organs of persons dying from acute or chronic mercury poisoning. Few studies are to be found, however, relative to the important subject of the manner in which the living body disposes of the drug in cases of acute poisoning, largely, perhaps, because the classical methods of analysis are too time-consuming to permit of their use in the routine daily examination of the excretions for the periods of weeks or months sometimes necessary. By means of the method of testing for mercury developed in this laboratory[1] it has been possible to study in detail the channels by which the poison leaves the body, the time that is required for its complete removal, and other facts in regard to its elimination, all of which have been utilized by Drs. S. W. Lambert and H. S. Patterson in formulating a plan of treatment for these cases, with extraordinarily good results. Full details as to the theoretical considerations on which the treatment is based and the technique of its application are to be found in a recent article by these two authors.[2] During the period from January, 1914, to December, 1915, sixteen cases of bichloride poisoning have been treated in St. Luke's Hospital with only two deaths. The full clinical histories of many of these, with complete records of uranalyses, etc., are contained in the above mentioned contribution by Lambert and Patterson, and in the present communication it is the purpose only to mention briefly certain points not generally recognized.

*From the Pathological Laboratory of St. Luke's Hospital, New York, Dr. F. C. Wood, Director.

In the first place, our experience with these cases shows the advisability of making frequent routine tests on the urine, stools, stomach washings, and colon irrigation fluid in order to determine when it is safe to discontinue the treatment, and also to avoid protracting it unnecessarily. The fact that for a certain time mercury is re-excreted into the stomach is of importance, for by regularly repeated gastric lavage one interrupts the vicious circle of excretion and reabsorption and removes from the body a certain portion of the poison which otherwise would have to find egress through the kidney or bowel, with a consequent increase in the risk of serious damage to each of these structures. While ordinarily excretion by the gastric route ceases before it does so from the kidney and bowel, this is not invariably so, as is shown by case No. 11 of the table, in which mercury persisted in the stomach washings two days longer than in the urine or feces. That this fraction of the mercury is really excreted by the stomach wall and does not reach the organ through swallowing saliva or by regurgitation from the duodenum is demonstrated by the experiments of Lieb and Goodwin,[3] who found the metal in the stomachs of cats poisoned by the subcutaneous injection of bichloride, even though the esophagus and duodenum had previously been ligated. In this connection it is of interest to note that in case No. 13 mercury was recovered from the stomach washings, although the poisoning was effected by inserting half of a bichloride tablet into the vagina. Another point of interest is the length of time during which elimination proceeds. As will be seen from the table it is extremely variable and may be protracted to an astonishing degree, as in case No. 3, in which after a single dose of four tablets the mercury could still be recognized in the excretions more than three months later, in spite of the fact that the patient vomited promptly after taking the poison and reached the hospital within less than three hours. This patient suffered from almost complete suppression of urine for about a week, and that the renal efficiency was greatly reduced is shown by the low phthalein excretion, so that one's first impulse is to attribute the delayed excretion to this fact. The next patient in the series, however, No. 4, who also took four tablets, did not suffer from suppression of urine and her phthalein excretion never fell below 62 per cent., still with her also the excretion dragged along for more than eighty days. Yet in her case the conditions for the production of renal injury were apparently more favorable than in the preceding one, for she took first one tablet four days before admission to the hospital, two more on the day preceding admission, and the fourth on the day of admission, so that she did not reach the hospital till more than four days had elapsed after swallowing the first dose. The rate at which the drug is eliminated would seem to depend on some factor not yet understood, for a careful study of the histories of the cases shows that neither the size of the dose, the interval before the stomach is emptied by vomiting or lavage, nor the delay before treatment is begun by antidotes or the institution of eliminative measures have any definite significance in this connection. No doubt the mercury enters into combination with the protoplasm of the body cells and is held fixed by these until they disintegrate, but why this should take so much longer in some cases than in others is not easy to explain. An observation of much interest is the fact that in eleven of the six-

TABLE I

Case No.	Patient's Name	Date of Admission	Date of Last Positive Test for Hg.	Vomitus	Gastric Lavage	Stool	Urine	Sweat	Blood	Hg. Persistent Longest in	Days Before Elimination Complete	Result	Amount Taken	Remarks
1	C. P.	1914 January 23	1914 January 28	-	+	+	-		0 0	Stool	6	Cured	2 tablets.	
2	W. A.	March 3	March 10	+		+	+			Stool	8	Cured	1½ grains.	
3	H. B.	March 26	July 6	+	+	+	+			Stool	104	Cured	4 tablets	Almost complete suppression of urine for 5 days. Phenolsulphonephthalein Excretion; April 7, 3.3 per cent May 10, 71.4 per cent.
4	R. H.	April 9	July 2		+	+	-			Stool	85	Cured	4 tablets taken over a period of 4 days.	No suppression of urine. Phenolsulphonephthalein excretion never below 62.5 per cent.
5	E. N.	June 14	July 28	+	+	+	+			Urine	45	Cured	5 or 6 tablets.	Elimination not complete.
6	E. M.	July 11	July 22			+	+			Stool	12	Cured	1 tablet.	
7	V. W.	November 20	December 15	+	+	+	+			Stool	27	Died	An unknown amount.	Urine last positive for Hg. on Dec. 1. Suppression of urine 1 week. Phenolsulphonephthalein excretion: 13 per cent.
8	A. B.	December 29	January 6		0	+	0			Stool	9	Cured	1 tablet.	Neither urine nor lavage fluid were ever positive for Hg.
9	E. W.	1915 January 17	1915 January 29		+	+	+			Stool	13	Cured	Part of a tablet.	
10	E. S.	March 21	April 1		+	+	+	+		Urine	12	Cured	3 tablets.	
11	M. D.	May 2	May 8		+	+	+	+		Lavage	7	Cured	1 tablet.	Urine and stool both negative, May 7th and 8th.
12	A. S	July 15	August 2	+	+	+	+		+	Urine	19	Cured	1 tablet.	Sputum positive on July 19. Spinal fluid negative. Last positive test on stool July 27th.
13	W. L.	August 23	August 30		+	+	+			Stool	8	Cured	½ tablet	introduced into vagina. Spinal fluid negative.
14	V. B.	September 28	October 13	+	+	+	+	0	0	Stool	16	Cured	1 tablet.	
15	C. W.	November 15	December 7		+	+	+			Stool	13	Cured	Part of a tablet.	Elimination not complete.
16	W. M.	December 10	December 15	+		+	+	0	+			Died	4 tablets	in solution. Spinal fluid negative. Throat irrigation positive. Almost complete suppression of urine on last four days, with nitrogen retention in blood.

teen cases the mercury persisted longer in the stool than in the urine or stomach washings, and in two at least of the remaining five elimination was not complete when the patient left the hospital, so that possibly longer observation might have shown that this patient also belonged with the majority. A further observation bearing on this point was made on a case outside the hospital in which only a single examination was done, and which is therefore not included in the table. This patient was a woman who had been using frequent (often several times a day) douches of bichloride, the exact strength of which was not ascertainable, and developed a severe bloody diarrhea. Specimens of stool and urine were brought for analysis two weeks after the last douche had been used. Mercury was present in the stool, but not in the urine.

TABLE II

Case No	Date	R. B. C.	Hbg., per Cent	W. B. C. Total No.	DIFFERENTIAL COUNT Poly.	Lympho.	Eos.
	1914						
1	January 23	4,700,000	100	24,500	84	16	
2	March 3	5,300,000	95	10,000	72	28	
	March 9			7,500	60	40	
3	March 27	5,500,000		23,000	87	13	
	March 28			29,000	83		
	March 31			22,000	80		
	April 1			20,000	76	24	
4	April 23	6,000,000	100				
	May 10			11,500	78	22	
5	June 15	4,800,000	90	23,500	85	15	
	July 7			16,700	47	52	1
6	July 11	6,500,000	115	18,000	80	20	
7	November 22			70,000	92	8	
	November 26			19,500	87	10	3
	December 12	3,500,000	50	20,000	82	18	
8		No counts taken					
	1915						
9	January 18		80	17,500	74	26	
	January 25			13,000	66	32	2
10	March 26			5,500	59	41	
11	May 3	5,900,000	100	16,500	80	18	2
	May 4			13,500	74	26	
12	July 16	4,800,000	85	14,000	73	25	2
	July 18			7,300	61	38	1
13	August 23	4,800,000	95	11,000	60	40	
	August 26			5,000	66	34	
14	September 29	5,800,000	100	14,000	76	24	
	September 30			13,000	78	22	
15		No counts taken					
16	December 11	5,700,000	100	45,000	90	10	
	December 12			36,000	90	10	
	December 14			18,500	78	22	

Attention may also be called to the fact that in two of the four cases in which tests were made for the presence of mercury in the sweat, elimination of the poison by this route could be demonstrated, showing the advisability of employing hot packs as part of the treatment. In five tests made on the blood of four patients only two proved positive, and in three cases in which the spinal fluid was examined the result was negative, an observation quite in harmony with the well-known impermeability of the meninges and choroid plexus to the passage through them of drugs. Blood nitrogen determinations were made in only three of the cases. In one instance (No. 14) a curiously low result was obtained: non-protein nitrogen, 16.6; urea nitrogen, 8.6, with a phthalein excretion of 62.5 per cent. In another case (No. 12) the non-protein nitrogen was 31; urea nitrogen, 15; urea, 5.4; creatinin, 1.2, and the phthalein 45 per cent. In the third case (No. 16), which terminated fatally, the non-protein nitrogen was 100, the urea nitrogen 71.5, the uric acid 5, and the blood sugar 50, the figures, as usual, expressing milligrams per 100 c.c. of blood.

That some discretion should be exercised in the external use of bichloride solutions for surgical dressings is shown by the fact that mercury may be

detected in the excretions a few hours after the application of a wet dressing of this antiseptic. In one instance a 1:10,000 bichloride dressing was applied to the left elbow of a patient suffering from osteoarthritis, the skin being broken over an area a few centimeters in diameter. Mercury was found in the stool on one occasion, but not in the urine in spite of repeated examinations. In another case a 1:5000 bichloride dressing was applied to the elbow, the skin being intact, and the urine and stool both showed the metal for two days following.

The behavior of the leucocytes in bichloride poisoning is interesting and deserves further study. In nearly every case, as will be seen from the table, a leucocytosis appears early, subsiding again after a variable period. This is usually in the nature of a polynucleosis, especially when a high total count is observed, as, for example, in case No. 6, in which the high figure of 70,000, with 92 per cent. of polynuclears was reached, falling in four days to below 20,000. This phenomenon does not appear to be generally recognized, but should be kept in mind in order to avoid the chance of unnecessary surgical intervention in the presence of abdominal pain, vomiting, high leucocyte count, and an unsatisfactory history if there should be a possibility of acute bichloride poisoning either accidentally or by design.

Conclusions.—1. The elimination of mercury in cases of acute bichloride poisoning may continue for periods of time ranging from a week to several months, and treatment should be continued until it has been shown that elimination of the drug is ceasing. The excretion usually continues longest from the bowel, and systematic flushing of the large intestine should always be carried out, but the gastric mucosa and the skin are also important as channels of elimination and should be utilized in order to spare the renal epithelium.

2. A considerable leucocytosis with an absolute and relative increase in the polynuclear cells is practically always present.

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UNILATERAL HYDROCEPHALUS.

By EDWARD LIVINGSTON HUNT, M.D.,
NEW YORK.

INTERNAL hydrocephalus is not uncommon; unilateral internal hydrocephalus is uncommon, the usual distribution of fluid being to all the ventricles of the brain. The case which follows is one in which the hydrocephalus was limited to the left lateral ventricle. The cause of these ventricular accumulations of fluid is still obscure. Many are due to an obstructive lesion affecting the patency of the foramen of Monroe. Many are due to an obstructive lesion, probably tubercular, situated in the choroid plexus. Some are due to a gliosis of the Aqueduct of Sylvius, and more recently the work of Dandy and Blackfan has shown a type of hydrocephalus in which the channels are patent, the hydrocephalus being due to the diminished absorption from the subarachnoid space.

It is greatly to be regretted that this report must be so incomplete, and that it cannot trace the etiology of the condition, or give any of the microscopic findings. My thanks are due to Dr. A. W. Hollis for the privilege of reporting it.

Many have assigned reasons to explain the causes of these hydrocephalic conditions, but few have been fortunate enough to have had an opportunity to observe the patients with any care and detail before death. The following case was under close observation for some time; its report may, therefore, prove of some value.

Touche has reported a case of hydrocephalus which developed convulsions, an increase in the size of the head and finally a paralysis of both sides of the body. The autopsy showed both lateral and third ventricles dilated.

W. C. White reported a case of unilateral hydrocephalus in which a woman of seventy-four years had frequent attacks of hemiplegia. The autopsy showed unilateral internal hydrocephalus. Here there was an obstruction in the choroid plexus.

Spiller reported a case of unilateral hydrocephalus in which a child of fourteen developed bilateral contractions and muscular atrophy. The autopsy showed a unilateral hydrocephalus due to a partial closure of the right foramen of Monroe.

Mrs. C. was seventy-eight years old. She complained of headache and pain in the legs and feet. Twenty-five years before she had met with a shock, which had left the left side weak. She had recovered sufficiently so as to be able to use her hands and to walk. Her headache had been severe and of some weeks' duration. She was somewhat deaf, the urine was scant and light colored. There were times when she lost consciousness for several hours. No nausea or vomiting. The family history was not very illuminating. Her father died of Bright's, mother of consumption.

The previous history was unimportant. She denied syphilis; had had no miscarriages; was the mother of one child and was a moderate tea drinker. Lately she had lost some weight.

The patient was poorly nourished and looked chronically ill. The pupils were normal, there were no enlarged glands. The thorax was symmetrical, with good expansion. The heart action was regular and rhythmical. There was a faint systolic murmur heard all over the precordium. No accentuated sounds. The lungs showed nothing, but coarse moist râles all over the chest. The abdomen was negative, the liver and spleen not being felt. The patient had an attack of psoriasis. The knee jerks were present, there was neither ankle clonus nor Babinski. The pulse was regular and rhythmical. The arterial walls appeared moderately thickened.

The urine was 1,015 specific gravity, with a faint trace of albumin, no sugar, and many leucocytes and epithelial cells, and a few hyaline casts. Vaginal and rectal examinations revealed nothing. The Wassermann was negative. The blood examination showed 85 per cent. hemoglobin, with 6,500 white blood cells, polynuclears 37, lymphocytes 63. The blood pressure was 130-190.

The eyes as examined by Dr. Wiener: The upper edge of each disc was slightly indistinct. In each eye several of the arteries appeared narrow and pale, and in two or three places there seemed to be an interruption in their continuity. The veins looked a little congested.

The ears as examined by Dr. Dench: Both drums appeared retracted; there was congestion around the handle of the malleus.

The patient entered the wards on September 14 and that night was seized with convulsive movements of both arms and legs. These attacks continued with more or less severity for several days. A lumbar puncture was made, the fluid was clear, there were two cells, the Wassermann and the butyric acid tests were negative. The amount of urine passed each day varied from about 20 ounces to 35 ounces. Under mild sedatives and diuretics, she improved somewhat and sat up. At the end of two weeks she complained of pain in the back of her neck, and began to have difficulty in speaking correctly. She then began to behave queerly, soon becoming irrational and violent.

A few days later occurred an attack of cyanosis with general twitching and on October 17 she developed a general convulsion. On October 21, when the urine was 33 ounces, she had a very severe attack of cyanosis, in which she became rigid with an imperceptible pulse.

These attacks of cyanosis and twitching became more

and more frequent, recurring, as often as every hour. Finally, she died in one of these attacks.

Autopsy: By Dr. K. M. Vogel. The pupils are equal, and both react. Patient has psoriasis.

Heart: The valves are slightly thickened and there is moderate atheroma about the aortic ring. The coronary vessels are sclerotic, but not thrombosed. Mitral valve is moderately thick and stiffened. Orifice measures 9cm. Wall of the right v. measures 2 cm. Pulmonary valves show no abnormalities. Tricuspid slightly thickened.

Lungs: Left lung is voluminous and does not collapse. At the apex is a large and depressed cicatrix, with fibrous prolongations into the lung substances. On incision the upper lobe is found emphysematous, but dry. The rest of the lower lobe is also emphysematous, but the posterior portion contains much fluid, and from the bronchi much purulent secretion can be squeezed. The bronchial nodes are anthracotic, but not calcareous. The right lung is adherent at the apex, where there is an old cicatrix and in general appearance resembles the left. Upper and lower lobes show the same changes as in the left.

Spleen is extremely small, measuring only 4.5 by 2.5 by 1 cm. but it has the typical form of a normally developed organ. On incision the pulp appears normal.

Left kidney shows fetal lobulation; the capsule strips fairly well. The cortex is of uneven thickness, the surface is granular, the markings poor. The blood-vessels are somewhat thickened.

Right kidney resembles the left, except that it shows numerous cicatricial depressions where the capsule is thickened. The appearance of the parenchyma is like that of the left kidney.

Heart weighs 250 grams; left lung, 250; right lung, 250; left kidney, 100; right kidney, 75; liver, 925 gm.

Liver is small, surface is small, but the peritoneum is thickened over the anterior edge of the organ. On incision the parenchyma is seen to be somewhat mottled and is glassy in appearance.

The gall-bladder contains brownish bile, little mucus, and no calculi. Pancreas appears somewhat fibrous. Aorta shows extensive atheroma with calcification. Bladder, uterus, and ovaries show no abnormalities.

Brain: On removing the skull cap, the dura is seen to be much discolored over the parietal and posterior portions on the right side. On incising it there are found the remains of an old hemorrhage covering an area several centimeters in diameter. The surface of the pia is smooth, but there is an extensive infiltration of cerebrospinal fluid over the entire surface of the brain. The meningeal vessels on the right side are much congested. All of the vessels at the base of the brain are sclerotic. On opening the organ it is seen that the lateral ventricle on the left side is much dilated, especially in the occipital region and is distended with clear fluid. Sections through the brain show that the vessels throughout its substance are everywhere congested.

Diagnosis: Bronchopneumonia; subdural hemorrhage; cerebral arteriosclerosis; dilatation of the lateral ventricle; edema of the brain; atheroma of the aorta; endocarditis (initial); parenchymatous degeneration (fifth degree) of liver; chronic diffuse nephritis, psoriasis; chronic adherent peritonitis about the cecum; micro-spleen.

41 East Sixty-third Street.

THE HIGH FREQUENCY CURRENT IN THE SERVICE OF THE GENERAL PRACTITIONER.

By LOUIS COHN, M.D.,

NEW YORK.

THOUGH I have employed in my practice of over thirty years the galvanic and faradic currents, mostly in gynecological work, I have in the last five years used the high-frequency current in so many different diseases and with such success that I feel I ought to publish some of the rather striking cases and the results obtained.

I shall begin with some cases of nervous disorders, the following being one of obsessions:

CASE I.—A young man of 24 years, a bookkeeper, was sent to me by his employer for treatment. This young man, about 9 months before consulting me, was present at the death of his grandfather, which scene impressed itself to such an extent upon him, that he could not rid himself of this picture. After a few months it affected him so that he could hardly eat or sleep and finally was on the point of abandoning his work, not being able to concentrate his thoughts on it. He had sought the aid of a number of physicians, without being in any way benefited by their advice and treatment. On examination I found no physical defect, beyond this disturbance of the nervous system. He was rather unwilling to take any medicine as he claimed to have swallowed an ocean of it without benefit, but on assuring him that in conjunction with electricity it would bring about a cure, he finally consented to take a mild sedative. He received about 25 treatments in the form of autocondensation, which resulted in an absolute cessation of these delusions, and though three years have elapsed, no recurrence has taken place.

I have had two more cases of this nature, one of which has been restored to a normal condition, the other, though greatly improved, abandoned treatment on account of leaving the city. While such cases of psychopathy offer greater difficulties than the ordinary nervous cases we usually have to deal with, they react generally just as favorably. There is, however, no doubt in my mind that while the electricity is a great factor, the personal element in the form of suggestion adds considerably to the successful treatment in such severe cases.

And now let us consider the rationale of this treatment, which many physicians not alone do not believe in, but reject as absolutely worthless. Whatever the primary cause of these nervous disturbances may be, whether brought on by shock, worry, abuse, disappointment, overwork, etc., unless the condition soon ceases, we have in course of time a progressive involvement of the functions of all the organs. If we consider the nervous system the balance wheel of the body, we can readily understand why, with the lack of harmony and rhythm in the different organs, they themselves become secondarily victims of this condition. We speak of nervous dyspepsia, nervous palpitation of the heart, nervous intestinal derangement, extending to the urinary organs. We finally see the process of metabolism involved and both assimilation and elimination affected. This again brings about a condition of autotoxemia, a poisoning of the whole system; and here we have our vicious circle complete.

Now what does high frequency treatment do for such cases? In answering this question now, we shall see later on why this current is of great use in all cases where there has been a disturbance of the physiological processes of the body, whether in the circulatory, the secretory, the excretory, the respiratory, or the cutaneous system. The primary effect of this current is an increase of the metabolism of the body by improving nutrition and furthering elimination. This we may call the framework of our therapeutics, and if we add to this the vitalizing effect it exercises upon the circulatory system as well as its tonic action upon the nervous system, we have here a quartette of beneficent actions which no other therapeutic measure presents in a single form.

While some of our critics see nothing but concentrated heat in the high frequency current, which in itself is quite a useful therapeutic agent, we know from actual facts that through its dissemination of ozone it has both an antiseptic as well as oxygenizing effect. Besides mentioning the use of this current in the destruction of bacteria in the water, we

have the records of many authorities who have employed it for the development of plant life as well as for bringing about an improvement in the mental and physical life of children.

These various statements made by me in regard to the action of the high frequency current upon the physiological as well as upon the pathological process of the body, are discussed elaborately by S. H. Monell, M.D., in his text-book on "High Frequency Electric Currents in Medicine and Dentistry." Though some of his statements are considered by many as not entirely proven, my experience and the successful results following the use of this current in my practice leave no doubt in my mind that he is guilty of no exaggeration and that he is absolutely within the confines of truth and verifiable facts.

I am able to illustrate this phase of the current with a concrete example in the following case:

Case II.—Mrs. D. A., 59 years old, consulted me in regard to her extreme nervous condition, poor sleep, lack of appetite, sour and bitter taste in the mouth, and loss of weight amounting to 40 lbs. in 2 years, following an abscess of the right leg which confined her to bed for 3 months. A physical examination showed no lesions of any kind, except a moderate anemia. Treatment by very competent authorities had been without success, and she found herself now in a condition where life had become a burden. She was given an iron tonic and received the autocondensation treatment 3 times a week. She gained steadily in weight, the first month 4 lbs., the next 3 lbs., etc., and at the end of nearly 5 months her weight had increased 20 lbs. She weighs as much now as she ever did, has been perfectly well all these years, with all her functions in absolutely normal condition.

It is but fair to assume in this case that during her sickness a systemic absorption of toxins had taken place, which produced this nervous condition and also interfered with her metabolism, bringing about the loss of weight. The current by its oxygenizing power furthers all metabolism, and by improving both assimilation and elimination removed the toxemia, placed her nervous system in a normal condition, and restored her weight.

Here follows a case of vasomotor disturbance:

Case III.—Mrs. M. E., 65 years old, complained of frequent tingling of finger tips and a loss of tactile sensation, making it impossible for her to use a sewing needle and even making it difficult for her to hold a spoon, knife, etc., in her hand. She received autocondensation treatment 3 times a week for about 4 months, which restored all her functions to a practically normal degree.

As an incidental result of the treatment the patient claimed that her hearing had been greatly benefited, a statement which was also made by a gentleman, 78 years old, who had been treated for arteriosclerosis. While, however, it is evident that an improvement follows in such cases where there is a functional impairment of the auditory nerve, I have had no favorable results in two cases where a progressive diminution of hearing was due to a sclerosis of the middle ear.

Case IV.—Mrs. L. C., 42 years old, woke up one morning, not to find herself famous, but to find that she was cross-eyed, which I considered, after careful examination, to be a case of hysterical strabismus. A further examination of the eyes by an oculist revealed no intraocular changes, confirming my original diagnosis. About 6 weeks of autocondensation treatment followed up by the glass vacuum brought about a complete restoration of the affected functions and improved greatly her general condition

As pruritus is commonly considered an affection due to a disturbance of the nervous system caused by some systemic conditions, I shall present here three varieties of cases in which the high frequency current brought about a rapid cessation of that incessant itching which makes the life of its victim miserable.

Case V.—Mrs. M. R., 32 years old, of a very neurotic past history, had been suffering for a few days from a general pruritus; there was no cutaneous lesion of any kind and no organic cause detectable. The pruritus was considered by me as being of a purely nervous origin. She received about 3 weeks of daily autocondensation treatment which, as she said, made "life worth living for her once more."

Case VI.—Mr. S. C., 72 years old, a victim of senile pruritus, had consulted a number of skin specialists, but in spite of external medication and a great variety of local measures, he itched and scratched day and night. He was in a most pitiable condition when I saw him, and had abandoned all hope and all faith of ever being freed from his tortures. Though this case was a very severe one, 3 weeks of daily autocondensation improved the condition marvelously, and though it required many months, treatments given 3 times and then twice weekly, to bring about a complete cure, he has had hardly any trouble these last years.

Case VII.—Mrs. A. C., 64 years old, had been troubled with itching of the vulva for several weeks before consulting me; an examination of the urine showed almost 3 per cent. sugar—a case of diabetic pruritus. About 4 weeks of autocondensation, each seance followed by 5 minutes of glass vacuum treatment, did away with the itching and the diabetes. Concerning the latter I shall have something more to say later on.

It is clear that in these cases the current had not only a sedative and anodyne effect upon the nervous system, but a reconstructive and eliminative effect upon the whole metabolism. I shall not speak at length of these innumerable cases of neurasthenia, nervous agitation, that motor restlessness which sometimes takes hold of even the stoics, nor of those cases which suffer occasionally from the "blues," but I shall prescribe for them some autocondensation treatment with its stimulating effect, the veritable electrical "cocktail."

Let me now review a few cases in which the trouble was due to a lack of elimination of those toxins which are the foundation of rheumatism, gout, neuritis, and neuralgia, and which resist often enough even the best medical treatment. Rheumatism and gout, as well as neuralgia, yield readily to the autocondensation, sometimes followed up locally by the glass vacuum electrode; but when we have to deal with a case of neuritis we are obliged to have recourse to the diathermic treatment, which in its efficiency has absolutely no rival. Wherever this treatment in my hands failed to cure the patient, it was found that the neuritis was not due to a simple local inflammation of the nerve, but was based upon some systemic condition, as a tumor pressing upon the nerve trunk.

Here are a few varieties of severe neuritis, with their histories and successful treatment:

Case VIII.—Mr. D. S., 72 years old, came to me with a history of tic douloureux, for which he had received an alcohol injection; this for the time being abolished the pain, but produced a partial lockjaw, evidently due to traumatism, which, in spite of several months' massage treatment, had not improved whatever. A proposed operation to remedy this condition was declined. The patient, though not of a very hopeful nature, was satisfied to take treatment, though I could not assure him of how much I was able to benefit him. I used the diathermic current daily in the beginning, and within 2 months brought about a complete cure of the lockjaw. After about 4 weeks of treatment the pain in his liberated nerve started again, though not in quite as severe a form as before. With the continuance of the treatment, however, the pain ceased and returned only to

a very moderate degree during the next year, to be easily controlled by a few treatments.

CASE IX.—Mr. A. N., 52 years old, consulted me in regard to a sudden paralysis of one side of the face, involving the eyelids, a typical case of Bell's paralysis. In spite of my earnest advice to have him take treatment at once, he was not able to do so on account of an important business trip to the West. He consulted a physician there, who told him not to do anything about it, as these cases generally get well without treatment. As in most cases, patients very readily accept such an advice, he let nature take care of it, with the result that on his return 6 weeks later the condition was absolutely unchanged. It required about 2 months of daily diathermic treatment and faradism to the affected side to restore the nerves and muscles to an absolutely perfect condition.

Incidentally the patient revealed the fact that as a result of the treatment he had gained greatly in sexual power, a statement made also by another gentleman whom I treated for arteriosclerosis. I have not used this current specially for this purpose, but have no doubt that with its stimulating effect it could be made useful in cases of sexual weakness.

While the use of massage and electricity is always indicated in cases of paralysis following cerebral hemorrhage, after the acute attack has passed I have employed in the early stages of a number of cases the glass electrode of a portable high frequency machine with admirable results, following it up later with the autocondensation treatment.

CASE X.—Mrs. B. L., 44 years old, suffered excruciating pain in her left arm, and though she had been under treatment of an osteopath for many months and had also subjected herself to the baking process for some time, her pains were as severe as ever, tormenting her day and night. It required several months of continuous diathermic treatment to restore her to a normal condition, free from pain and able to use her arm fully.

CASE XI.—Miss E. C., 28 years old, a nurse, had been suffering from neuritis of the right arm for over 2 years. Being attached to a hospital, she had the advice of a number of physicians, but in spite of it found no relief and was brought to a point where she was almost unable to use the arm. Several months of diathermic treatment brought about a complete cure, the full use of her arm.

In spite of the fact that I heard a gentleman who uses this current in his practice say that he was not able to get results in sciatica, I have had gratifying results in a number of cases, of which I shall quote here the following:

CASE XII.—Mr. M. G., 45 years old, a commercial traveler, was obliged to return from his trip on account of severe pains in his left hip. An examination showed the maximum of pain over the sciatic notch radiating toward the knee and increased by any movement overstretching the nerve. It required but a comparatively short time to mitigate the severity of the pain by using the diathermic treatment followed by the glass vacuum electrode. He continued this treatment for several weeks, when he was discharged entirely freed from all pain.

Though I have still a predilection for the use of the galvanic and faradic currents in gynecological cases, I have employed with pronounced success the diathermic high frequency current in several cases of ovarian neuralgia, stimulating in two cases original attacks of appendicitis, lacking, however, rigidity of the muscle and pronounced febrile temperature.

As elimination is the basis of the treatment of all such cases, it is clear that this current furnishes an admirable means to bring about this result, and it is therefore also very useful in colds, bronchitis, and respiratory difficulties. We read here and there of what to take to abort a cold. I would suggest some autocondensation treatment, followed up by sime aspirin, quinine, and a hot lemonade. It is effectual beyond all peradventure.

Asthma, being a reflex neurosis, depending upon some irritating point in the system, as nasal, bronchial, gastric, intestinal, or secondary to some systemic disease, and caused by the contraction of the smaller bronchi, yields readily to the high frequency current, which, being antispasmodic in its action, readily dilates the constricting vessels and in a short time produces a great improvement and often a lasting cure. Here we find often the autocondensation sufficient, though in severe cases I would advise the diathermic treatment. As I lack as yet a sufficient personal experience to speak categorically upon the absolute value of this current in cases of pulmonary tuberculosis, I prefer to send such patients to the mountains, in combination with the high frequency treatment to be used there. I would advise, however, in cases where there is a pulmonary weakness without there being any tubercle bacilli found in the sputum, a systematic prolonged high diathermic treatment, which would materially strengthen the lungs and possibly prevent an entrance of the tubercle bacilli into the tissues.

The current by its effect upon the circulation relieves congestion of the tissues and prevents inflammatory conditions which arise from this engorgement. It is, therefore, effectual in all catarrhal conditions, as can be seen in the following case:

CASE XIII.—Miss L. B., 32 years old, had been suffering for many years from frequent attacks of pain in the gall-bladder, the pain shooting up toward the right shoulder, pathognomonic of gallstones. While I advocate operation in such cases, the patient was in such a debilitated condition that I was persuaded to use the high frequency treatment before employing radical measures. The treatment extended through many months, and though there was never any physical evidence of stones having passed, she improved greatly in her condition and has hardly any pains now.

We know that gallstones *per se* do not cause any pain, but are only painful when we have an inflammation of the mucous membrane of the gall-bladder. The current, therefore, evidently restored this part to a normal condition and removed hereby the cause of pain.

In appendicitis I have followed the invariable rule that unless there was an improvement of the patient in twenty-four hours the case was of an operative nature; though we know that usually the first attack is followed by others and that operation is finally necessary. Considering, however, that many of these cases are purely catarrhal without being primarily of an infectious nature, I have in the last five years used this treatment after the cessation of the acute attack and have on record four cases of one attack, and one case of two attacks (this one I saw only in his second attack), where there has been no other attack within the period of one to five years. Of course, I know that this fact does not bar the possibility of their falling victims to this disease again, but meanwhile they are entitled to a suspension of judgment.

In this connection I wish to cite two surgical cases:

CASE XIV.—Miss G. V., 32 years old, in descending from a car fell into a cavity of the street which was torn open on account of a subway construction. The injury to her right knee was so extensive that in spite of her absolute rest for 3 weeks, combined with appropriate treatment, it was determined to send her to a hospital for surgical intervention. Before invoking this measure, however, the patient was brought to

me for a further examination. An x-ray picture showed no injury to the bone but a marked infiltration of the soft tissues, making it impossible for the patient to use the foot to any degree. Daily diathermic treatment followed by the glass vacuum application brought the case to a successful termination in about 6 weeks and enabled the patient to use her foot as well as ever.

CASE XV.—Miss L. R., 30 years old, in falling from a bicycle broke the lower end of the tibia, and after two unsuccessful settings of the limb, 6 weeks having meanwhile passed, had to be operated upon. With the aid of Lane's plate a perfect union resulted. However, in spite of this apparent bony success, the patient could not use the limb, a rather severe infiltration of the soft tissues having followed the early operation and still being present. A course of the same treatment as in the preceding case was entirely successful in restoring the natural contour of the foot as well as its functions.

The potential qualities of the high frequency current in subduing inflammatory conditions, in restoring stiff joints to their original flexibility and usefulness, have been fully recognized by the medical authorities of the warring nations, for it is used in almost all the field hospitals where the crippled and rheumatic soldiers exposed to the climatic changes in the trenches, are taken care of.

While the high frequency current has shown a curative effect in all those preceding illustrative cases, I shall now discuss three groups of diseases where the current may bring about a cure in the early stages, but will so greatly modify the worst manifestations of the chronic condition and contribute so much to the well-being of the patient that I consider its use in these diseases almost imperative. I shall not enter into details about the different types of kidney diseases, for after all they have all the same pathological basis, an inflammation and subsequent degeneration of the kidney tissue. While I invoke all the therapeutical measures in these cases, as medicine, diet, hygiene, and hydrotherapy, I have more faith in the efficiency of this current than in all the other therapeutic means. In its diathermic application it relieves the congestion and regulates the vascular supply of the kidneys, and by aiding their efficiency of elimination prevents in most instances a further degeneration and practically keeps the disease in *statu quo*, thereby materially increasing the chances of a prolongation of life. As it is my conviction that diabetes is primarily a nervous disease, affecting profoundly the metabolism of the body and filling the blood with an excess of sugar, it is self-evident, therefore, that the high frequency current is an extremely valuable remedy in these cases. While the dietary regimen is an absolutely essential feature in the treatment of this disease, the autocondensation application will materially aid in the diminution of the sugar percenage as well as in both improving the nervous system and aiding the metabolism of the patient.

But it is in arteriosclerosis that we find the high frequency current the remedy par excellence. I have had a great many cases of this nature and I can absolutely affirm that every patient has left me on the completion of the treatment with the assurance and the evident appearance that he had been greatly benefited by the current, and that all those little reminders of old age's insidious approach had either entirely disappeared or had greatly lessened. It is rare that the physician is consulted in the very beginning of the disease, as its early manifestations, as a little dizziness, tingling in the extremities, that tired feeling which at times takes possession of so many of us are not sufficient to arouse any suspicion of the nature of the trouble; but when the patient complains of a great deal of palpitation or of precordial tightness on exertion, when rapid walking becomes an impossibility, when every little exertion becomes almost painful, then the physician's advice is fervently sought and every aid and relief appreciated. As in all chronic diseases, diet, hygiene, moderate living free from excitement and strenuousness are necessary elements in the management of the case, to which we add the life-giving qualities of this current. With an amelioration of the general condition, there is generally a fall of the blood pressure, an evidence of the lessened obstruction to the blood current. When we consider the constant effects of this current upon circulation, upon metabolism, upon excretion, we can hardly wonder at the result it produces upon a system which needs help so badly. I would compare it with that timely lift which one so gratefully appreciates when wearied from climbing a hilly path—a gentle arm aids one in the final ascent.

It is, therefore, not an exotic dream but within the domain of a stern reality to believe that this current, so potent in arresting the disintegrating progress of life's bête noire, hardening of the arteries, can be used successfully to prevent or, at least, to postpone the epoch of its arrival. I am satisfied that by its regular and timely application this current would perhaps not perpetuate eternal youth, but would vindicate the accepted maxim that man is as old as his arteries, by preventing their early aging.

The following case represents fully the general type of the disease in not too advanced a stage and will serve sufficiently in showing the benefits from this treatment:

CASE XVI.—Mr. E. H., 68 years old, has been suffering greatly from precordial pains on the slightest exertion. He is hardly able to walk a few blocks without experiencing pain, is easily fatigued, and his digestion is poor. An examination shows a cardiac hypertrophy with an accentuation of the aortic second sound, a hard, tense pulse and a blood pressure of 180. A course of twenty-five autocondensation treatments, given three times a week, brought the blood pressure down to 165 —the degree of the improvement on this point varies in many cases—improved his digestion, and made it possible for him to walk for quite a distance without any pain whatever. His general condition was infinitely better and remained so for about eight months, when he took a second series of treatments. It is always necessary to repeat these treatments within six to twelve months, as the effect wears off during this time.

We now approach another phase of old age's discomforts and inconveniences, an enlarged prostate with its tribulations of frequent urination. We know that surgery is often successfully resorted to, but unless the case is extremely bothersome we prefer to suffer rather than to risk an operation at an advanced age. However, while the high frequency current cannot entirely abolish the ravages of age, it can undoubtedly improve the condition sufficiently to warrant its use in every case before submitting the patient to surgical measures. Though I have had fair results with the rectal glass electrode, I have in the last years used the diathermic method with the most gratifying results. While in some cases the diminution of the gland is not a very pronounced one, nevertheless the frequency of urination has been greatly lessened. The following case is a typical one and shows clearly the improvement following a prolonged diathermic treatment:

CASE XVII.—Mr. M. A., 72 years old, consulted me in regard to his frequent urination, being under the con-

stant necessity of emptying his bladder almost every hour during the day and night. On rectal examination I found a rather large prostate, undoubtedly causing this symptom. He had a diathermic application three times a week for about three months with the result of diminishing both the area of his enlarged prostate and the frequency of his urination. He was able to hold his urine for three hours at the time, and never was compelled to void it during the night more than two or three times.

I have also used this current in acute and chronic prostatitis by the diathermic method and am absolutely convinced that its use in all such cases will bring better and quicker results than any other mode of treatment bereft of this effective auxiliary measure.

As stated before, the current is a powerful antiseptic agent, and, therefore, extremely useful in all cases of boils, carbuncles and infected wounds, as well as in inflammations of the lymphatic glands. In the early stage of the inflammation before suppuration has taken place, its action is both absorbing and germ destroying; and it hastens the terminal stage after the pus has been evacuated and thoroughly drained. The following interesting case speaks with its own eloquence:

Case XVIII.—Mr. E. K., 25 years old, consulted me in regard to a chain of about six carbuncles encircling with a rather grim tenderness his unwilling neck. He had been suffering for a year from these decorative endearments, and though they had been cut and poulticed and had been subjected to all sorts of vaccine treatment, together with medicinal measures, they were loth to part company with my client. After opening two of these carbuncles filled with pus, I applied the glass electrode to all of them and persisted in its use daily in the beginning, and then every other day for about six weeks. The persuasive power of the current was too much for them, they departed in peace, and though two years have since gone by, they are still counted among the absentees.

I have had also several cases of cervical adenitis, in which a disappearance of these enlarged glands followed promptly the application of this current. Though I could relate a few more interesting cases which have been successfully treated by this current, it would be but a repetition of the success shown in others and would transgress the limits of this short essay. I shall, therefore, but briefly touch upon the fulguration treatment for which this current can be used in cases of hemorrhoids, carbuncles, warts, moles, and other skin blemishes. Of course, a general practitioner is not apt to get many such cases, nevertheless it is gratifying to state that all the cases I have treated have been markedly successful. I shall quote the following case of internal hemorrhoids:

Case XIX.—Mr. F. S., 62 years old, was operated upon for bleeding internal hemorrhoids several years ago, and remained well up to a few months before consulting me. On examination I found a group of small bleeding hemorrhoids not far from the sphincter and very accessible. After thoroughly cocainizing them, I employed fulguration for about 10 minutes twice a week. Three weeks sufficed practically to efface them—the bleeding was controlled after two treatments—and though three years have elapsed, no return has taken place.

Unless the hemorrhoids are very large and numerous, in which case an operation is the only remedy, the fulguration method is extremely satisfactory. It is practically painless, does not interfere with the work of the patient, and is absolutely efficient in its results.

In view of the many brilliant results the high-frequency current produces, it may be astonishing to many that it is not as much employed as its merits deserve. The answer is a simple one: it requires a great deal of time on the part of both patient and physician—time of application as well as duration of treatment—involving an expense which is beyond the means of many who really are in need of this treatment. It is, therefore, not used as much as it should be in acute cases, and employed only as the last refuge in chronic cases when other means have failed to serve the purpose.

While I do not wish this current considered a panacea, still there is no other remedial agent comparable to it in its wide application and curative potency—a veritable elixir of life.

1261 Madison Avenue.

THE USE OF STEAM IN THE TREATMENT OF SUPERFICIAL CANCER.

By WILLIAM J. GILLETTE, M.D.,
TOLEDO, OHIO.
SURGEON TO ROBINWOOD HOSPITAL.

The value of heat in the treatment of cancer is now pretty generally conceded. As is well known, John Byrne was one of the first to recognize its possibilities, and, employing it for cancer of the uterus, had surprisingly good results.

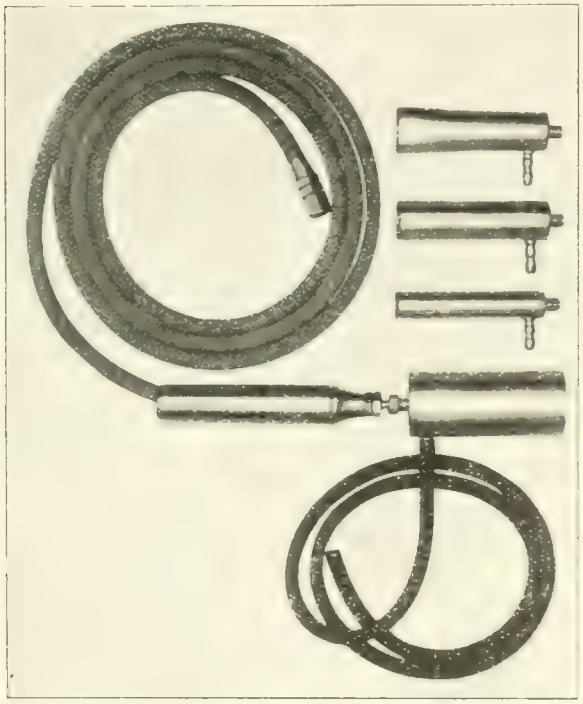
Dr. Fredericks of Buffalo followed in his footsteps and had likewise excellent results in the same class of cases. These gentlemen used heat of sufficient intensity to cauterize the tissues, which we know is not necessary. Haaland found that the cancer cell is destroyed at a temperature between 122° and 136°, a temperature that does not destroy the normal structure. With this idea in mind, the past few years Dr. J. F. Percy of Galesburg, Ill., has been able greatly to advance the treatment of cancer of the uterus with his especially devised heating irons (not cautery irons) and water cooled specula. His operation is in no sense a cauterizing operation and does not undertake the removal of any portion of the uterus.

The marked success obtained by this method, even in cases otherwise inoperable, not only by Dr. Percy, but others who entirely confirm his claims, together with my own previous experience with the cautery, led me to employ heat also in the treatment of superficial cancers. For this purpose, the past two years, I have used superheated steam, and have found it of great value in the destruction of large fungating cancer and sarcoma masses and in subjecting large surfaces to heat as after the removal of the mammary gland by the Halsted operation. I have used it seventeen times upon sixteen cases and have been greatly pleased to see under its influence cancer masses promptly disappear with satisfactory healing. So far as I know, in four instances only has there been recurrence and in one of these I have had the privilege of resteaming with apparently good prospects of ultimate cure.

Of course it is yet too early to say others of this series will not recur. If recurrence does not take place locally, it is too much to expect that in all, metastasis had not taken place before operation, and in such, recurrence is sure to follow. All of these patients, with the exceptions noted and three now undergoing treatment, are clinically well. The tremendous influence of steam in the destruction of cancer is so marked and satisfactory that I am sure in time it must become a recognized agent in the treatment of cases suitable to its employment.

So far as I know, it has never heretofore been used in the treatment of cancer, though Doyen a few years since is reported to have experimented with steam as well as hot air and hot water, but discarded them all in favor of the high frequency current (diathermy). I believe he did not actually employ steam for the treatment of cancer, thinking that it would not sufficiently penetrate tissue. This conclusion was certainly incorrect, for under proper pressure, it may be made to penetrate tissues to the depth of an inch or more. It does not readily permeate fascia or firm layers of fat, but this objection is easily overcome by puncturing with the scalpel, in multiple places, any fascia over which it is to be applied or, what is better, by removing it entirely. The same procedure may be employed with fat.

Again, steam has a selective property in most cancer cases, for the reason that it follows the line of least resistance, and cancer usually being not of so firm a texture as its surrounding tissues, will be in-



vaded when the neighboring structure is left intact. This I consider one of its most valuable characteristics. To my surprise, following its use, I found that patients were entirely free from pain and usually remained so throughout the entire process of healing.

For the employment of steam, I have had DeVilbiss & Co. of this city, make me some metal shells, as shown in the cuts, enclosing tubes of small diameter through which steam is forced into cancer tissues, at a boiler pressure of from fifty to fifty-five pounds. The shells act as a protection to structures it is not desired to treat. They are made in four sizes and used attached by a handle to a six-foot length of fiber-tubing able to withstand a pressure of one hundred and twenty pounds.

The used steam is carried from the shell by way of the small nipple, at its upper end, to which is attached a rubber tubing leading to a pail of water. This instrument, while crude, and leaving many improvements to be desired, is yet efficient, and I have employed it with a very high degree of satisfaction.

A PRACTICAL METHOD FOR ESTIMATING THE PROTEIN CONTENT OF CEREBROSPINAL FLUID.

By J. A. F. PFEIFFER, M.D.,

WASHINGTON, D. C.

Considerable importance has been attached to the results of investigations regarding the protein content of the cerebrospinal fluid, which have been utilized in recent years by neurologists and psychiatrists throughout the world, for the differential diagnosis between syphilitic diseases and other affections of the central nervous system.

The amount of protein contained in normal cerebrospinal fluid is quite small, and consists chiefly of globulin and albumose. In acute and chronic inflammatory conditions of the nervous system, an increase of the protein content of the fluid occurs, usually associated with a marked leucocytosis. In cases of progressive degeneration, irrespective of the great excess of fluid, it is found that proteins are greatly increased in amount. A considerable part of the proteins may be coagulated by heat between 75° and 80° C.

The various methods which have been devised for the determination of proteins in different fluids, after some modification, are in most instances also applicable to the cerebrospinal fluid. A number of different reagents have been employed both in the qualitative and quantitative estimation of proteins, such as alcohol, ammonium sulphate, butyric acid, sulphosalicylic acid, and others. Ammonium sulphate has been used by Nissl for the demonstration of globulin in the cerebrospinal fluid, and by Nonne and Apelt in performing their reaction.

Sulphosalicylic acid has been shown to be an excellent precipitant for quantitative work, and has been utilized in this laboratory for some time in the routine examination of the cerebrospinal fluid for protein in the following manner, which has proven to be a most convenient, practical and satisfactory method: 3 c.c. of a 4 per cent. solution of sulphosalicylic acid are placed in a test tube 1 cm. in diameter, and 0.5 c.c. of cerebrospinal fluid allowed to flow down the side of the tube on to the surface of the acid, when a characteristic white ring appears, if an excess of protein be present, which reaches its greatest intensity in two minutes. An approximate estimation as to the degree of excess may be obtained by performing the test in several tubes, with dilutions of the spinal fluid from one to five, and comparing the results.

Dementia Precox and the Adrenal Gland. — Dunlop Robertson states his belief that the catatonic type of dementia precox is due to an excess of adrenal secretion in the blood. He has come to this belief through a mass of testimony in the literature and through the result of a blood test made by himself. Two samples of blood were taken—one from a normal person, the other from a catatonic, and tested with a solution of potassium bichromate. The addition caused a quite dark coloration of the catatonic blood, the other blood presenting no change. In anticipation of the objection that the adrenal secretion should cause increased blood pressure, whereas in catatonic precox the blood pressure is usually lowered, the author suggests that it is not improbable that an excess of adrenalin may reduce the pressure, for it is well known that many organic substances produce opposite effects according as they are given in large or small doses.—*Journal of Mental Science.*

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NATIONAL QUARANTINE.

IT is very probable that the cessation of the war in Europe will be shortly followed by a vast emigration from all the now warring countries to the United States. The possible shortage of labor in those countries will be more than balanced by the business depression and poverty that will prevail, and the contrast of the material prosperity of this country will attract men and women of all classes as it never did before. With these hordes of seekers for peace and plenty will come to us the danger of infection, and the responsibility of the quarantine authorities in all ports of the Atlantic coast will be immeasurably increased. A consideration of this possibility, or rather probability, must keep acute the question of national control of the quarantine stations of the country.

As the MEDICAL RECORD has repeatedly urged, the prevention of the introduction of disease into the United States is preeminently a function of the general government and not one of individual States or municipalities. Since most of the immigrants who enter through any port, especially that of New York, do not remain there but scatter to every State in the Union, the problems associated with immigration are necessarily national ones. This fact is recognized fully and acted upon in all respects save in the matter of quarantine, and even in the latter with the exception of the two ports of Baltimore and New York, all the other quarantine stations of the country being now in charge of the United States Public Health Service.

There is absolutely no reason why New York should not follow the example of the sixty-seven ports which since 1888 have transferred their quarantine functions to national control, and the recent regrettable death of Dr. O'Connell, the health officer of this port, would seem to emphasize the wisdom of making the transfer at this time. If the Public Health Service is invited to take control now the station will be at once placed in charge of experienced officers, whereas if a new State official is appointed, although he may eventually become as efficient as was Dr. O'Connell, he will have first to acquire experience, and in the meanwhile New York and the entire nation may have to suffer from the consequences of mistakes which even an expert sanitarian is liable to make while familiarizing himself with the difficult conditions of the New York quarantine service. Such an opportunity to make this change without the necessity of displacing a faithful officer is unique, deplorable as is the event which has brought it about, and Governor Whitman has shown that he is alive to the situation by recommending, in his annual message to the Legislature, that the office of Health Officer of the Port be abolished.

THE CONTROL OF TUBERCULOSIS.

TUBERCULOSIS is an infectious disease, presumably acquired by the inhalation or ingestion of the specific bacilli extruded from the bodies of tuberculous men or animals. It is possible therefore that the strict isolation of all sick humans and the slaughter of all sick animals continued over a long period would bring about the extinction of the disease. This is, of course, assuming that the parasite cannot live and multiply for any considerable period in other media than animal tissues, and that other acid-fast or non acid-fast organisms cannot, through a process of mutation, acquire the pathogenic properties of Koch's bacillus.

One is encouraged to believe in the possibility of the extinction of this disease by the results obtained by isolation and early treatment of the tuberculous. At the recent Second Annual North Atlantic and New York State Conference on Tuberculosis, Dr. Victor G. Heiser, Director for the East of the International Health Commission, Rockefeller Foundation, stated that in Victoria, Australia, tuberculosis had been virtually stamped out by the simple method of prompt treatment of every individual afflicted with the disease. This treatment is carried out in the man's home if the authorities have convinced themselves that he does not constitute a center of infection there and has a reasonable chance of becoming cured; but if the sanitary officers, after investigation, are convinced that the patient cannot be treated safely at home, he is removed to an institution. If the patient is the bread-winner of the family and has no means and his invalidity insurance is insufficient, the municipality assumes the responsibility of taking care of the family until the bread-winner is restored to his earning capacity. Women and children, when tuberculous, are taken care of in the same way as the adult males, that is to say, they are removed from their homes, when in the opinion of the sanitary authorities they constitute a menace to their families or the community, and are subjected to enforced segregation in a sanatorium or hospital.

It is difficult to conceive of the carrying out of any such plan as this, at least in its entirety, in any of our large American cities, as for example New York or Chicago, with their heterogeneous populations and their social conditions and economic laws so different from those in Australia. With conditions as they exist here to-day the enforced segregation of the tuberculous would often work extreme cruelty such as would not be tolerated by public opinion. The authority to do so undoubtedly resides in our boards of health, but no health officer would dare, even if he had the will, to exercise such authority until the public had been educated up or

down to the idea that the community, the State, is everything, the individual nothing, or until phthisiophobia had so obsessed the public as to drive it to the same extreme of hysterical inhumanity as leprophobia, for instance, does to-day.

Dr. Heiser, however, is rather more optimistic, for he believes that "by a united effort on the part of the statesmen, to bring about insurance against disease, including tuberculosis, on the part of the municipal authorities, enforcing antituberculosis laws and regulations as above outlined in a strict but humane way, and lastly, on the part of philanthropists aiding both agencies by improving general housing and working conditions of the masses, the tuberculosis problem might be solved in the United States as well as it has been solved in Australia, in less time than is thought possible. It needs a wise and just government, a practical and expedient municipality, well trained sanitarians and physicians, and an intelligent people and the goal can be reached." These, we must admit, are rather large needs; but, no doubt, if we had such a government and such a people, such wise statesmen and more of such philanthropists, this and every good and desirable sanitary goal could be reached with ease and certainty.

THE ESTIMATION OF TOLERANCE TO SUGAR.

It has been the custom to estimate a patient's tolerance to sugar by determining how many grams of the substance can be given by mouth at one time without causing glycosuria. The objections to this method are quite obvious for the degree of increase in the blood sugar, following such a dose must depend upon the amount of the total dose absorbed from the stomach and the rate at which it is absorbed as well as the rate at which the body cells are able to utilize this material and the amount which can be contained in the storage places in the body. It is clear then that in order to determine the ability of the body to utilize sugar, the substance must be administered directly into a vein and the result expressed in terms of time as well as rate, *i.e.* grams of glucose per kilo of body weight per hour of time.

This argument is clearly set forth by Woodyatt, Sansum, and Wilder (*Jour. Am. Med. Assn.*, 1915, lxv, 2067), who have devised an apparatus whereby solutions can be driven into a vein at a regular and fixed rate. As a result of their experiments they have found that a normal rabbit, dog, or man can utilize between 0.8 and 0.9 gram of glucose per kilo of body weight per hour without glycosuria for an indefinite time. Injections have been given for as long as two and one-half hours to man and twelve hours to animals. They emphasize the possibility of using the method for feeding, for at the above rate a man may receive 252 calories per hour into the vein and be able to utilize them. The tolerance for other sugars, levulose, galactose, and lactose, was found to be much lower than the figures given above. If now the amount of sugar administered be increased above the tolerance limit, a glycosuria is induced and with it a polyuria. When the rate reaches 5.4 grams per kilo an hour about 3.6 grams per kilo an hour are excreted in the urine and the diuresis is enormous. The amount of urine has reached the almost incredible figure of 600 c.c. per 10 kg. of body weight for one hour which would correspond to 100 liters in the twenty-four hours for a man weighing 70 kg. Needless to say, such a process cannot last long, for if no water is supplied the animal soon becomes dehydrated, while if enough is supplied to make up the deficiency the heart soon gives out.

The clinical applications of these observations are obvious, and the authors mention a number of them. The intravenous administration of food; the abstraction of any desired amount of water from the body; the flushing of the body with a great stream of water in the case of poisoning; the application of the method to diabetic coma, uremia, edema, bichloride poisoning, etc., are naturally thought of at once. Whether it would be advisable to attempt it on man is at least debatable. One should have experience with the possibilities in animals before beginning to use it therapeutically. These authors state that such work is being done in their laboratory and we shall await with interest the results of their observations. Those already published are of very great interest and seem to promise much.

Nanism.

It was inevitable that nanism, no less than gigantism, should be attributed to some disorder of the endocrine glands, although considerable time has been required to furnish the proof. This is true not only of dwarfism from under-development of certain parts of the skeleton, but also of the essential form. At a session last summer of the Hamburg Medical Society (*Deutsche medizinische Wochenschrift*, September 23) Konne reported two cases of dwarfism of the so-called Lilliputian or symmetrical type. One female, aged 18, represented both somatic and psychic infantalism. Growth began to show arrest in the third year. The mental processes were those of a child of seven. There were no apparent disorders of the thyroids, parathyroids, adrenals, or pineal body. The sella turcica was normal in the *x*-ray picture. Two facts, however, pointed to the hypophysis, viz., glycosuria and a positive Abderhalden reaction (breaking down of hypophysis substance in the blood). The girl had never developed sexually. The other patient, male, was a Lilliputian up to the age of 30, of the infantile type. After this period his lower extremities began to grow slowly. The sella turcica was markedly expanded. After his death from phthisis a teratoma of the hypophysis was discovered. The testicles were those of a newly born child.

Tetragenus Meningitis.

Although the *Micrococcus tetragenus* is regarded as generally non-pathogenic in man, excepting as an associated pyogenic organism in tuberculous cavities, in acute abscesses, and in the pus of empyema, nevertheless it may sometimes play a definite pathogenic rôle of its own. Lenglet and Sacquépée have recently observed among French soldiers a small

epidemic of a disease characterized by the presence of a continued fever resembling that of typhoid fever, but with pulmonary, digestive, and vasomotor complications that gave it a distinctive character. Examination of the blood in these cases revealed the tetragenus in association with a diplococcus as yet unknown. The prognostic outlook was generally favorable. With these cases there may be classed the two cases of tetragenus meningitis also observed among French soldiers and reported by Felix Ramond and André Résibois in *Le Progrès Médical*, September, 1915. Both of these cases began like typical cases of cerebrospinal meningitis. Symptoms of gastroenteric disturbance were quite pronounced. In one of the cases there were a marked bronchitis and cyanosis of the extremities. The *Micrococcus tetragenus* was isolated from the fluid obtained by lumbar puncture. Recovery ensued in both instances.

Protective Ferments in Leucemia.

THE Abderhalden reaction has been interpreted as the expression of the process by means of which the blood destroys foreign protein introduced into it from outside the body, or protein derived from any of the tissues or organs of the body, but not ordinarily circulating in the blood. In pathological conditions of these tissues or organs a certain amount of disintegration occurs, as the result of which protein alien to the blood enters this fluid and excites the formation of a destructive ferment. Grazia Norzi (*Pathologica*, September 1, 1915), has found definite evidences of this sequence in cases of leucemia. Applying the method of Abderhalden he tested the blood serum of six patients with the aid of extracts of various organs involved in leucemia, and in four instances he obtained positive results. The conclusion is reached that in leucemia the organism elaborates ferments that digest the protein set free from the bone-marrow, spleen, and lymph glands. These ferments have no effect upon the protein of the normal organs, but are not absolutely specific, for in two cases they have been found to exert their digestive action upon placental tissue.

News of the Week.

Stamping Patent Medicines.—Three hundred inspectors, recruited from the sanitary, medical, and food bureaus and from among the visiting nurses of the Department of Health, New York, were assigned on December 27 to the task of stamping approximately 5,000,000 packages and bottles of patent medicines in the retail drug stores of the city. The stamping was necessary in order to distinguish the packages already in the shops from those added to the stock after January 1, when the registration law for such preparations becomes effective. The new law requires that the ingredients of all patent medicines shall be printed on the wrappers, or that the Health Department shall be furnished with the formulæ for their preparation for its files. The law, of course, does not apply to medicines already in stock in the retail stores.

Plan to Reorganize All City Hospitals.—Commissioner Kingsbury of the Department of Charities, New York City, has under consideration the reorganization of all the city hospitals under his control, and as his plans have already been approved by the trustees of Bellevue and allied hospitals they will probably be put into effect in those institutions as soon as the necessary amendment to the present law is passed by the Legislature. The reorganization has already been begun at the Cumberland Street Hospital, Brooklyn, with a request for the resignations of the fifty-seven physicians on the staff, and this has met with a protest from the affected physicians, who believe that an attempt is being made to put the hospital service into politics. As so far announced, the Commissioner's plans include the substitution of a small salaried medical staff with a continuous service for the large medical staff with a rotating service. The chief of each division in the hospital would employ his own assistants, who would be paid for constant attendance at the hospital, thus, in the Commissioner's opinion, improving the hospital service. In the opinion of the protesting physicians, however, this centralization is a step backward, puts the hospital into politics, wastes the public funds, is unfair to the young physician, and will lead to demoralization and poor service.

Death Rate High.—The noteworthy feature of the mortality report for the week ending December 25 in New York City was the increase in the number of deaths due to pneumonia and influenza. The deaths due to the latter disease were 24 or nearly five times as many as during the same week of last year, while those due to pneumonia were increased by nearly 200 as compared with 1914, lobar pneumonia causing 251 and bronchopneumonia 117. The mortality from pneumonia being estimated at 20 per cent., it may be assumed that during the week there were nearly 2,000 cases of the disease in the city. Similar reports of epidemic pneumonia and influenza have been received from other cities, and the New York Department of Health has renewed its warning to keep away from those who are coughing or sneezing and out of crowds as much as possible. The total number of deaths from all causes reported during the week was 1,724, as compared with 1,363 during the corresponding week of last year, the respective rates being 15.49 and 12.74. The death rate for the fifty-two weeks was estimated at 13.55, as compared with 13.60 for last year.

Grand Prize to Health Department.—Announcement has just been made of the award by the Jury of Awards of the Panama-Pacific Exposition of a Grand Prize to the Department of Health of New York City for its work in health and sanitation. While a number of prizes were awarded to the city, the Department of Health was the only individual department to receive a Grand Prize.

Duhring Memorial.—On December 13, the trustees of the University of Pennsylvania formally dedicated the Duhring Memorial Building, forming a new wing to the University Library. This has been erected in memory of Dr. Louis A. Duhring, late professor of dermatology in the medical school of the University, who bequeathed to the University his estate of over a million dollars.

Æsculapius for Terpsichore.—Nijinski, the Russian dancer, is a prisoner of war in Austria; Dr. Robert Bárány, the Viennese aurist and winner of the Nobel prize in medicine, is a prisoner in Russia. Mr. Burian, the Austrian premier, has suggested through a neutral ambassador that the two prisoners be released, each to return to his own country to follow henceforth the arts of peace. He apparently regards it as a fair exchange.

Hospital Under Fire.—An official statement

issued at Berlin on December 29, states: "Our artillery bombarded the railway station at Soissons, where the French recently had provided a hospital in the immediate neighborhood of the railway station with a Red Cross flag. On account of its proximity to the station it was not possible to exclude the possibility of hitting the hospital."

The American Ambulance. — Ex-Ambassador Bacon, who went to France two months ago to inspect the work of the American Ambulance, returned to New York on December 28. He reports that the cost of running the institution was $1,000 a day, which was much less than in the beginning, and that there are now 610 patients in the hospital at Neuilly and 500 others in beds hired outside.

Dr. David F. Wheeler of Buffalo, N. Y., who enlisted in the Foreign Legion of the French Army last spring, received on Christmas Day the decoration of the War Cross. Dr. Wheeler was wounded on September 28, and is spending the time of his convalescence in working for the American Ambulance.

Gift of Hospital Train.—Two Americans, it is announced, have furnished money for the equipment and maintenance of a hospital train, with a capacity for 240 wounded men, to be operated in connection with the American Ambulance at Neuilly. The train will run from designated points behind the front to Paris or other hospital centers, and will consist of an operating room, a pharmacy, a kitchen, etc.

Need in Serbia.—It is reported that several members of the American Sanitary Commission who left Serbia in November, have been recalled to Saloniki to take up general relief work. Conditions in that country are said to be very serious, the food supply being short because of the seizure of foodstuffs collected by the American workers.

Murders in 1914.—In a recent compilation of records of homicides in American cities during 1914, Mr. Frederick L. Hoffman gives the total number of murders in the United States during that year as 8,000, of whom 80 per cent. were men. Memphis, Tenn., had the highest number murder rate, 72.2 per 100,000 of population; while Reading, Pa., had the lowest, 1 per 100,000; New York had a rate of 6.1, and Chicago a rate of 9.1 per 100,000. The eight cities having the highest rates are all in the South. In Philadelphia the rate was only 4.6, and in Boston 3.4. The total number of murders in New York City was 280, and in Chicago, 217. During the decade 1904-13 the average murder rate for all cities was 7.9 per 100,000, while in 1914 the rate was 8.6, an increase of nearly 9 per cent. During the same time the suicide rate increased only 3.6 per cent. Sixty per cent. of the murders were done with firearms, 15.1 per cent. with cutting or piercing instruments, and most of the victims were between the ages of 25 and 34.

Object to "Twilight Sleep Home."—Some of the residents of Riverside Drive, New York, in the neighborhood of Seventy-second Street, are aroused over the opening on the Drive of a hospital for the administration of "twilight sleep," and have applied to the courts for an injunction, claiming that the use of the property as a hospital violates the restrictive clause in the deed covering all the land in that vicinity. The property in question was leased last July for a term of five years, and has since been used as a private sanatorium where "twilight sleep" treatment is given. The plaintiffs claim that by virtue of such occupancy the premises threaten to become notorious as the New York Home for Twilight Sleep, and that such use and occupancy are an invasion of their privacy and rights.

Dies at 102.—Mrs. J. B. Stock of Duluth, Minn., who was born in County Kerry, Ireland, in 1813, died at her home on December 30, leaving 4 children, 20 grandchildren, 20 great grandchildren, and several great-great-grandchildren.

Misuse of Red Cross.—Complaint has been made to the Attorney General of the United States that a number of physicians of Saginaw, Mich., are violating the law prohibiting the use of the Red Cross emblem by having it emblazoned on their automobiles. An inquiry into the charges will be made.

The Herter Lectures.—The University and Bellevue Hospital Medical College announces that a course of five lectures, under its Herter Foundation, will be given by Prof. Victor C. Vaughan of the University of Michigan on "Poisonous Proteins." The first lecture will be delivered on Monday, January 10, at 4 P. M., at the Carnegie Laboratory, 336 East Twenty-sixth street, and the others will follow daily at the same hour.

Bronx County Medical Society.—At the regular meeting of this society, to be held at Ebling's Casino, 156th street and St. Ann's avenue, on Wednesday of next week, the paper of the evening will be by Dr. Charles H. Mayo of Rochester, Minn., on "Gall-Bladder Disease." The subject will be discussed by Drs. Charles H. Peck, Charles A. Elsberg, John F. Erdmann, Franz Torek, John Rogers, Irving S. Haines, William P. Healy, Benjamin T. Tilton, and others.

Charitable Bequests.—By the will of the late Charles S. McKelvey, chief engineer for the New Jersey Board of Public Utilities, who died in Paterson on December 16, the Paterson General Hospital and St. Joseph's Hospital, Paterson, receive bequests of $13,000 each.

The Brooklyn Eye and Ear Hospital receives $5,000 and the Brooklyn Hospital and the Brooklyn Home for Consumptives $2,500 each by the will of Col. R. W. Woodward of Brooklyn.

The sum of $3,000 is bequeathed to the Hospital of the University of Pennsylvania, Philadelphia, by the will of the late Helen F. Knight of Lower Merion, Pa., for the endowment of a free bed in the children's ward in memory of Mrs. G. Lee Knight.

By the will of the late Bernard Harburger of Philadelphia bequests are made as follows: Jewish Hospital Association of Philadelphia $500; Mt. Sinai Hospital, $500; Philadelphia Jewish Sanatorium for Consumptives, $500.

Personals.—Dr. STEWART HAMILTON has been appointed superintendent of the Harper Hospital, Detroit, Mich., to fill the vacancy caused by the death of Dr. Wayne Smith. Dr. Hamilton was formerly assistant superintendent and physician in charge of the institution.

Dr. FREDERICK P. GAY, professor of pathology in the University of California, has been selected as faculty research lecturer for 1916, in recognition of his work in immunity in pneumonia and typhoid fever. On the University Charter Day, March 23, 1916, Professor Gay will deliver the annual public address on the results of his research in some special field.

Dr. WILLIAM F. MATTHEWS, deputy health officer of the Port of New York, was designated acting head of the service by Governor Whitman on Janu-

ary 1, pending the appointment of a successor to the late Dr. O'Connell.

Medical Society Elections.—LOWNDES COUNTY (GA.) MEDICAL SOCIETY: Annual meeting at Valdosta on December 14. Officers elected: *President*, Dr. DeWitt W. Freeman; *Vice-President*, Dr. James M. Smith; *Secretary-Treasurer*, Dr. Joseph A. Thomas.

SOO LINE SURGICAL ASSOCIATION: Annual meeting at Minneapolis, Minn., on December 9. Officers elected: *President*, Dr. Theodore Bratrud, Warren, Minn.; *Vice-President*, Dr. J. M. Dodson, Chicago; *Secretary-Treasurer*, Dr. J. H. Rishmiller, Minneapolis.

THOMAS COUNTY (GA.) MEDICAL ASSOCIATION: Annual meeting at Thomasville on December 10. Officers elected: *President*, Dr. Lloyd E. Morton, Boston; *Vice-President*, Dr. W. W. Jarrel, Thomasville; *Secretary*, Dr. S. L. Cheshire, Thomasville.

MASSACHUSETTS SURGICAL AND GYNECOLOGICAL ASSOCIATION.—At the 85th annual session in Boston on December 8, the following officers were elected for the ensuing year: *President*, Dr. H. O. Spalding, Westboro; *Vice-President*, Dr. Ralph C. Wiggin, Cambridge; *Secretary*, Dr. Harry C. Lee, Boston; *Treasurer*, Dr. C. Y. Wentworth, Newton Highlands.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION.—The officers were elected at the annual meeting held in Mankato on December 1: *President*, Dr. E. S. Judd, Rochester; *Vice-Presidents*, Dr. J. S. Holbrook, Mankato, and Dr. H. B. Grimes, Madelin; *Secretary*, Dr. W. T. Adams, Elgin; *Treasurer*, Dr. G. F. Merritt, St. Peter.

FALL RIVER (MASS.) MEDICAL SOCIETY: Annual meeting on December 13. Officers elected: *President*, Dr. J. Aladin Barre; *Vice-President*, Dr. Arthur C. Lewis; *Secretary*, Dr. R. W. French; *Treasurer*, Dr. W. S. Lyon.

HARRISON COUNTY (IA.) MEDICAL ASSOCIATION: Annual meeting at Logan on December 8. Officers elected: *President*, Dr. Harry N. Anderson, Woodbine; *Vice-President*, Dr. F. H. Hanson, Magnolia; Dr. A. H. Konigmacher, Missouri Valley.

Obituary Notes.—Dr. CHARLES TOWNSHEND DADE of New York, a graduate of the College of Physicians and Surgeons, New York, in 1891, consulting dermatologist to the Manhattan State Hospital, the Roosevelt Hospital, the Central Islip Hospital, the Englewood Hospital, and the Vassar Brothers' Hospital, Poughkeepsie, chief of the dermatological clinic of the Out-Patient Department of St. Luke's Hospital, and attending dermatologist to the Randall's Island Hospital, and a member of the New York Academy of Medicine, the New York Dermatological Society, and the Society of the Alumni of St. Luke's Hospital, died at his home, after a long illness, on December 26, aged 56 years.

Dr. WILLIAM PHILIP SPRATLING former superintendent of the Craig Colony for Epileptics, Sonyea, N. Y., a graduate of the College of Physicians and Surgeons, Baltimore, in 1886 a former president of the National Association for the Study of Epilepsy, and a member of the American Medico-Psychological Association, died suddenly at Welska, Fla., on December 23, aged 52 years.

Dr. CHARLES F. BURGER of Saint Clair, Mich., died at his home on December 4, aged 84 years.

Dr. EDWARD H. THRAILKILL of Kansas City, Mo., a graduate of the Kansas City Medical College in 1890, associate professor of surgery in the University of Kansas, School of Medicine, and a member of the American Medical Association, the Missouri State Medical Association, and the Jackson County Medical Society, died suddenly at his home on December 7.

Dr. WALTER E. SEYMOUR of Riverside, R. I., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1898, and a member of the Rhode Island Medical Society, and the Providence County Medical Society, died at his home on December 7, following an illness of several weeks, aged 41 years.

Dr. LEWIS FREY died at Scranton, Pa., on December 6 at the age of 49 years. He was graduated from Jefferson Medical College in the class of 1888. He was a member of the Lackawanna Medical Society and the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. FRANCIS COFFIN MARTIN of Boston, a graduate of the Harvard University Medical School in 1883, and a member of the Massachusetts Medical Society, and the District Medical Society, died at his home in Roxbury, on December 3, aged 57 years.

Dr. HENRY T. FISHER of Knoxville, Tenn., a graduate of the Lincoln Memorial University, Medical Department, Knoxville, in 1891, died at his home after a long illness, on November 29, aged 67 years.

Dr. JAMES S. MILLER of Mount Pleasant, Tex., a graduate of the University of Louisville, Ky., Medical Department, in 1877, and a member of the State Medical Association of Texas and the Titus County Medical Society, died at his home, after a brief illness, on November 28, aged 63 years.

Dr. MARY HAWES of Denver, Col., a graduate of the Laura Memorial Woman's Medical College, Cincinnati, Ohio, in 1899, formerly staff physician at St. Anthony's Hospital and a member of the American Medical Association, and the Colorado State and Denver City and County Medical Societies, died at her home, after a long illness, on December 8, aged 50 years.

Dr. FRANK H. STUART of Bandette, Mich., a graduate of the Kentucky School of Medicine, Louisville, in 1887, died suddenly at his home on December 7, aged 67 years.

Dr. ERDMANN M. BRANDT of Tarrytown, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1889, and attending physician to the Tarrytown Hospital, died at his home from pneumonia after a short illness, on December 23, aged 48 years.

Dr. ALFRED VICTOR BRAILLY of New York, a graduate of the College of Physicians and Surgeons, New York, in 1875, died at his home on December 22, aged 63 years.

Dr. SAMUEL STILLE of Atlantic City, N. J., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1875, died at his home from pneumonia, on December 23, aged 86 years.

Dr. ROBERT N. WILLSON, JR., died at Philadelphia on January 1 at the age of 43 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1897, after which he became resident physician in the Pennsylvania Hospital. He was for a number of years assistant physician and recently physician to the Philadelphia General Hospital. He was a member of the Philadelphia County Medical Society, and of the Medical Society of the State of Penn-

sylvania and a Fellow of the American Medical Association, a member of the American Association of Pathologists and Bacteriologists and of the Pathological Society of Philadelphia.

Dr. WILLIAM J. ASHENFELTER died at Pottstown, Pa., on January 1 at the age of 66 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1870. He was formerly surgeon to the Sixth Regiment and also of the First Brigade, N. G. P., with the rank of major.

Dr. ARNOLD GUSTAVE LEO of New York, a graduate of the College of Physicians and Surgeons, New York, in 1895, died at his home suddenly, on December 31, aged 43 years.

Obituary.

GEORGE THOMAS JACKSON, M.D.,

NEW YORK.

DR. GEORGE THOMAS JACKSON, formerly professor of dermatology in the College of Physicians and Surgeons, New York, and consulting dermatologist to the New York Infirmary for Women and Children, died at his home in this city, from pneumonia, on January 3. He was born in New York on December 19, 1852, and after graduating from the College of the City of New York, spent several years in business. In this he received an excellent training, much to his advantage in after life. Preferring a medical career, he entered the College of Physicians and Surgeons, receiving the degree of doctor of medicine in 1878. He served as interne at the City Hospital and then spent two years abroad, studying at the Universities of Vienna, Strassburg, and Berlin. He became professor of dermatology in the Woman's Medical College and Infirmary, New York, in 1890, and in 1897 instructor of dermatology in the College of Physicians and Surgeons, and in 1908 was made professor in the same department, a position which he held with marked ability until his retirement in 1913. He was a member of the American Medical Association, the New York State and County Medical Societies, the American Dermatological Association (at one time president), the New York Dermatological Society (also at one time president), the New York Academy of Medicine, and the Alumni of the City Hospital.

As a contributor to the literature of medicine Dr. Jackson's career was one of more than ordinary importance. He served upon the editorial staff of the *New York Medical Journal* and the *American Medical and Surgical Bulletin* and for several years contributed articles of value upon subjects connected with his specialty. He was also a contributor of dermatological articles to two editions of the "Reference Handbook of the Medical Sciences," His treatise upon "Diseases of the Hair and Scalp" became a standard work, as did his "Ready Reference Handbook of Skin Diseases," now in its eighth edition.

CHARLES C. BARROWS, M.D.

NEW YORK

DR. CHARLES CLIFFORD BARROWS of New York, professor of clinical surgery in the department of gynecology of the Cornell University Medical College, died at his home after an illness of two months, on January 2, aged 58 years. Dr. Barrows was graduated from the Medical Department of the University of Virginia in 1879 and from the New York University Medical College in 1880, and after two years' service at Bellevue Hospital entered the medical corps of the United States Army, serving until 1887 in the campaigns against the Indians. Returning to New York, Dr. Barrows became clinical instructor in gynecology in the New York University Medical School and in 1893, on the opening of the Cornell Medical School joined the department of gynecology, in 1913 being placed in full charge. He was a fellow of the American College of Surgeons and the American Medical Association, and a member of the New York State and County Medical Societies, the New York Obstetrical Society, the New York Clinical Society, the New York Academy of Medicine, the Society of the Alumni of Bellevue Hospital, and the Medical Society of Greater New York; and was attending surgeon to the Manhattan Maternity Hospital, attending gynecologist to Bellevue Hospital, and consulting surgeon to the New Rochelle and Peekskill Hospitals.

JOSEPH J. O'CONNELL, M.D.,

NEW YORK.

DR. JOSEPH J. O'CONNELL, health officer of the Port of New York, died at his home at Quarantine, Rosebank, S. I., on January 1, after a long illness, at the age of 49 years. Dr. O'Connell was born in Brooklyn and was educated at St. Francis' College and in medicine at the Long Island College Hospital, graduating from the latter in 1887. He was for many years sanitary inspector of the Bureau of Contagious Diseases in Brooklyn, and at the time of his appointment as health officer, in 1912, was visiting physician to St. Mary's General Hospital, visiting surgeon to St. Mary's Female Hospital, and alienist to the Kings County Hospital. He was a member of the New York State and Kings County Medical Societies, the American Medical Association, the American Public Health Association, and the Long Island Medical Society, and the author of a number of articles on public health and sanitation. During his term as health officer of the port he effected several changes at Quarantine, the most notable being the construction and equipment of the pathological and bacteriological laboratory, one of the finest in the world. During 1914, when the danger of typhus fever entering the port was very great, Dr. O'Connell perfected a system of disinfection of persons and cargoes entering this port, which prevented the occurrence of a single secondary case of the disease. At the time of his death he was lecturer on hygiene in New York University, lecturer on public health in the Long Island College Hospital, and as health officer a member of the New York City Board of Health.

ISAAC OTT, M.D.,

EASTON, PA.

DR. ISAAC OTT, former dean of the Medico-Chirurgical College of Philadelphia and professor of physiology in that institution, a distinguished neurologist and author of many medical works, died at his home in Easton, Pa., on January 1, aged 68 years. Dr. Ott was graduated from the University of Pennsylvania, Department of Medicine, in 1869. He was for a time fellow in biology at Johns Hopkins

University, and from 1872 to 1879 lecturer in physiology at the University of Pennsylvania. In 1879 he became lecturer in physiology at the Medico-Chirurgical College, and in 1894 professor. He was a member of the American Medical Association, the Medical Society of the State of Pennsylvania, the Northampton County Medical Society, the Philadelphia Neurological Society, and the American Neurological Society, of which he was at one time president.

DAVID WILLIAM CHEEVER, M.D.,

BOSTON, MASS.

Dr. David William Cheever of Boston, Mass., a graduate of the Harvard University Medical School in 1858, died at his home on December 27, after a short illness, aged 84 years. He was one of the original surgical staff of the Boston City Hospital, which was opened in 1864, a member of the instructing force of the Harvard Medical School continuously since 1861, when he was appointed demonstrator of anatomy, having been made professor of clinical surgery in 1875, professor of surgery in 1882, and professor emeritus in 1893. He was a member of the American Medical Association, the American Surgical Association, which he served as president in 1889, the Massachusetts Medical Society, and the Suffolk District Medical Society, an honorary fellow of the American College of Surgeons, an associate fellow of the College of Physicians of Philadelphia, a foreign member of the Surgical Society of Paris, and the author of several text books on surgery.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

BRITISH HOSPITAL SHIPS—GERMAN STATEMENTS DENIED—ORGANIZATION OF PROFESSION FOR WAR SERVICE—R. A. M. C. CALL FOR MEDICAL OFFICERS—USES OF UREA.

London, December 17, 1915.

The British Admiralty has been constrained to issue a further categorical denial of the stories continually circulated in the German wireless messages about our hospital ships. We have 42 such vessels working to and from the Mediterranean—not 70, as stated in the German press, which pretends that all are heavily laden but not with hospital supplies, and goes on to assert that they are undoubtedly carrying troops and munitions protected by this ruse. The admiralty reply that no hospital ship has carried other than sick and wounded, nurses and medical staff, and stores. Though these vessels are sufficiently ballasted to secure safety and comfort, they are none of them deeply laden—in fact, they are generally some feet higher than deep draught; they are prominently painted in accordance with the Geneva Convention and duly notified to the belligerents. No temporary arrangements, such as have been suggested exist as to any of them. This country strictly abides by the Geneva and Hague conventions, and the report here repudiated is absolutely false and the insinuations are unjust.

The war naturally intrudes into all discussions, practically into all conversations. The Harveian Society has just held a discussion on the organization of the profession for war service when Major Galloway gave some account of the Central Medical War Committee, which has been formed to deal with matters connected with the present conflict. On it are representatives of the two Royal Colleges of London, the universities of England and Scotland, and the principal medical bodies in Ireland. The director-general of the Army Medical Department has availed himself of the help of this body in recruiting the medical service. Major Galloway urged medical men of military age who were physically fit to join the R. A. M. C. An ex-president of the society, Dr. Charles Buttar, held it to be the duty of every profession to help those of its members who were in any difficulty and that in times of peace, much more during war. He is one of a committee for suggesting methods by which medical practitioners may be set free to serve their country and as far as possible relieved of anxiety as to the effect of doing so on their future. He remarked that generous as the profession is with patients it is very frequently not so with its fellow members. Jealousy and suspicion are by no means uncommon, though the lofty traditions of the calling should render such feelings impossible. Men can be spared from their practice to join for a time the R. A. M. C. with very variable degrees of inconvenience, *e.g.* a single man more easily than a married one, a young rather than old one, one holding an appointment which can be kept open for him on his return, assistants and partners, men in districts crowded with practitioners rather than from rural localities.

To safeguard the interests of those who volunteer for the time of the war the central committee has appointed local committees to which information is being supplied as to various duties devolving upon them and medical men who feel called upon to join the army are urged to put themselves in communication with these local committees. A form of agreement has been circulated as a basis for arranging the conduct of the practice of a volunteer, and it has been suggested by some that partnerships for the term of the war might be formed or a number of men in a locality, perhaps the majority or even the whole, might unite. The president observed that every man in his audience had doubtless asked himself what was his duty in the present emergency and longed for some one to tell him. He submitted that the Central War Committee was the best body to decide the question for any one who felt unable to settle it. His own answer was that every man of military age should send in his name to the committee as willing to take a commission in the R. A. M. C. whenever the committee tells him that it is his duty to do so. This committee is already classifying men in groups according to the ease with which they may be spared from service in the civilian community.

The proposal to include urea in our list of useful remedies may raise a curiosity, not unmixed with scepticism in certain directions, but in these days therapeutists place no limits on suggestions that can easily be subjected to trial. So we have laboratory notes by Professor Symmers and Mr. Kirk on urea as a bactericide and its application in the treatment of wounds. The former shows that it readily kills non-sporing bacteria suspended in water; next that it seems to completely sterilize tuberculous sputum in from half an hour to one hour. Then comes the question, will urea kill bacteria in the presence of blood and such like albuminous material? To decide this, blood was inoculated with *Bacillus pyocyaneus* and urea added, solution being assisted by immersion in hot water for

a few minutes and the mixture left at room temperature for 20 minutes, after which tested on agar and broth tubes. No growth took place, although control experiments furnished confluent growths. But to obtain the bactericidal effect the urea has to be employed in a concentrated solution (25 per cent.). Lower dilutions, however, have an inhibitory effect. W. J. Wilson, in 1907 (*Jour. Path. and Bact.*), found there was no growth of *B. coli* when 8 per cent. was present and with lower percentages remarkable changes of form resulted in different organisms. Urea is stable in the dry state, is practically non-poisonous, highly diffusible, is inhibitive in low concentration (3 per cent.) in higher percentages (8 to 10), is bactericidal, this effect being active in the presence of blood and such organic fluids. Moreover, it does not irritate the tissues and may be sprinkled quite freely and dry over wounds.

To the foregoing Mr. Kirk adds the clinical notes of the use which he and Professor Symmers made during the last four years. In fresh 100 per cent. solution in water they only found it unquestionably beneficial in diphtheria carriers in which its value is recognized. In surgery they met no good results until applied in solid form and freely, too—so that the solution formed in the blood or serum could be kept closely in contact by closing with continuous sutures or covering with a protective to prevent its draining away. Dry dressing arrested the action by absorbing it. Urea is entirely innocuous to the tissues in the strongest concentration or in the dry state. All the wounded soldiers in the Ulster Volunteer Force Hospital were treated with it. Messrs. Symmers and Kirk report that sloughing, infected wounds gave better results under it than otherwise, the circulation around remains normal, no venous congestion, no irritation of skin. Repair, rapid. Sometimes it produces pain, severe enough to demand morphine—the urea seeming to become caked by absorbing moisture from the air. Since using it as a routine dressing in the Ulster Volunteer Hospital the wounds require dressing only once in forty-eight hours and fewer nurses are consequently required.

To sum up the conclusions from the tests employed by the contributors of the preceding report it appears that urea is an antiseptic and acts efficiently in the presence of blood and albuminous fluids; is innocuous to animal tissues; is not toxic in the quantities that can be applied to wounds; saves half the labor necessitated by other treatment; does not retard during use the processes of repair; prevents suppuration arising in wounds from chronic blood infections. From all this striking results ought to be obtained from employing it as a first-aid dressing.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 23, 1915

1. Symmetrical Synovitis in Hereditary Syphilis. Abner Post.
2. Some Modern Ideas About Anesthesia. Frank L. Richardson.
3. Episiotomy. John T. Williams.
4. Wanted—A Fad. Robert T. Edes.
5. Notes on a Conference on the Medical and Social Aspects of Syphilis of the Nervous System. J. H. Bazeley and H. M. Anderson.
6. Mental Features of Congenital Syphilis. J. H. Bazeley and H. M. Anderson.
7. Diagnostic Value of Lange's Gold Sol Test. Harry C. Solomon, Hilmer O. Koefod, and Edward S. Welles.

1. **Symmetrical Synovitis in Hereditary Syphilis.**—Abner Post states that a careful study of syphilitic children shows this symptom to be comparatively frequent. The fact that the joints are seldom fully distended, that they are painless and interfere but little with locomotion explains their infrequent recognition. These joints have been compared to interstitial keratitis which is usually symmetrical, but may be single, or the two sides affected with so long an interval that the first case is single so far as diagnosis and treatment are concerned. Symmetrical synovitis of the knees has occurred so often in conjunction with interstitial keratitis and Hutchinson's teeth that such a triad may be considered as valuable as Hutchinson's triad of interstitial keratitis, Hutchinson's teeth, and deafness. Local treatment of the knees seems to be unnecessary, but constitutional treatment is important. In general, treatment acts slowly. Some cases, not hitherto recognized as syphilis, respond very quickly.

3. **Episiotomy.**—John T. Williams calls attention to this little used procedure which he states has a definite value in certain obstetric cases. Properly used it should practically eliminate complete lacerations of the perineum from gynecology. It should not be performed except to prevent a complete tear, because incomplete perineal tears heal as well as the episiotomy wound and are less difficult to suture. Complete lacerations of the perineum are to be feared in contractions of the inferior strait; rigid perinuem in late primigravidæ; short perineum; unusual size of the fetal head; aftercoming head in breech presentations, and in face presentations. The incision should be made at an angle of about 45° with the median line of the perineum and not at right angles to it, in order to avoid wounding the venous plexus of the labium and to give the greatest room for extension. The writer has done episiotomy in a number of cases and cites two as illustrative of the entire group.

5. **Notes on a Conference on the Medical and Social Aspects of Syphilis of the Nervous System (Continued).**—J. H. Bazeley and H. M. Anderson discuss the mental phenomena in general mental states as related to congenital syphilis, the mental phenomena in sixty congenital syphilitic children compared with sixty non-syphilitic children, and the mental phenomena in families with congenital syphilitic children from which they concluded as follows: 1. There is increasing authority for considering the endogenous psychoses and the psychoneuroses to be the last offshoots of luetic heredity. 2. The laboratory findings afford the best classifications of congenital syphilis, and there are six possible groups on this serological basis. 3. Of children under fifteen years constituting social problems, the congenital syphilitics constitute the more serious problems. Among them there are more cases of backwardness in school, there is more feeble-mindedness and retardation, there are more defects in the mental processes (with the one exception of affectivity), there are more delinquencies, there are more defects in vision, hearing, and speech. And if we consider the single individuals with one or more defects, then in the syphilitics there are more individuals with plural defects in the mental processes, there are more individuals with plural delinquencies, and there are more individuals with plural defects in the two main sense-organs and in speech. 4. In families where the syphilitic infection makes its appearance the before and after picture in the mental development of the children is clearly delineated. The writers cite a number of instances in which the earlier children in a family are normal while those coming after syphilitic infection has made its appearance show mental deterioration with the other stigmata of hereditary syphilis.

7. Diagnostic Value of Lange's Gold Sol Test.—Harry C. Solomon, Hilmar O. Koefod, and Edward S. Welles review the diagnostic results that have been claimed for the gold sol test and analyze the results of this test in 500 cases from which they conclude that fluids from cases of general paresis will give a strong and fairly characteristic reaction, especially if more than one sample is tested, in the vast majority of cases. Very rarely general paresis gives a reaction weaker than the characteristic one. Fluids from cases of syphilitic involvement of the central nervous system other than general paresis often give a weaker reaction than the paretic, but in a fairly high percentage of cases give the same reaction as the paretics. Non-syphilitics may give the same reaction as the paretics; these cases are usually chronic inflammatory conditions of the central nervous system. When a syphilitic spinal fluid does not give the strong paretic reaction it is good presumptive evidence that the case is not one of general paresis, and this test offers a valuable differential diagnostic aid between general paresis, tabes, and cerebrospinal syphilis. The term "syphilitic zone" is a misnomer as non-syphilitic as well as syphilitic cases give reactions in this zone, but no fluid of a case with syphilitic central nervous system disease has given a reaction outside of this zone, so that negatively it may be used, and any fluid giving a reaction outside of this zone may be considered non-syphilitic. Light reactions may occur without any evident significance, while a reaction of no greater strength may mean marked inflammatory reaction. Tuberculous meningitis, brain tumor, and purulent meningitis fluids characteristically, though not invariably, give reactions in higher dilutions than syphilitic fluids. The unsupplemented gold sol. test is insufficient evidence on which to make any diagnosis, but used in connection with the Wassermann reaction, chemical and cytological examination, it offers much information aiding in the differential diagnosis of general paresis, cerebrospinal syphilis, tabes dorsalis, brain tumor, tuberculous meningitis, and purulent meningitis. In the opinion of the authors no cerebrospinal fluid examination is complete for clinical purposes without the gold sol test.

The New York Medical Journal.

December 25, 1915

1. The Cottage Hospital in Rural Communities. Charles P. Nobel.
2. William Konrad Röntgen. I. Seth Hirsch.
3. A Short History of the Röntgen Rays. Percy M. Brown.
4. The Influence of Röntgen's Discovery on Medicine. Ludwig Kast.
5. The Physics of Röntgen Radiation. J. S. Shearer.
6. Röntgen's Discovery. W. D. Coolidge.
7. Thyroid Disease. Silas P. Beede and J. Wallace Beveridge.
8. Pharyngeal Stenosis. H. Hallarman.
9. Decayed Teeth and Cancer. Alonzo Milton Nodine.

1. The Cottage Hospital in Rural Communities.—Charles P. Nobel says that naturally the broad principles which apply to all hospitals, as to their necessity, management, advantages to the community, and to the medical profession are equally applicable to rural hospitals, but there are, in addition, certain facts and factors which apply to them chiefly or exclusively. The management, while affording efficient medical and nursing care, should provide an atmosphere in which the spirit of helpfulness, true sympathy, charity, and gladness abounds. There is no question that the "closed" hospital can be more efficiently administered; that its patients will receive better and more systematic treatment; that the superintendent of hospital and training school will be spared many trials, and that the medical staff is afforded a much better opportunity to develop additional technical skill and to acquire greater clinical knowledge in the particular specialties of medicine in this type of hospital. The "open" system as applied to the private rooms, and even to certain small pay wards, has manifest advantages to rural hospitals. With reference to the question whether the local staff shall do the general and special surgery or whether a skilled specialist from a neighboring city should be called in seems best to be settled by following a mixed plan. The local staff should be prepared to operate in emergency cases and will be able to perform many other operations with skill and success, but if skilled specialists are not called in the staff misses the opportunity for improving their own surgical and medical technique. There are three other important matters in connection with the proper conduct of a rural hospital and these are the wisdom of having a paid anesthetist, a salaried pathologist and bacteriologist, and also a properly remunerated *x*-ray specialist attached to the staff.

6. Röntgen's Discovery.—W. D. Coolidge objects to the statement frequently made that Röntgen's discovery was an accidental one and says that the combination of circumstances which led to the discovery of "invisible light" was of Röntgen's own choosing and the results were exactly what he was looking for. Recent developments have made it possible to measure the wave length of the *x*-rays, and shows them to be a transverse vibration traveling with the velocity of light and with a wave length about one-ten thousandth that of ordinary light. Moseley and Darwin have found that each element, when placed in the path of the *x*-rays of sufficiently high penetration, gives off secondary rays with a wave length characteristic of the particular substance in question. This serves not only as a useful method of analysis, but also as the basis of a logical method for grouping the elements. In discussing the future possiblities of the *x*-ray the writer suggests that their germicidal and sterilizing action may be commercially useful in connection with food products; that they may be useful as ionizing agents to bring about chemical reactions; that as it has been possible to produce the decomposition products of radioactive substances by means of the *x*-ray, it therefore seems possible that we may be able some day to produce radioactive substances synthetically; that it is not too much to hope that we shall be able to transmute the elements at will and to store up large quantities of available energy in small masses; that the work now being done on alpha ray scattering and with the *x*-ray spectrometer will lead to much higher efficiency of *x*-ray production; that another dream which should come true is the production of a substance capable of making a screen a thousand times more sensitive than anything we now have; that with our rapidly increasing knowledge of characteristic radiations, we shall some day see a photographic plate in which a much larger fraction of the *x*-ray energy is absorbed with a corresponding increase in speed; that with the ability to get characteristic radiations of definite wave length, the germicidal and physiological actions can be scientifically studied, with the possibility of finding out whether there is, for a definite purpose, any specificity of action so that a certain cell responds more strongly to a certain wave length than to any other.

Journal of the American Medical Association.

December 25, 1915.

1. Tropical Sanitation in Its Relation to General Sanitation. Dr. W. C. Gorgas, Surgeon General, United States Army.
2. The Handwriting on the Wall. Torald Sollmann.
3. Carbohydrate Indigestion. Wilder Tileston.
4. Active Immunization with Diphtheria Toxin-Antitoxin, and with Toxin-Antitoxin Combined with Diphtheria Bacilli—Second Paper. William H. Park and Abraham Zingher.

5. Effect of Moderate Doses of Some Opium Deriviatives on Gastrointestinal Tract of Man: Preliminary Study on Röntgen Studies. Henry K. Pancoast and Arthur H. Hopkins.
6. The Endowment of Childhood from the Obstetric Standpoint. John F. Moran.
7. Where Chiropractors are Made. Thomas F. Durigg.
8. Rectal as a Substitute for Vaginal Examination in Labor. Rudolph Wieser Holmes.
9. The Rat as a Carrier of a Dysenteric Ameba. Kenneth M. Lynch.
10. Syphilitic Iritis with Condolomatas: Report of Three Cases. Walter Baer Weidler.
11. Suppurative Cholecystitis from the Parathyroid Bacilus. Report of a Case. Lucius E. Burch.
12. Painful Weak Feet: Report of a Case. H. Winnett Orr.
13. Report of a Case of Mercuric Chloride Poisoning with Particular Reference to Its Treatment. Harry M. Kay.

1. Sanitation.—W. C. Gorgas, speaking to health officers at the Fifteenth Annual Conference of Health Officers of New York State at Rochester, September, 1915, reviewed the well known facts regarding yellow fever and the stegomyia mosquito and the sanitary work done in Havana and Panama, laying special emphasis on wages as the important factor in determining sanitary conditions. He says that because of the risk that men ran in going into a country where yellow fever was prevalent they were obliged to raise wages and to offer special inducements to get men to work in these localities. If yellow fever had continued they would still be raising wages on the isthmus. This large increase in wages caused a great general improvement in living conditions, and to this improvement in social conditions caused by high wages we owe principally our extraordinary improvement in general health conditions. His experience has taught that it is the health officer's duty to urge forward those measures in his community which will control individual diseases, but it is still more his duty to take that broader view of life which goes to the root of bad hygiene, and do what he can to elevate the general social conditions of his community. This can best be accomplished by increasing wages. The writer believes that every man should receive a "natural wage," which is just what he produces, not a cent more and not a cent less, and that a step toward this ideal condition might be made by taxing unused lands to such an extent that the owners would be compelled to use them. The coming generation of health officers have on their hands the fight for the greatest of all sanitary measures, natural wages.

4. Diphtheria.—William H. Park and Abraham Zingher give the late results of active immunization with diphtheria toxin-antitoxin and with toxin-antitoxin combined with diphtheria bacilli. Their recent investigations show that individuals who, before treatment, give a negative Schick reaction are immune probably for life and, therefore, it is not necessary to inject them, when exposed either with antitoxin or toxin-antitoxin. Those who give a positive reaction and are exposed to diphtheria and in immediate danger should receive either antitoxin alone or, if a longer protection is desired, both antitoxin and toxin-antitoxin. For the general prophylaxis against diphtheria in schools and communities, excluding immediate contacts, a mixture of toxin-antitoxin alone (from 85 to 90 per cent of the L+ dose of toxin to each unit of antitoxin) or toxin-antitoxin plus vaccine of killed diphtheria bacilli is recommended. The dose is 1 c.c. of toxin-antitoxin and 1,000,000,000 bacteria injected subcutaneously and repeated six times at intervals of six or seven days. Sufficient time has not yet elapsed to judge the value of adding the injections of the bacilli to the toxin-antitoxin. The early and the late results of active immunization should be determined with the Schick test. Early results are those obtained by the application of the test within four weeks, and late results from four months to two years after the immunizing injections.

5. Opium Derivatives.—Henry K. Pancoast and Arthur H. Hopkins have found that Röntgen examination is a valuable method of studying certain phases of drug effects on the gastrointestinal tract, especially motility, and the knowledge it furnishes can be gained better by this method than by any other. Their observations were made in a series of 11 cases given morphine and one heroin habitué. While they have been able to duplicate the phenomena observed by others, with one exception, there was a decided lack of uniformity in connection in the effects produced in different individuals, in connection with both stomach and bowel. There is no distinct uniformity in connection with dosage. Small doses in some may produce more marked effects than much larger doses in others. Females appear to be more susceptible than males. In the stomach a rather high spasmodic hour-glass contraction is observed rarely, but the writers have not seen this near the pylorus as described by others. In some instances the stomach may show no appreciable change from normal. In most cases there is more or less pyloric spasm, increased peristalsis and a decided prolongation of the emptying time. In the small intestine, morphine causes decreased motility almost uniformly, apparently as a result of a lack of propulsion and not of spasm. When marked it is most noticeable in the upper small bowel. The effect on the large bowel is very variable and probably of little consequence. Oral administration produces practically the same effect as subcutaneous injections.

6. Endowment of Childhood.—John F. Moran points out that among the results of advances in obstetrics are the awakening interest in prenatal care and the prevention of infant mortality, the practical abandonment of craniotomy on the living child, and the broadening indications for cesarean section. He finds that practically 38 per cent of the deaths under one year of age are due to causes mainly dependent upon the health and condition of the mother during pregnancy and confinement. Much good is being accomplished by organizations engaged in seeking the welfare of motherhood and childhood, by stimulating general interest in the cause and securing lay and professional co-operation; but if this much-to-be-desired beneficence is to become nation-wide, the checking and follow-up system can be satisfactorily done only under state subsidy and control. The keynote to decreasing the appalling infant mortality is good obstetrics and the watchword is efficiency—efficiency in prenatal care—so that at the time of birth both mother and child shall be in the best possible condition, and efficiency in the conduct of labor whether it be in the rôle of "watchful waiting" or masterly activity in order that the child shall be assured the inalienable right to be born alive and healthy and that the mother may be properly safeguarded.

8. Rectal Examinations in Labor.—Rudolph Wieser Holmes expresses the opinion that there must be a complete revision of the chapter on pelvic examinations in obstetric textbooks which shall give adequate presentation of the value of rectal examination. Vaginal examination should be made subordinate to rectal touch. While, at the present time, rectal examination does not give us the means of measuring pelvic size, it is of great value in estimating the factors situated in the posterior half of the bony pelvis. In almost every direction, under appropriate conditions, rectal examination is as definite as vaginal, if combined with abdominal palpation. The ease or difficulty of rectal examinations are commensurate to the ease or difficulty which encompass the vaginal ones, and are dependent on the same factors. Rectal examination is an utterly innocuous procedure in labor, whereas, vaginal examinations are always potential sources of infection to the woman. Rectal examinations are peculiarly appro-

priate to those women who are to receive the test of labor in relatively contracted pelves when cesarean section may possibly be needed. Vaginal examinations should be made in labor only when the rectal examination, for some special reason, is indefinite and inconclusive. The rectal examination is a decided technical advance in the conduct of labor.

9. Dysenteric Amebas in Rats.—Kenneth M. Lynch records observations which he has made incriminating the rat as a factor in the dissemination of amebic dysentery. The details of his study warrant the conclusions that: 1. The rat (*Mus norvegicus*) suffers from spontaneous amebic dysentery similar to that occurring in man. 2. This apparently occurs in endemic foci in Charleston, S. C. 3. The ameba found in the cases of rat infection here reported are indistinguishable from *Endamoeba histolytica*. 4. This rat may be infected with *Endamoeba histolytica* by allowing it to eat human feces containing this parasite. 5. The disease thus produced is practically the same as that occurring in man and from spontaneous infection in rats. 6. This infection, spontaneous and experimental, may be transmitted from the infected to the healthy rat by close association, that is, living, eating and drinking together. 7. The rat is a possible and probable disseminator of dysenteric amebas pathogenic for man.

The Lancet.

December 11, 1915.

1. A Review of Modern Gynecological Practice. Victor Bonney.
2. Two Cases of Arteriovenous Injury. G. A. Wright.
3. The Diagnosis and Treatment of Mediastinal Pleurisy. Louis Renon.
4. Clinical Results of 1000 Intravenous Injections of Galyl. Harold Spence.
5. An Epidemic of Jaundice Occurring at Alexandria. E. B. Gunson and J. W. C. Gunn.
6. Pneumosan in the Treatment of Pulmonary Tuberculosis. A. E. A. Carver.
7. The Development of the Oocyst of the Human Coccidium. C. M. Wenyon.

1. Modern Gynecological Practice.—Victor Bonney epitomizes the principal advances that have been made in gynecology during recent years, and presents a bird's-eye view of modern gynecological practice. He especially emphasizes the metamorphosis that has occurred within the memory of all. Gynecology was formerly a branch of medicine. It has become the most surgical of all branches of surgery. Specialists are a necessity for the advancement of any science or art, but in gynecology, at all events, pure specialism is a danger. The abdominal cavity is full of surprises, and except of necessity no one should open it who is not competent to deal with whatever he finds there. Hence the necessary enlargement of scope of the modern gynecologist. He is to-day an expert abdominal surgeon, especially expert in the pelvis.

2. Arteriovenous Injury.—G. A. Wright reports these cases because arteriovenous injury leading to communication between two vessels are not now of rare occurrence and records are needed to enable them to formulate rules for their management. Experience in the South African War brings out certain points. 1. It is not always possible to make out the aneurysm even though such may exist. 2. In aneurysmal varix the venous dilatation may not appear for a considerable time, several months or more after the injury, and in such cases, usually no operation is called for unless permanent disturbance of the circulation, quick pulse, etc., are present. 3. In late cases, those in which the injury has been inflicted perhaps some weeks before, at least in those in which the external wound has healed, when an operation is called for, several courses are open to the surgeon. Of these the most successful seem to be: (a) Ligature of the artery above and below the communication, leaving the vein alone. This was the course adopted in the first case cited. (b) Ligature of both vessels above and below. (c) Incision of the sac and ligature in the sac of both vessels above and below. Proximal ligature of the artery alone seems, in cases of arteriovenous communication, to give the worst results. The more recent conclusion of Inspector General Delorme is in favor of incision of the sac, and ligature in the sac of both vessels above and below.

3. Diagnosis and Treatment of Mediastinal Pleurisy.—Louis Renon reports a case in which the diagnosis of mediastinal pleurisy was easy simply because the possibility of its being such a case was present in his mind, skiagraphy having merely confirmed and rendered certain the diagnosis. In arriving at a diagnosis of this condition the first thing is that the possibility of its existence should cross the mind. The diagnosis of mediastinal pleurisy can be arrived at on a reasoned practical basis if one carries out seriatim the following examination. In the course of an acute febrile affection any sign of compression within the mediastinum should lead one to entertain the idea of a solid or liquid tumor in this region. This will occur to one even more markedly when the mediastinal syndrome is complete, that is, compression of the trachea, the esophagus, the nerve trunks, the vessels, etc., and is manifested by attacks of suffocation, retraction, amphoric breathing, paroxysmal cough, disturbance of voice and of the complementary thoracic circulation. The finding of this syndrome should be followed by *x*-ray examination. Bronchoscopic examination is indicated in the presence of amphoric breathing. The writer dwells somewhat at length on the difficulties of differentiating between dermoid cyst and mediastinal pleurisy and states that when one feels certain that he is in the presence of an encysted purulent effusion in the mediastinum, that inspite of the difficulty and risk of operation, there is no alternative when the temperature remains high, pressure effects produce an intense mediastinal syndrome, and, especially when by the twentieth day nothing has been coughed up.

4. Clinical Results of 1,000 Intravenous Injections of Galyl.—Harold Spence states that galyl, or tetraoxydiphosphaminodiarsenobenzene is one of the several synthetic substitutes for salvarsan. Its arsenic content is 35.2 per cent, and it possesses some claim to originality in that it contains in its formula phosphorus (7.2 per cent) while the atoms of arsenic are graphically represented as differently grouped. The assertion is made that it has the advantage over other arsenic derivatives of being non-toxic to nerve tissue. Several cases are cited as typical of the series and from them it appears that galyl is at least as efficacious as its predecessors and that syphilitic lesions disappear rapidly under its use. It is also claimed that it is less toxic than salvarsan. Thus far no fatality has been reported from its use, neither has there been reported any undoubted case of arsenical intoxication, but the remedy is new and the literature very meager. An interesting complication encountered twice in the series was a reaction resembling serum sickness.

5. An Epidemic of Jaundice Occurring at Alexandria.—E. B. Gunson and J. W. C. Gunn relate that during the months of June, July and August, 1915, they observed and treated a large number of cases of jaundice admitted to the general hospital at Alexandria. These cases were of great interest in that they arose almost without exception from a single camp. The clinical picture was so constant and differed in so many respects from that of ordinary catarrhal jaundice that the authors regard the disease as a definite clinical

entity. The most striking feature in the clinical picture was the marked enlargement of the heart in practically all the cases. This enlargement was so definite and so persistent, associated as it was with giddiness and dyspnea on exertion, as to make it almost the leading feature in the clinical picture.

6. Pneumosan in the Treatment of Pulmonary Tuberculosis.—A. E. A. Carver makes a supplemental report on a series of cases of pulmonary tuberculosis treated with pneumosan upon which he promised to report after an interval to what extent the initial favorable effects in these patients should be maintained. He now announces that the results of this treatment have surpassed his expectations. After the lapse of 16 months, all but 16 of the 103 showed a continued improvement. He states that one great point in favor of pneumosan is that he has never known it to be followed by untoward effects. The results appear to warrent its more extended use in pulmonary tuberculosis, though, like every other remedy, it should be used in conjunction with careful supervision of the patient's home condition and not as though it were sufficient in itself to restore the patient to his normal state.

British Medical Journal.

December 11, 1915.

1. Psychic Mechanism of the Voice in Relation to the Emotions. Frederick W. Mott.
2. Organic Lesions from Shell Contusions. J. Jameson Evans.
3. Bilateral Iridodialysis with Amblyopia and Contracted Fields Due to Exploding Shrapnel. F. D. Bennett.
4. The Prophylaxis of Tetanus: A Summary. A. T. MacConkey.
5. The Control of Diphtheria Bacillus Carrying, and the Jasmin Oil Method. William Ewart.
6. The Goulstonian Lectures on Spinal Injuries of Warfare. Gordon Holmes.
7. A New Cataract Operation. M. Corry.
8. Improved Technique for Intravenous Injections and Removal of Blood from the Veins. J. Alfred Codd.

2. Organic Lesions from Shell Concussion.—J. Jameson Evans states that as far as cases of shell concussion concern the eyes, the main symptoms are impairment of sight, contraction of the visual field, photophobia, and blepharospasm. When these symptoms are noted with little or no evidence of injury to the eyes or neighboring cavities, it is usual to regard them as functional, and in the majority of cases this view is correct. It must not be assumed that they are all of this nature. Cases are met in which there is little or no evidence of injury but which show gross changes such as dislocated lens and detached retina in the eye, but the histories of these cases have not been sufficiently definite to ascribe these changes to concussion. Shell shock also seems capable of bringing out latent ocular defects; squint and nystagmus have become manifest after shell fire, although the patients deny their previous existence. A number of cases are reviewed which the writer believes indicate the necessity of investigating cases of shell shock very carefully in order to differentiate those that are functional from those that are due to organic lesion.

4. The Prophylaxis of Tetanus.—A. T. MacConkey summarizes the literature on the prophylaxis of tetanus to date. He says that allowance must be made in the reports that have come in for the incomplete details of results due to the exigencies of the times. Taking this into consideration and putting the figures together he finds that among 83,593 wounded there were 539 cases of tetanus, or a percentage of 0.65. In the Crimean War, tetanus occurred in 0.15 per cent of the wounded; in the American Civil War, in 0.2 per cent, and in the Russo-Turkish War, in 0.12 per cent. Thus the incidence of tetanus in the present war is greater than would have been expected. The experience gained during the first year of the war confirms the opinion that from 500 to 1000 U. S. A. units of tetanus antitoxin is a sufficiently large prophylactic dose for the majority of cases, and that it is advisable in severe wounds to repeat this dose once or twice at intervals of a week. Occasionally cases occur in which antitoxin appears to have very little preventive effect. These cases should be recorded with minute details, so that our knowledge of them may be increased and an explanation of their occurrence obtained. Those cases of tetanus which develop some weeks after the receipt of an injury may be due to the reactivation of a quiescent focus or to too early or too energetic active or passive motion. The question of the duration of passive immunity is still unsettled. In one case the evidence shows that 12,000 U. S. A. units protected for only thirteen days and in another that 1,500 U. S. A. units conferred immunity for three weeks. As regards operating in cases of tetanus, the opinion before the war was against doing so, and nothing has occurred since to change that opinion.

6. Spinal Injuries of Warfare.—Gordon Holmes, in this, the third Goulstonian Lecture, discusses the sensory disturbance of spinal injuries, under the headings of "remote" and "local" sensory disturbances. He states that there is no one sign or symptom from which one can draw reliable conclusions on the severity of the lesion, or from which one can say, when there is complete motor and sensory paralysis, as there nearly always is in the earliest stages, whether the cord is completely divided or not. The structural damage is not always parallel to the functional loss. The most reliable information is perhaps given by the state of the muscles of the lower limbs; after three or four days the legs are usually very flaccid and their muscles toneless when the lesion is severe and irrecoverable, and they gradually become more so and waste. The preservation of tone in the muscles, is an indication that improvement may be expected. Valuable information can also be obtained by stimulation of the soles, as the amount of reflex movement that results varies more or less inversely with the severity of the injury. When tactile stimuli can be felt in the lower limbs within the first two or three days there is promise of useful recovery. A large proportion of the cases of spinal injury die soon after the infliction of the wound from the shock or associated wounds of the abdomen or chest. Among those that survive the greatest danger is from cystitis and pyelonephritis and the development of extensive bedsores. A large part of the responsibility therefore falls on the nursing. When cystitis is threatened or has developed, the writer has seen excellent results from suprapubic drainage. Finally, the danger of moving the patient must be borne in mind; the risk is obvious if the vertebral column is fractured. There is evidence that secondary changes are more liable to develop after movement; absolute rest is consequently advisable during the first few weeks if the symptoms hold out any prospect of useful recovery.

7. A New Cataract Operation.—M. Corry writes a preliminary note on a new operation which is now being performed in Delhi. The essential feature of this operation is a preliminary conjunctival flap cut so as not to hamper the movements of the knife in making the incision in the eye-ball. The lens is removed entire in its capsule either with or without a preliminary iridectomy. The advantages of the operation as shown by the results obtained in 1500 operated upon this year are: 1. The wound in the eye-ball is closed at once by the flap so that the risk of subsequent infection is *nil.* 2. Prolapse of the iris and vitreous are prevented from occurring. 3. The flap is firmly adherent to the globe

within a few hours, and in a large mapority of cases the dressing can safely be then removed. 4. Cataract cases are now treated in this hospital as out patients, and they can go home immediately after operation, returning next day to have the dressing removed permanently. 5. No photophobia is present subsequent to the operation, even on the second day, when the patients are provided with glasses, and can see well. 6. The usual corneal astigmatism is very much less than is generally found after other operations.

Münchener medizinische Wochenschrift.

November 9, 1915.

On the Treatment of Deficiency Phenomena.—Engelhorn refers chiefly to the menopause which has been studied as exhaustively by Jaschke among the moderns. The simplest explanation of some disagreeable phenomena of the menopause is that there is an overaction of the antagonists of ovarian internal secretions. The critical question is as follows: to what extent are the phenomena of the menopause due to ovarian insufficiency and to what extent to "overcorrection" by the antagonists. But certain endocrin glands are believed to act as understudies of the ovaries, so that defect symptoms are automatically cut down. Other views are in evidence—thus if ovarian inner secretion has held in check some psychoneurosis, then removal of the ovaries sets it free. More strictly speaking, the psychoneurosis may develop in the latter end of the fourth decade simply as a coincidence. Why must it be imputed to the cessation of the menses? An intensive study of the results of castration of women has failed to show any sequential changes in the activity of other endocrine glands. The remedies useful in the menopause comprise hygiene, nerve sedatives and organotherapy. The former may include a vegetarian diet and systematic hydrotherapy. Nervines include bromides and phenacetin and valerian derivatives. Ovarin and lutein are given as organotherapeutic resources. An old resource is venesection at stated intervals (6 weeks to 3 months). The author after taking the blood pressure may, if it be indicated, withdraw 100 c.c. of blood from the cubital vein as a valuable palliative for the nervous phenomena of the menopause. Finally regarding the amenorrhea and ovarian dysfunction of young women as in part due to deficiency, the author even justifies venesection in some of these cases. The association of neurotic manifestations and venesection obtains throughout.

Treatment of Sepsis.—Jessen has already advocated 1 per cent intravenous injections of lactic acid in tuberculosis and has recently extended this treatment to streptococcus and staphylococcus sepsis—non-fulminating cases. The examples cited by him would ordinarly be classed as rheumatoids, such as are naturally refractory to salicylic acid; together with tuberculous subjects in the hectic fever stage. In such cases the acid exerts a bacteriolytic power. As a preliminary to such treatment any pus focus should be disposed of. Further in regard to salicylic therapy the author holds that the salis are of little value and that the salicylic acid should be given pure and in high doses. Thus given, however, it produces burdensome by- and after effects, more so than does lactic acid when given intravenously. The conditions controlled by lactic acid seem to be "septoid" rather than septic. The diagnosis of sepsis is based largely upon the septic facies (greenish tint with blue lips together with embolic processes in the skin and about the joints). Bacteria in the blood are not mentioned, but a bacteriolytic effect is assumed when the temperature suddenly falls.

Night Blindness in the Battlefield.—Paul mentions the fact that nyctalopia has often been seen to attack perfectly intact soldiers. In peace times on the contrary it is very rare and tends to appear only in the broken down. Neurasthenic soldiers make up many of the army cases. The prognosis is extremely uncertain and it is a problem to know what to do with the victims. "War nyctalopia" is first of all not a disease of the eye but is the result of nervous relaxation and psychic depression. Prognosis must to some extent depend on protection from nervous and psychic insults.

Deutsche medizinische Wochenschrift.

November 4, 1915.

Typhus, Typhoid, Malaria, etc.—The leading articles in the present number deals with these subpects. Otto gives an account of a typhus epidemic in a prison camp. On March 2 last six cases were recognized, after some suspects had been received. The six were found to have come from the same locality, which suggested louse propagation. All who had come in contact with the strangers were at once isolated, and their barracks closed. An anti-louse campaign was now instituted. A barbed wire fence quarantine was also established. The anti-louse campaign was estended to the unexposed troops. The barracks of the exposed men were washed and treated with naphthalin. It was apparently impossible to rid the barracks of lice while the men were in them. New ones were therefore gotten up as a sort of detention hospital. These were provided with steam disinfection as well as baths. The occupants of the various barracks could be cleaned up here, while their domiciles were subjected to a rigorous disinfection, along with clothing, linen and bedding. Suspects were at once moved into a special barracks and if typhus developed were at once transferred to the pest house proper. No one entered the latter unless he was louse free—hence physicians and attendants were protected, and as a matter of fact not a case developed among them. In addition to the 6 patients who entered the camp with typhus 56 others developed the full picture of the disease while 9 others without examination were pronounced infected, a total of 71 cases. The wisdom of segregation of suspects and exposed was apparent, because men developed the disease in all quarantined places and could readily have carried the disease to the unexposed. The article will be continued. Drs. Hage and Korff-Petersen consider the subject of typhoid immunization and diagnosis. The immunized were tested for agglutination and complement deviation as well as the blood picture, diazo and attempts to cultivate bacilli from the blood. Those who escaped typhoid after vaccination are contrasted with those who developed the disease. Of the five tests used but one, the diazo, seems to have an absolute value as it is as good as absent in all subjects who have been immunized.

Chronic Pancreatitis.—Einhorn of New York finishes his article on this subject. Prognosis depends practically upon whether nutrition can be maintained. In certain cases secondary to diseases of the biliary passages, surgical relief of the latter may arrest the disease. The patient's nutrition can be improved if a certain amount of pancreatic gland tissue remains. The state of the stomach is also of great significance in these cases. There may be hypo- or hyperacidity or hypochylia, and indications are thus furnished for special diet and medication. Preparations of pancreas often have a very salutary action. In lientery, suggesting as it does very weak digestive powers, the nourishment should at first be liquid.

Book Reviews.

TWELVE LECTURES ON THE MODERN TREATMENT OF GONORRHEA IN THE MALE. By DR. P. ASCH (Strassburg). Translated and annotated by FAXTON E. GARDNER, M.D., Lecturer and Assistant Visiting Genito-Urinary Surgeon, New York Polyclinic; Assistant Genito-Urinary Surgeon, Bellevue Hospital, Outpatient Department, New York City. Price, $1. New York: Rebman Company, 1915.

THE title of this book conveys a fairly accurate idea of its contents. The author modestly claims in these unpretentious lectures to draw attention to those methods of treatment of gonorrhea which have proven most reliable in his practice. Much of value is contained in the chapters on acute prostatitis and epididymitis. The translator's notes temper the author's radical statements concerning serum and vaccine therapy and frequently suggest modern instead of obsolete surgical procedures.

HEREDITY AND ENVIRONMENT IN THE DEVELOPMENT OF MEN. By EDWIN GRANT CONKLIN, Professor of Biology in Princeton University. Price, $2, net. Princeton: Princeton University Press, 1915.

THE best presentation of a scientific subject in a non-technical way will be given by one who is most deeply versed in that subject. The country is flooded with "popular science" *ad nauseam*, but there are few books to which the thoughtful, educated reader may turn for an adequate, clear, and simple statement of the results obtained by the intense activity of scientific specialists, which is the characteristic feature of present-day culture. Fortunately this need has been recognized by several persons with large means and generous dispositions, and the result has been the endowment of lectureships of sufficient importance to secure the services of men of the first rank. One of the most fruitful of these endowments is "the Norman W. Harris Lectures at Northwestern University," and the book under review is the latest published result of that endowment. It is a worthy companion to the notable volumes previously contributed to the series.

Of all the sciences, Biology is the one that most directly concerns mankind. In its applications it affects every individual. Yet to many educated persons "biology" is a strange word, and the language of the science is an unknown tongue. This book should do much to dispel this ignorance. In a small volume that can easily be held in the hand, we have here the fundamental facts and theories that are of interest to everyone. The first chapter deals with the process by which the individual arises from the germ, the general principles of development. The second chapter is of especial importance for it deals with a subject that is but little understood outside of biological circles. This is the physical basis of heredity and development, including the nature of sex, the origin and behavior of the sex-cells. The two chapters following contain a description of the phenomena of heredity, and a discussion of the relative importance of heredity and environment in the development of men.

Having mastered so much, the reader will be prepared for the discussion in the remaining chapters. These are the ones that probably will be read with the greatest interest. First comes Eugenics, the preservation and improvement of the race by the control of heredity. Here is a sane, leved-headed view of the subject, a relief from the clamor that this subject has called forth in the popular press. Finally we have a discussion of the bearing of these biological principles upon the ethical view of life, upon the questions of personal responsibility, freedom of the will, and determinism.

It is impossible to state scientific facts clearly without using some words that are unfamiliar to the untrained reader. But the book is made complete in itself by the addition of a glossary, as well as a bibliography and an index.

As a whole the book gives in a small space a remarkably clear and adequate statement of the general belief of biologists concerning the fundamental principles of their science. The only exception is in regard to the effect of selection. A modification of the statement made on page 379 becomes necessary in view of a more recent article by Castle (*American Naturalist*, December, 1915). The style of the book is interesting and attractive and the subject matter of the greatest importance. It is a work that should be read by every physician, and it is one that can be recommended to many patients to their pleasure and profit.

PHYSIOLOGICAL CHEMISTRY. A Text Book and Manual for Students. By ALBERT P. MATHEWS, Ph.D. Professor of Physiological Chemistry, The University of Chicago. Illustrated. Price, $4.25. New York: William Wood & Company, 1915.

UNLIKE most of the books that have been published under the above or similar titles, this volume is truly what it is supposed to be—a treatise on the chemistry of physiology in all its aspects. Frequently the authors of such works are primarily chemists, less often primarily physiologists, and in either case the result, excellent as it may be from the standpoint of either specialty, does not present the fusion of the two sciences that is intended. Professor Mathews, however, is evidently entirely competent to compose either a text book of physiology, or one embodying the most advanced teachings in organic chemistry and physical chemistry, and having written the two simultaneously, presents them skillfully interwoven between the covers of the present volume. Consequently the mass of chemical lore that requires discussion is invested with a vital interest that it all too often lacks in other books, while at the same time the physiological observations receive their adequate explanation in the underlying principles of pure science. The book is divided into three sections. Of these, the first is devoted to the physics and chemistry of living matter in general, as exemplified in protoplasm and the cells. In the second and largest portion of the book, the functions and activities of the mammalian body are discussed in full detail, and the third section contains a complete and very useful epitome of the almost endless technical procedures that are now necessary in making tests of metabolism and organic function. Where everything is excellent it is difficult to select portions for special praise, but no doubt most readers will find the sections on calorimetry, on the blood, and on general metabolism particularly instructive. The list of references appended to each chapter is of great value, to both students and research workers, as they comprise books suitable for collateral reading, as well as a satisfactory bibliography of each topic. Some mention should also be made of the admirable mechanical execution of the book. Although it contains over one thousand pages, the size and weight have been kept within astonishingly low limits by the use of a very thin but perfectly opaque paper, and the many illustrations are admirably reproduced. The text throughout embodies the most recent views and theories, and is without a doubt the most satisfactory exposition of the subject extant, while the author's most agreeable narrative style makes the book a delightfully easy one to read.

WHAT TO EAT AND WHY. By G. CARROLL SMITH, Boston, Mass. Second Edition. Thoroughly Revised. Price, $2.50, net. Philadelphia and London: W. B. Saunders Company, 1915.

THE importance of diet in the prevention or treatment of disease is now so thoroughly recognized that books on diet have multiplied rapidly within recent years. However, there is always room for a good article of any kind and this statement applies to Mr. Carroll Smith's book. It is an excellent common sense dissertation on diet, avoiding technicalities and the chemistry of foods but discussing exhaustively the value of diet in certain diseases and affections and pointing out the kind of food most suitable in their prevention and treatment. The book will well repay a careful reading.

THE ETIOLOGY OF TYPHUS EXANTHEMATICUS. By HARRY PLOTZ, PETER K. OLITSKY and GEORGE BAEHR. Reprinted from the *Journal of Infectious Diseases*, July, 1915. pp. 1-68, with one plate.

IN the small book under review are described at length the investigations pursued by Dr. Plotz and his co-adjutors Drs. Peter K. Olitsky and George Baehr which terminated in the discovery of the typhus bacillus. The conclusions reached as the result of these investigations would seem to justify the claim that the bacterium isolated by Plotz is the causative agent in typhus exanthematicus. For those who desire to judge for themselves as to the validity of the claim, a perusal of the book will demonstrate that Plotz and his co-workers have fulfilled all the scientific predicates calculated to place their conclusions on a sound basis.

Society Reports.

SOUTHERN MEDICAL ASSOCIATION.

Ninth Annual Meeting, Held at Dallas, Tex., November 8, 9, 10, and 11, 1915.

THE PRESIDENT, DR. OSCAR DOWLING OF SHREVEPORT, LA., IN THE CHAIR.

Report of Committee on Prevention and Treatment of Pellagra.—DR. H. LESLIE MOORE, chairman, of Dallas, Tex., stated that taking everything into consideration they had come to the conclusion that the ideas advanced in the experiments made by Dr. Joseph Goldberger of the Public Health Service, were the most plausible, and probably the only theory that had come anywhere near being proof. When he spoke of proof, the members doubtless noticed a few days ago a report came out in the Mississippi Board of Health in which a number of convicts had had the disease produced in them by Dr. Goldberger according to his theory. They had all noticed that nearly every case of pellagra occurred in people who were poor and who were not able to get the best nourishing food. Very few cases occurred in the well to do. This fact Dr. Goldberger had observed. He observed in certain orphanages that this took place in Mississippi where there were a large number of children who had pellagra, and that nearly every case, all of the cases practically, were confined to those between the ages of six and twelve years of age. He set to work with a view of determining if these children were fed differently from the older children and he found that the children of this group were fed very little lean meat or other animal protein foods, and were given mostly biscuits, light meal, syrup, and very little of the legumes, such as beans and peas. In one of the largest orphanages he found there was the highest percentage of pellagra. Following this the Public Health Service took charge and prescribed a diet for those children between the ages of six and twelve, and they were given a greater proportion of fresh animal food and all the leguminous protein foods, beans and peas, etc., in addition to what they were already getting. In those children who survived through the spring and summer the trouble would apparently clear up to reappear the following spring. In the two institutions there were probably 200 cases of pellagra which were fed as prescribed by the Public Health Service. After this additional diet was prescribed, only one out of these 200 cases recurred the following spring, that is, they went one entire year without recurrence with only one exception. Dr. Goldberger, concluded that pellagra could be prevented by appropriate diet without any change in environment, whether it be hygienic or sanitary. In other words, there was no change in the environment in any of these cases except the addition of the diet. No attention was paid to the sanitary condition.

Report of the Committee from the State at Large.—Dr. W. L. ALLISON, chairman, of Fort Worth, Tex., stated pellagra had spread rapidly through the entire South since 1907, until now each of the Southern States could number its cases by the tens of thousands. The medical profession was better acquainted with the disease now, and therefore its presence was suspected and diagnosed earlier than formerly. While it was true that in Europe the disease was largely among the poorer classes, this did not hold true in this country, and especially was it not true in Texas. They had no such poor in Texas as were found in Italy, and the disease was frequently found among the well-to-do classes of people there. They had every reason to believe the disease was not directly contagious. It was a significant facts that with few exceptions, nurses and doctors handling these cases in the various institutions where pellagra was treated, had not contracted the disease. Notwithstanding the many theories as to the cause of the disease, none had as yet been proven. Like many other diseases, a low diet and a run-down constitution seemed to be predisposing factors. That the disease was purely a dietary one was advocated by many, but this theory would not account for all the cases, nor would it explain its sudden incidence and rapid increase in this country. Many had developed the disease with whose diet no fault could be found. Corn as a dietary factor seemed to be losing favor. The occasional failure of mild cases to respond promptly to a well-balanced diet, would seem to discredit any dietary theory. The theory of Alessandrini and Scala that "pellagra is nothing more than a mineral acidosis," due to an excess of silica or alumina in the water, had met with little favor and did not seem to be supported by facts. That the disease might be an infection seemed to be gaining favor and had much to support it. The Thompson-McFadden Pellagra Commission pointed to the significant fact that no new cases developed in those mill villages having a water carriage sewerage system. This commission also reported that close connection with a previous case existed in 80 per cent. of their cases. There was nothing to show that the disease was hereditary. Morphine habitues seemed fairly susceptible. The incubation period of the disease seemed to be from two to six weeks. All animal inoculation experiments had been negative with possibly one or two exceptions. The greater prevalence of the disease among women between the ages of 20 and 45 made it appear that the causative agent was to be found about the home in the day time. The symptoms of the disease were all in the nature of an intoxication more or less chronic in its course. In the majority of cases the diagnosis should be made before the skin lesions developed. When the disease first appeared in this country, 60 per cent. of the cases died, while to-day probably of these 80 per cent. get permanently well. The prognosis for complete recovery was more favorable in children and it diminished with age, being very unfavorable in old age, although even the old got well. In view of the rapid increase of pellagra, more attention should be paid to the prophylactic treatment. Everything should be done to improve the sanitary and hygienic conditions about the home. A well balanced and nourishing diet would do much to increase the individual resistance and prevent the disease even if it were of infectious origin. A sanitary water carriage sewerage system was certainly a step in the right direction. Active treatment of a case of pellagra should be begun by placing the patient in bed for at least a few weeks, depending on the severity and progress of the case. This of itself lessened the force of most diseases and conserved body energy. Hydrochloric acid should always be supplied where it was diminished or absent. Of the many remedies, thymol, quinine hydrobromide, picric acid, and the arsenical preparations, especially sodium cacodylate, were apparently the most popular.

Pellagra in Texas.—Dr. K. H. BEALL of Fort Worth, Tex., stated that while a conservative alarm had been sounded throughout the State by a few, the State Government had done very little to check the ravages of this new enemy. Eight years ago this disease was purely of academic interest to them, although last year it killed 500 of their citizens and made invalids of many thousands more. Texas had within her confines a great many varieties of soil, climate, and altitude. Navarro County had a great many more deaths from pellagra than had El Paso County, although Navarro County had six or seven times as many cases of the disease. There were several factors which might be considered why this occurred. One was altitude, another the climate, but certainly it was not the water because El Paso had a large river and many irrigation ditches. The whole Pan Handle of Texas was free from pellagra because perhaps the altitude was greater than in this part of the country, and therefore along with the high altitude there was a cooler climate. In a chart which he had to show the members there were 1769 deaths, with exactly the same number of females as males between 60 and 70 years of age. Statistics would seem to show that women were much more frequently attacked with the disease when of certain age than men of certain age, or when they became much less resistant to its ravages. An intensive study of pellagra would be extremely fruitful at this time and would lead to much greater results than it would ten years from now, with a study of its epidemiological features, such as heredity, poverty, alcoholism, and syphilis, and the State of Texas had no right complacently to watch this enemy slay the people. No one knew but that in Texas and in this southland pellagra might find a riper field than in Italy.

Drugs in Pellagra.—Dr. W. T. WILSON of Navasota, Tex., reported 500 cases of pellagra treated up to November 1, 1915, ranging from the mild to the severest type. One hundred and ninety cases were treated by himself and 310 treated by other physicians. Of this number 35 had died. Of the 35 deaths, 14 reported death due to pellagra that were treated with picric

acid; ten were terminal cases and of the typhoid type, and died within 14 days after treatment was begun; 4 had tuberculosis associated with pellagra. Two had nephritis complicating. The others, probably cancer, were very young children. In several of them symptoms of pellagra were relieved. Thirty-seven were reported with severe mental symptoms that recovered. His report was not complete on the number of cases improved or not improved. He failed to ask for this data, but from conversation with many physicians he did not think the percentage in either case would exceed 7 per cent. if it even ran that high. From May 4, 1914, the total number of cases discharged to June 9, 1915, were 200 with 3 deaths. He was unable to account for this low death rate except that he had asked for a report on completed cases to June 9, and the seriously sick were probably under treatment at this time. The disease did not become very serious before the middle of May. The total number of cases from June 9 to November 1 were 300. Out of these 500 cases, there were 35 deaths. Of last year's cases treated by other physicians as well as himself, 22 out of a total of 92 had symptoms of a recurrence. This report was almost complete. In each case they had been treated but a short time, averaging about 21 days, and again on being put on treatment this year they responded immediately. There had been reported a total of 35 deaths this year to November 1, most of these deaths having occurred during the months of July, August and September. In acute pellagra or in pellagra of recent origin picric acid was of no value, that is, when used internally and as a gargle. In severe types or those with malarial symptoms quinine hypodermically should be used first, then the picric acid following. In the chronic forms alternate or give at the same time picric acid as above stated and sodium cacodylate hypodermically, and also give the patient some bicarbonate of soda at intervals. Several physicians reported good results from the use of thymol in the treatment of this disease.

The Blood in Pellagra.—Dr. BEVERLY YOUNG of San Antonio, Tex., said that the red cells, hemoglobin, and hemoglobin index varied greatly, and while the total red count was made in nearly all cases, he considered it of only relative importance as the severity of the diarrhea had such a marked effect on the concentration and possibly on the distribution of the cellular elements of the blood. Taking the peripheral blood, however, as an index, the small mononuclear leucocytes were markedly increased, while the other cells, except the polynuclears, were slightly, if at all, affected. Some cases showed slightly high eosinophilia, but this was very variable, and in every case where the eosinophilia was marked he was able to find the ova of intestinal parasites. His observation was that a high lymphocyte count was usually of good prognostic import. This high count usually persisted not to the same extent, but above normal, for weeks and sometimes months after the acute symptoms subsided and the patient was in excellent physical condition. The cases developing after admission to the hospital with two exceptions were among those who were fairly well nourished and eating a well balanced diet, and several cases observed during the same period of time who persistently refused nourishment of any kind did not develop pellagra, and while the lymphocytes were increased in these cases, they were neither so markedly nor so persistently increased as in the pellagrins. Two of these cases were particularly important for comparison since so persistent were they in their fast, that they died of exhaustion in spite of forced feeding.

Etiology of Pellagra with Reference to Amebic Invasion.—Dr. W. A. DEARMAN of Long Beach, Miss., said that while Dr. Goldberger was of the opinion that pellagra was caused by the lack of a well-balanced ration and that as a prophylactic as well as a curative measure individuals should be encouraged to eat liberally of peas, beans, and other legumes, and that the whole solution of the pellagra problem depended on this vital and important principle, this theory was not supported *in toto* by the end results of the Thompson-McFadden Commission. In six mill villages studied, comprising 861 families, of which 140 contained one or more cases of pellagra, the daily use of fresh meat was rather uncommon in the population, only 13 families falling in this group, almost half of the families (428) used it rarely or never. The families containing cases of pellagra occurred in all the groups and were relatively most numerous in the group using fresh meat daily and less numerous in the summarized group using the food rarely or never. In those families avoiding fresh meat altogether, only 4 out of a total of 46 had cases of pellagra, or 8.7 per cent., a lower percentage than any other group. In 193 persons who did not use fresh meat at all, only 1 new case of pellagra was observed, an incidence of 0.50 per cent. He had been able to demonstrate the presence of amebæ in the centrifuged urine of about 50 per cent. of pellagrous cases that came under his observation, and about 40 per cent. showed a mild to a severe and marked pyuria. The amebæ were large and small, and one marked feature was that they were very sluggish in their movements. Sometimes a cell resembling an encysted ameba would have to be recognized and kept under close observation in order to observe motility, while some were very actively motile. While he had no evidence at hand to prove conclusively that amebic invasion *per se*, or with a proper symbiosis, was responsible for pellagra, the symptomatology, the clinical course, and the post-mortem finds as reported ran parallel with the depredations often observed in a profound amebic invasion.

Dr. ALLEN W. FREEMAN of Washington, D. C., said whether we believed pellagra was due exclusively to diet or not, he thought we agreed that the evidence was strong that there was a definite relationship in many cases between the incidence of pellagra and certain deficiencies in the diet. That there was a definite relationship in the incidence of pellagra between classes fed on different diets in institutions had been proven successfully by changing the diet; furthermore, pellagra had been produced experimentally by limiting the diet to certain elements in common use in the South. Dr. Goldberger did not claim, and did not pretend to prove, that diet was the only factor in pellagra, but he had produced something which, it seemed to him, we must either try out or reject. He had shown that he could produce pellagra so clean cut that we must either totally disprove his findings or attempt to put the régime he recommended into effect.

Dr. STEWART J. ROBERTS of Atlanta said there were two chapters in connection with pellagra that had not yet been written. First, the absolute proof of the cause of the disease. Of theories there had been many since man began to study the disease after Casal first described it. What was the one thing that we most needed in this country at the present time in regard to the etiology of pellagra? Absolute honesty in realizing that we did not know the cause of the disease because we could not prove it, and we had been too long in pellagra seeking after a sign. We had many signs. What we needed was one proof. The second chapter in pellagra that had not yet been written was the one as to the treatment of the disease. Coming to the cure of pellagra, let us understand one another clearly, and let us be absolutely honest. By the cure of the disease he understood that a patient who had had the disease remained absolutely free of it forever unless reinfected. He met good professional friends everywhere who told him they had cured 600 patients of pellagra. Another man said he had cured 200 patients. It was one thing for a pellagrin to recover from an attack of pellagra, but it was quite a different thing for a pellagrin to recover from the disease which we called pellagra. He was sorry, if he appeared to be blunt, but if as Americans we were ever to solve the problem of pellagra, it would be after we had come down from our mistaken confidence, after we had come down to absolute intellectual honesty, and finally worked out somewhere, sometime, proof.

Dr. O. M. MARCHMAN of Dallas, Tex., stated that since last August the City Society decided to hold a pellagra clinic and they had at that clinic some twenty-five or thirty patients in different stages of the disease. He found from reports from the different physicians of the county and surrounding counties that they had used every available remedy, and not only the patients at the clinic but others treated in the various institutions were relieved in a like manner by all of these various treatments with a liberal generous diet. They found upon investigations at the clinic and from reports that they had had probably 100 cases of pellagra in Dallas since last August, an increase of 100 per cent., from previous years. These pellagrins were from the poorest class and were fed a one-sided or limited diet. A great many of these patients were put upon a generous diet, without any medical treatment whatsoever, and recovered as rapidly as those put upon various gunshot prescriptions.

Dr. ALLAN EUSTIS of New Orleans said he had heard no evidence as yet to counteract Goldberger's ideas. He

did not believe any of us were able to pass on Goldberger's results until we saw the published details of his investigation. Personally, he had never seen Dr. Goldberger claim that he had found the cause and a cure for pellagra, but he believed the condition could be remedied in great part. Erythema was only one of the symptoms of pellagra, and he was anxious to see what were the other symptoms that these patients in Jackson, Miss., developed.

Dr. JOHN E. STINSON of Chickasha, Okla., believed pellagra was infectious, and it was one of the most dreadful maladies he had ever been called upon to treat. Take the symptoms of the disease as they manifested themselves, and they were hard to combat by any method of treatment. He did not believe any true case of pellagra had ever been cured.

Dr. JAMES A. HAYNE of Columbia, S. C., said that a person might make a mistake in the diagnosis of pellagra in children in mild attacks of it, but he did not make mistakes regarding the terminal symptoms of the disease, and when a physician wrote a death certificate that a patient had died of pellagra, that was probably the cause of death. In South Carolina up to the present time they had had 1200 deaths from pellagra. To give some idea of the difference between pellagra and typhoid fever, the death rate from typhoid fever in South Carolina was only 26 per 100,000. It was about equal to the death rate from the circulatory diseases, such as heart disease, kidney disease, and so on.

Dr. JOHN L. JELKS of Memphis, claimed that certain diets were very good, while others were very bad, in cases of infection of the gut, such as we had in pellagra. A patient from Dallas was supposed to have been injured on the Cotton Belt Railroad at Texarkana, was brought to Memphis, and $500 offered by the claim agent as a settlement was refused; a diagnosis of pellagra was made, not from the skin manifestations, but from the gut. He depended more upon the contents of the gut than upon the skin manifestations which were one of the latest symptoms to develop, after which death was almost certain. Patients with amebiosis would manifest the same train of symptoms as those encountered in cases of pellagra. Note the number of cases of amebiosis in which there was pain in the back of the neck. Note the number of cases in pellagra in which you find pain in the back of the neck. Note the number of cases of pellagra in which you find marked melancholia. Nearly all of the cases had a blood picture to which one of the essayists had called our attention. He believed that pellagra was an infection which took place primarily in the gut.

Dr. J. R. LEHMANN of Dallas, Tex., stated that it had been shown that we carried in our mouths the organisms of pneumonia, and yet all of us did not get pneumonia. But when conditions were ripe, with lowering of the vital resistance, we developed pneumonia. Was it not possible that the cause of pellagra, like that of pneumonia, was lurking around seeking whom it might devour, and only when conditions existed which favored a lowering of the resistance did pellagra develop.

Dr. A. A. HEROLD of Shreveport, La., said he was converted to diet as the principal causative factor in pellagra, and he would tell briefly why: He was health officer of Catto Parish in Louisiana, and in that parish agricultural and mineral oil regions were side by side. There was practically no dfference between the people who lived there. In the mineral oil districts sanitation was more imperfect; flies and mosquitoes were more numerous in the oil region, and insect-borne diseases, such as typhoid malaria, were much more common in the oil districts than in the agricultural, yet not one case of pellagra had been reported in the oil fields, but 200 cases had been reported from the agricultural regions. There was one explanation for that. The usual ration of the farmer was fat meat, cornmeal, and some syrup. On the other hand, the roughnecks in the oil regions would not stand for poor rations. They lived on a thoroughly mixed and varied diet and did not develop pellagra.

Dr. E. H. MARTIN of Hot Springs, Ark., believed that pellagra was infectious, and he agreed with Dr. Goldberger that a person who was well nourished would not contract the disease. It had been an axiom with him for several years that an absolute preventive of pellagra was a bank account. If a man had $200 in the bank he was not likely to have pellagra. He had never seen a person during all these years, who had money in the bank, who contracted pellagra. A man who had money and who was well nourished would not take pellagra, and the man who had pellagra, who got well nourished, would get well.

Dr. LEVINE of New Orleans stated that a study of the intestinal tract was the most important thing in making a diagnosis of pellagra. There was a class of cases of pellagra where the skin symptoms were lacking. Involvement of the nervous system was not present, and the only symptom was the involvement of the gastrointestinal tract. Patients would complain of stomach disturbance; they had symptoms of heaviness and fullness and pain, with slight cramps and loose bowels. The fact that pellagra was on the increase was due to the further fact that we were not sufficiently expert as yet to differentiate those cases which were pellagra from those which were not.

Dr. CHARLES W. GARRISON of Little Rock, Ark., said he would challenge the statement that the publication of the dietary treatment of pellagra was injurious to the people and the profession. In Arkansas they had a slogan, "Let Arkansas feed herself," and they were using pellagra to assist us in that movement. There had not been a single speaker, either representing the infectious or opposite theory of pellagra, who had not admitted that diet was one of the most essential and important factors in prevention and treatment of the disease.

Dr. FRANK H. CLARKE of Lexington, Ky., said that those who had the pleasure of visiting Lexington two years ago would recall the splendid agricultural district there. It was a short-horned and Jersey cattle country, a fine race horsing country, and a great many wealthy people had settled there, and yet pellagra had appeared among the rich as well as among the poor.

Dr. BRUCE recalled two patients who had returned from the Johns Hopkins, who were treated there for amebiosis with secondary anemia. These patients came under his observation during this year with the later symptoms of pellagra. The skin symptoms had shown up and the severe nervous symptoms. In the beginning these cases were incorrectly diagnosed and were treated as instances of amebic dysentery, and since then had developed all of the later symptoms of pellagra.

Dr. LOUIS LEROY of Memphis, wished to report in this connection an interesting case of pellagra which he had this spring, developing in an old woman who had at this time inoperable rectal cancer. Wherever one had a lesion in the intestinal mucosa, he had a possible port of entry for the subsequent development of pellagra. He had no respect for the statement that it was too early for anyone to get up and assure the people that there was no danger of contracting pellagra. One could name any one locality, and when one case occurred, if there were open earth closets, if there was ground infection, one could look for more cases pretty soon.

Dr. WILLIAM KRAUSS of Memphis stated that with reference to the open closet, until very recent times, they had no pellagra originating in the city of Memphis, but recently he had seen many cases of the disease which had originated there, and they had no open closets in our city. Something was said about personal cleanliness, and consequently one might infer from that that only people who were filthy in their habits contracted pellagra, and yet they had an increasing number of cases of the disease in Memphis among the best people who lived in the best surroundings, who took two baths a day, and ate good, nourishing food.

Dr. THOMPSON FRAZER of Asheville, N. C., said several years ago he saw a great many cases of pellagra, and he had heard so much had been written about it that he decided to look it up. He had overlooked a great many cases and had not recognized the disease; then he had a good many cases referred to him. He had seen from 75 to 100 cases of pellagra, but in the last two years he had seen but few, which he found was in keeping with the history of the disease which had tended to spread from one section to another.

Dr. C. B. BOWYER of Stonega, Va., said that for the benefit of those who made a study of pellagra, he would report the results of some observations they had made in the coal mining district. He had never seen a case of pellagra in a man who gave his occupation as that of a miner. He was talking with Dr. McCormack, and he said that pellagra, so far as he knew had never developed in miners in Kentucky.

Dr. W. L. ALLISON of Fort Worth, Tex., said when he came to this meeting he was opposed to Goldberger's theory, because he believed at that time he had made

the definite statement that pellagra was due to poor diet and that alone. He now agreed with him and believed as he did that diet stood as a predisposing factor. When one fed pellagrins good nourishing food lots of them got well, but it did not hold true in Texas that pellagra occurred only among the poor. The first trouble he had with the relatives of a pellagrin occurred about six years ago. A woman with pronounced symptoms of the disease died under his care, and the family came to see him about the nature of her trouble, and he told them she died of pellagra. They resented it very much. They wanted it distinctly understood that this woman was well fed. He had seen many cases of pellagra in people who were well fixed financially and who lived well. He did not believe the disease incidence could be explained by diet any more than tuberculosis and typhoid fever could.

Experimental Study of Quinine and Urea Injections in Hyperthyroidism.—Dr. LEIGH F. WATSON of Oklahoma City, said he had used quinine and urea injections for hyperthyroidism over 400 times and the results might be summarized in the folloing conclusions: (1) The treatment is suggested only to relieve the symptoms of hyperthyroidism and is not recommended to remove the tumor in simple goiter. (2) The injection is a harmless procedure in experienced hands. It should be used only in a hospital by men skilled in goiter work. It is almost painless, and there is no post-injection discomfort. (3) Small infiltrations, frequently repeated, are to be preferred to massive ones. (4) If the injections are always made well within the thyroid, there will be no adhesions around the gland and operation will not be made more difficult because of the previous treatment. (5) The injection of a weak solution of quinine and urea has little effect, necrosis and connective tissue formation always occurring after the concentrated solutions are injected. (6) In treating toxic goiter the necessity of preventing pain from any injection, by the use of local anesthesia, is of vital importance. If acute attacks of hyperthyroidism are to be prevented, the use of preliminary injections into the most prominent portion of the goiter of a few minims of sterile salt solution, given at one to three day intervals, followed by injections of sterile water, will be found indispensable. The results of the quinine and urea injections depend on the amount of tissue destroyed. (7) The greatest field of usefulness for the injection will be found in those cases of beginning hyperthyroidism not severe enough to justify operative treatment, and as a preparatory measure to partial thyroidectomy in chronic cases of toxic goiter too ill to warrant any form of immediate operative procedure.

The Small Town—The Neglected Unit in Sanitary Administration.—Dr. A. W. FREEMAN of Washington, D. C., said that sanitarians had almost completely overlooked the small towns, the towns in the agricultural districts of the country ranging in population from a few scattering houses to one thousand people. Such towns were merely a group of country homes without the intervening farmland. The population was essentially rural and composed of people just one step removed from the farm. The fundamental sanitary needs of the small town were those of water supply and excreta disposal. The shallow well and the privy were condemned and attention was called to the usual appearance of both on the same building lot. It had been his observation that neither the well nor the privy were sufficiently protected. He deplored the aversion the average American had to paying taxes, and pointed out by a slight increase of taxes matters of sanitation could be easily taken care of and the public health protected. A public scavenger and the can privy should be advocated. Such privies were easily cleaned and the breeding of flies was kept down and public health protected. The cleaning of the can or vault privy could be made often enough to insure a high degree of sanitation. The work could be done for about thirty cents per month for a family. The great need of the south to-day was the improvement of the rural home.

Sanitation of the Rural Home.—Dr. R. N. WHITFIELD of Florence, Miss., stated that the rural home needed more improvement as a rule that any other home, because in the South the rural population was greatly in excess of that of the cities and towns, and, most of all, the public health services had been performed in the cities and towns to the exclusion of the rural districts. One exception had been made, and that was the work done by the Rockefeller Commission, which had been laboring five or six years in eleven of the Southern States. The second greatest need in the South was the divorcement of the public health from peanut politics. He condemned the pie-hunting and the coat-tail hangers-on for positions on public health boards and declared that no physician would be a success as a health officer if that physician was allowed to practice his profession. A full time health officer should be placed in charge of every county in the South, and he should be a capable and competent man.

Intensive Community Health Work.—Dr. JOHN A. FERRELL of New York stated that intensive community health work differed from ordinary health work in that a concrete health problem was taken and adhered to until measurable progress had been made. It was limited to a relatively small circumscribed area instead of being diffused throughout a large area, such as a state or a county. A detailed record of a survey was made of the area selected, including every home, school, church, road and stream, and usually the information was shown on a map. Every home was visited and inspected and every person examined as far as practicable with reference to the particular health problem under consideration. A record of the disease in the past and its probable consequences was made so that when the work began there was a definite starting point.

Rural Sanitation in the South.—Dr. J. HOWELL WAY of Waynesville, S. C., placed the chief resposibility on the one thousand three hundred and ten county governments of the Southern States for the improvement of conditions. He advocated the employment of a full time county health officer on scientific merits rather than on a political basis for the present. The chief difficulty in county work was the lack of a well defined plan of procedure, and he insisted that a rule of standards and model system would be worked out for counties soon. Eventually, when methods of rural sanitation became standardized, their counties grow in population as well, the unit system operated by state boards of health would naturally and appropriately give place to the whole time county health officer, but for the next five to fifteen years the unit system possibly was destined to exercise a more practical helpful influence on the progres of rural sanitation than could be involved by any adherence solely for the whole time county health officer plan, which so many counties did not feel they might institute as yet.

Immediate Necessity of Intensive Health Work in the South.—Dr. A. L. LINCECUM of Austin, Tex., said that housing conditions were deplorable, especially among the tenants in the farming districts. The absence of screens on the doors, windows and porches of these homes cost annually for treatment of malaria more than the expense of screening would be.

Treatment of Suppurative Appendicitis.—Dr. SOUTHGATE LEIGH of Norfolk, Va., regretted the subject of suppurative appendicitis had not received the attention at past meetings of the Association that it deserved. While it was generally understood if properly handled by the profession, there was still room for great improvement and expansion of knowledge on the subject. While the mortality rate had been greatly reduced in appendicitis, it should be reduced even more. Great improvement could yet be made in the early handling of cases. As soon as a patient was suspected of being affected he should be placed upon a proper stretcher, the head of which was elevated, and in all cases the patient should be kept lying inclined to the right side that in case rupture of the pus sac took place the upper region of the abdominal cavity would be protected from the pus. The question of transportation of the patient was most important. The patient should be well propped up and kept inclined to the right side. Cathartics should never be given in acute cases. Delay in operating was often advisable, if the condition of the patient would permit, especially if the patient was fatigued from the journey and transportation. However, where all conditions were favorable, operating as soon as possible after the case had been properly diagnosed should be advocated.

The Use of Radium in Uterine Bleeding Due to Myometrial Degeneration.—Dr. C. JEFF MILLER of New Orleans stated that radium had proved a boon in inoperable cases of carcinoma, but he would not recommend it as the sole treatment in operable cases. The only treatment that promised relief from cancer was its early removal by surgery. He reported a number of cases in which he had used radium with beneficial and satisfactory results. He also asserted that radium, when properly screened, might be used as economically inside

the body of a patient as by being kept in a medicine case at the office.

A National Health Problem.—Dr. ARTHUR T. MCCORMACK of Bowling Green, Ky., delivered an address on this subject in which he brought a strong indictment against the United States Government for its failure to recognize the necessity of preserving the health of its citizenship. The present pure foods and drugs act was criticized. The speaker said that the enforcement of the law was so slow it made possible patent medicine fakes and really encouraged violations. He pleaded for prompt action in the department of chemsitry and in the publishing of its findings at once. He advocated the correlation of the Bureau of Animal Industry with the Bureau of Health, saying that the health of animals and man were too closely intermingled to be separated. He wanted the Child's Welfare Bureau to be taken out of the Department of the Interior and placed in the Health Department. Research, education, leadership, organization, interstate and foreign and maritime quarantine, prompt statistics, as accurate as possible without being devitalized by delay, enforcement of Food and Drugs Acts, detailed solution of special problems of state and localities—but above all, leadership and study in methods of execution would be the beginning functions of such a federal department. The bringing together of all the health departments, even down to the municipal department, under the fountain head of the United States Health Department, was advocated. When such a time came he believed then diseases known to be preventable would be stamped out.

Malaria and Hookworm Disease.—Dr. W. S. LEATHERS of University, Miss., stated that either malaria or hookworm disease so devitalized the human body that typhoid and tuberculosis had but little trouble in completing the destruction. These diseases made the other diseases more deadly. The insidious diseases must be stamped out before any noticeable impression could be made upon the diseases having a higher degree of mortality. Public health depended almost entirely upon education, and when the people became educated along the lines of protection against the ravages of the insidious diseases, a great step in advance would be made. Teaching simple sanitation to the people was one of the great duties of public health departments. The Southern States reported for the year 1914 between two million and three million cases of chills and fever, and fifteen thousand deaths from malaria. The State of Mississippi reported 22,090 cases of chills and fever for the month of September, 1914. The land in the Mississippi Delta was being held down in price to-day because it was generally understood that living was almost impossible there. He could not understand why our government was spending millions to put water on lands in the West that would never be as productive as our lands of the South, and it would not give one cent to take the water off the land of the South. Our richest lands were those which became covered with water. Lands in the Mississippi Delta sold from $20 to $100 per acre when they should be selling for $400 per acre. Malaria made living almost impossible in the Delta. This meant that millions of dollars were lost each year to the South due to this disease.

Immediate and After-Treatment of Railway Injuries.—Dr. W. W. GRANT of Denver stated that the importance and necessity of immediate first-aid treatment in such cases was apparent, by reason of the fact that these accidents were generally defined as contused, lacerated and mangled, and were much more prone to infection that smooth wounds. The application of iodin, peroxid of hydrogen and alcohol pending the transfer of the patient to a permanent place of treatment was common. Probing was seldom justified under any conditions. He spoke of the dangers of operating while the patient might still be suffering from shock of the accident, and declared that many surgeons did not realize the value of proper reaction before operating. To add a physical shock to physical injury would generally prove hurtful to the patient. There was no more urgent field for skilled surgery than the treatment of mangled feet, hands and fingers. Lacerated tissues were more liable to infection and healed more slowly than other wounds. The sewing up of torn and lacerated wounds was a sure harbinger of infection and would have to be opened up again. Drainage tubes constituted the safest plan for the prevention of infection. Scalp wounds were not generally attended by severe shock and healed rapidly, but the most insidious wound was the small punctured fracture. Every such wound demanded early investigation or serious results would likely follow.

The Treatment of Malaria with Reference to Its Eradication.—Dr. T. E. WRIGHT of Monroe, La., said that in one of the hospitals used by the Missouri Pacific Railroad in north Louisiana 747 cases of mlaria among the railroad men were treated during the years 1912, 1913 and 1914. During this year, beginning January 1, and ending November 1, 249 cases of malaria had been treated. The patients remained in the hospitals from four to six days. This short stay in the hospital was due to the intensive treatment given malaria cases in the hospital. This economic feature of intensive treatment and prompt results when applied to the whole malarial district of the South was a matter of much greater importance and should receive serious consideration on the part of medical men. The treatment used generally by him consisted of injecting quinin directly into the blood and the dose was generally ten grains. The doses were given every eight to ten hours. Intensive treatment of malarial patients must be employed in order to decrease the number of carriers. The intravenous use of quinin, administered with proper care, in doses of ten grains, in proper dilution, repeated in from eight to ten hours once or oftener, according to the case, was the type of intensive treatment that more nearly sterilized the blood of malaria than any other method heretofore employed. Fewer cases of recurrence would follow the intravenous use of quinin. The discomfort through this treatment of the patient was slight or of short duration, not lasting over five or six minutes. The technic was so simple that nurses in training might be taught to administer quinin by this method with reasonable certainty.

The Sex Question in Public Health.—Dr. ISADORE DYER of New Orleans said the sex question was essentially one of public health. Sex hygiene was to-day a fetish bandied about by the pedagogue, the preacher, the politician and the physician. Congress debated some phases of sex hygiene; both sides were vehement in urging and opposing the dissemination of knowledge among the young, and while they continued to disagree, the young go on learning in the old-fashioned way. Facts were needed in presentation of the sex question to young men and women, not preachments. He demanded in the future that the question be handled in an open and frank way with the children. He was of the opinion that perhaps the public school would be a good place to teach sex hygiene and he believed the proper men and women could be found to tell the children about the things that every child should know.

Dr. E. H. MARTIN of Hot Springs, Ark., favored separation of children in public schools, and said that segregation of sex was practiced in a Mississippi town in the public schools. Dr. Martin opposed co-education upon the grounds that a boy learning subservience to a woman was not liable to make a very good soldier in later years. He disagreed with Dr. Dyer in the handling of sex problems and did not believe it proper to recognize prostitution.

Dr. ALLAN W. FREEMAN of Washington, D. C., said he had been attending public health meetings for a number of years, but he had never heard a frank and honest discussion of the sex question. He agreed with Dr. Dyer that it was first a question of health and should be treated as such.

Syphilis, Its Relation to Public Health.—Dr. LLOYD THOMPSON of Hot Springs, Ark., advocated the registration of all affected persons and a heavy fine to be imposed upon the physician for failure to report. The marriage license should not be given to any one until he had been thoroughly examined and had withstood certain tests. He urged the adoption of a plan by employers to require a bill of health of every employee and to refuse employment to any person who would not submit to a physical examination. If prostitution was permitted, he believed it should be put under strict surveillance and regular medical examination.

Health Conservation Through Life-Insurance Companies.—Dr. J. L. DAVIS of Waco, Tex., stated that of all of the business propositions before the world to-day he believed the best one was to save human life. The life insurance companies had long ago realized this and had set themselves to the task of prolonging life. This they were doing by teaching their policy holders how to care for themselves and to give attention to little matters of health. The life insurance companies of the United States had taken the lead in matters of sanitation and right living. They had been advocating

Tuberculosis was recognized by insurance companies as an exceedingly infectious disease and for a great number of years they had made careful inquiries into the lives of applicants for insurance along this line. They had gone so far as to inquire whether the applicant had been associating with tuberculous people. Typhoid fever was characterized as the arch enemy of insurance companies. The next of the deadly enemies was alcohol, and the greatest temperance lectures of the age could be taken from the dry records of almost any life insurance company.

Sanitary Preparedness.—Dr. RUPERT BLUE, Surgeon-General, U. S. Public Health Service, said the maintenance of sanitary preparadness was no less the duty of the individual than it was of the community. The question that came then was how this end was to be accomplished. It was not altogether easy to reach so convincingly that the layman would appreciate these things. It must come in many ways. If upon the plastic mind of the school child the simple truths of sanitation were impressed, we gradually cerated a people in which sanitary living was a habit. If by child hygiene we produced better and stronger men and women, these in turn would bring into the world stronger children, because they would have learned that mating with the weak and defective produced weak and defective children. Thus we would have a practical eugenic betterment. He did not think it was necessary in this connection that he discuss the trite questions of the medical inspection of school children, the whole time health officer, diet, exercise and the other thousand and one things which we were practically of one mind. The impression he desired to leave in their minds was that, if America would avoid the decay and retogression, if she would be ready for the supreme trial of strength when the hour of calamity came, she must retain her sanitary defenses at all times. The sane and healthy nation, republic of healthy minds in healthy bodies, adding by its labors, uninterrupted by disease, to the material and spiritual welfare of the world, was prepared alike for the piping times of peace and the stern realities of war.

National Board of Medical Examiners.—Dr. WILLIAM L. RODMAN of Philadelphia stated that the National Board would not in any way interfere with the State boards. All the National Board asked was that it would be treated with the same consideration, and that only, which was accorded to all of the several states. The examinations that would be required by the National Board would be of the same high standard as that of the highest state boards, and there was no reason why a licentiate of the National Board should not be recognized by the most exacting state boards. It was the patriotic duty of the several States to recognize the National Board because of the advantages to the government service. It was not a federal board under government control, but the government saw that it was a splendid thing to supplement it in time of war and pestilence. The examinations for a time would be held in Washington, but later they might also be held in the middle West and perhaps in the far East to accommodate practitioners all over the country. The standards would be high. First, the applicant must have had a four-year high school course. Second, he must have had one year at least in the elemental biological sciences. Third, he must have had four years in a high grade medical school and in addition at least one year of experience in a general hospital. The examination would be oral, written, laboratory work and clinical. Candidates would be required to make diagnoses, set fractured limbs, identify tissue under the microscope, and satisfy by a number of such tests his knowledge and ability.

Appeal for Military Preparedness.—Col. M. W. IRELAND, U. S. Army Medical Corps, presented the new policy of the medical departments of the Army and Navy for preparedness in keeping with the new military program of the national government. He said they were beginning the reorganization of the army which would increase materially the military establishment. They were working that the entire army might hold together in time of war without a breakdown. The Surgeon-General's office was seeking to provide the needed precautions to safeguard the troops. The Surgeon-General had asked for and secured the approval of the authorities of a plan that would allow seven medical officers for every one thousand men. If war came the medical departments of the Army and Navy must be greatly increased. In the past we had relied upon the National Guards, volunteers and the Red Cross for this increase, but they were not sufficient for the medical department to perform its duty, as was shown by the experience of the Spanish-American War, when 21,000 cases of typhoid broke out in our concentration camps in the South and in our Santiago campaign. For the enormous work of war the medical department must have a great force of doctors, and they must be trained as medical officers in the army. The medical department failed in the Spanish-American War. In the 35 years of peace we had forgotten the lessons of the Civil War, and as a result thousands of soldiers suffered and died with typhoid fever. It was to guard against the recurrence of such a thing as this that the medical departments of the Army and the Navy were reorganizing and placing themselves upon an efficient preparedness basis.

The Allen Treatment of Diabetes by Fasting.—Dr. ISAAC IVAN LEMANN of New Orleans said it was the belief of Allen that we had been wrong in trying to maintain or increase the weight of our diabetic patients where glycosuria persisted, for such attempts simply kept the body at a size beyond the capacity of the pancreas to provide sufficient internal secretion for it. Better, therefore, to have the body thinner and have enough pancreatic secretion to do the work of a smaller body. This pancreatic internal secretion he would have us conceive as an amboceptor binding blood sugar to the tissues. When the amboceptor was lacking the unbound sugar was secreted by the kidneys. Allen's proposals were: (1) To starve the patient until his urine was sugar-free. (2) To add gradually to his diet until his point of tolerance of protein and fat, as well as of carbohydrate, was reached. (3) To remain within these points of tolerance, no matter how low they might be and no matter how thin the patient might be. Attempts to increase the patient's weight by the addition of a large number of fat calories to the diet results in the return of the glycosuria. His short experience with Allen's method embracing now five cases had served to free him of the fear of precipitating a severe acidosis by the sudden starvation, and, secondly, it had convinced him in one severe case of its great possibilities in certain cases at least. The other four cases were mild. In two of them he had tried in vain to stop a glycosuria by gradual reduction of carbohydrate intake, then of protein intake, and finally in one of them by the interposition of green days. These two patients became aglycosuric in twenty-four to forty-eight hours of starvation respectively. The other two mild cases required 24 to 72 hours starvation respectively. In none of these four did acetone appear in the urine. None of the patients had any serious complaints. Not only was the disappearance of the glycosuria brought about more promptly and with less trouble both to the patient and to him than by the former technique, but it was possible to build up for each of these patients quite a livable diet and still maintain them aglycosuric. In the two patients whose points of tolerance he had tried to determine by the older method, he found the new tolerance quite satisfactory and far in excess of what it had been prior to the past. His brief experience with the method had been sufficiently satisfactory and enlightening to encourage him to proceed.

Pyelitis in Infancy and Early Childhood.—Dr. L. R. DEBUYS of New Orleans stated that the majority of cases of pyelitis occurred under three years and of these most of them under two. In from 90 to 96 per cent. of the cases females were affected. It was highly probable that much of the trouble in the adult female kidney might have origin in the infections of the kidney during infancy and childhood. Pyelitis might be primary or it might be secondary to a cystitis. The treatment of pyelitis might be included under four heads: (1) Drugs. (2) Irrigation of the pelvis by direct method. (3) Irrigation of the pelvis by indirect method. (4) Vaccines. Many drugs had been advocated for use in pyelitis, among them urotropin, potassium citrate, methylene blue, creosote, and salol. Of these urotropin and potassium citrate were the most frequently used. Urotropin was best given early and in large doses, 2 to 3 grains, every three or four hours, to a child from one to two years of age. It was given for the antiseptic property of the formaldehyde liberated in the urine. The direct method of irrigating the pelvis of the kidney had been shown in the adult to be the most efficient means of combatting a pyelitis and its results were excellent. By far the most reliable method of treatment in pyelitis in the small patient was by irrigation of the pelvis of the kidney by

indirect method. By this was meant the giving of large quantities of liquids. It was well to dilute their food so that they might be always hungry, and in order to satisfy their hunger they must take large quantities of fluids to receive a sufficient quantity of nutriment. Vaccines were sometimes of benefit and should be autogenous. Their effect was not uniform and reliable, but in some instances had been of advantage. They should be given in doses beginning with 50,000,000 and increasing rapidly to 200,000,000 or even 250,000,000. The interval varies from three to five days, depending upon the reaction of the patient and the recovery from the reaction. In the resistant cases and the chronic ones the autogenous vaccine was more especially indicated. Should the vaccine not produce after from three to five vaccinations an immunity, as shown by the bactericidal property of the blood, its use should be discontinued.

Dietetic Treatment of Bronchial Asthma.—Dr. ALLAN EUSTIS of New Orleans stated that a review of 178 cases justified the following conclusions: (1) Most cases of bronchial asthma are due to absorption of proteolytic toxins. (2) These toxins may be absorbed from a suppurating accessory sinus in the nose or from the intestinal canal. (3) Treatment of intestinal toxemia is as important as any drainage of focal infections. (4) An alveolar abscess may be the focus from which the toxin is absorbed. (5) In the dietetic management of asthmatics animal proteins, with the exception of buttermilk, should be eliminated from the dietary as much as possible.

Influence of Potassium Iodide on Luetic Reaction.—Dr. RANDOLPH LYONS of New Orleans drew the following conclusions: (1) The experiments performed fully confirm the observations of Sherrick upon the influence of potassium iodide on the luetin reaction. (2) That iodine is the essential factor in producing the positive reaction in a non-luetic individual is demonstrated by the fact that hydriodic acid, thyroid extract, and possibly hyperthyroidism will produce a similar effect. (3) When a luetin test is made, it is essential that no iodine in any form be taken internally. Furthermore, it is important to know that iodine should have been ingested for an interval of at least three weeks previous to the performance of the test. (4) Torpid or later reactions occurring after an interval of two weeks are usually due to the ingestion of potassium iodide. The reaction may be influenced after an interval of two months by the subsequent administration of potassium iodide (Sherrick). Anomalous reactions may generally be attributed to potassium iodide. (5) Activation of the luetin test with mixed treatment vitiates it. (6) Clinical differentiation between the two, luetin reaction and iodine reaction, cannot be made with any degree of certainty. When a positive test develops very rapidly, an iodine reaction may be expected. (7) The extreme prevalence of the use of iodine in some form (potassium iodide) will necessitate a critical review of the published reports of positive reactions in order to eliminate the iodine reactions. This will undoubtedly lower the percentage of positive results.

A Plea for Uniformity in the Wassermann Reaction.—Dr. COURTNEY W. SHROPSHIRE and Dr. CHARLES WATTERSTON of Birmingham, Ala., said that from their experience and from their study of the literature, they came to the following conclusions: (1) That the results obtained with the Wassermann reaction and its modifications are subject to wide variation. (2) That this variation is due to modification in technique and to faulty technique. (3) That the members of the medical profession, judging by the reports taken from the literature, request some representative medical organization to take up the work of standardization, and place the reaction on a firm basis with definite units of strength and volume, and standard readings to be used by all serologists.

Artificial Pneumothorax.—Dr. JOHN J. LLOYD of Catawba Sanatorium, Va., drew the following conclusions: (1) The selection of cases should be carefully made if success is to be expected and the operation be saved from disrepute. (2) In spite of careful examination, including *x*-ray examination in some cases, we are unable to discover an extensively adherent pleura in a large per cent. of cases prior to attempting compression. (3) In the early part of the treatment all the cases should be treated as bed patients. (4) In order to accomplish the greatest benefit, the lung must be kept completely compressed for a long period of time—how long we are not yet in a position to determine. (5) The immediate dangers are relatively slight and may be avoided by proper technique. The remote dangers are chiefly due to embarrassment of the better lung and may often be anticipated and prevented. (6) Artificial pneumothorax offers a chance for great improvement in a class of cases hitherto regarded as very doubtful.

Fecal Infections.—Drs. W. C. MAYES, W. WILSON, and C. F. WILSON of Memphis, from their limited experience, drew the following conclusions: (1) That many diseases, the etiology of which has been obscure, are undoubtedly due to metastasis or absorption of toxins from a primary focal infection. (2) We do not believe that we have done our whole duty to a patient by simply treating the results of a metastatic infection or the symptoms of toxic absorption. (3) It is absolutely essential to remove the primary focus when possible or at least overcome the infection in the same in order to conserve the best body economy. (4) That in the diseases due to focal infection, if a cure is not effected by the removal of a diseased focus, or if further metastasis occurs, the focus removed was not the causative or only causative focus, and a further search should be made with a view to its removal or cure. (5) That if the focus cannot be removed, or the infection in the same controlled, for anatomical reasons, often the removal of a diseased tonsil, draining an apical dental abscess, or accessory nasal sinuses will allow the body economy to so recuperate that a cure will occur in the original offending focus. (6) That an innocent appearing tonsil may be the focus, and that the search for the offending focus is not complete without exhausting every aid of the laboratory, *x*-ray, and our own diagnostic ability.

Influence of the Injection of Blood on Anemia and Infections in Children.—Dr. J. SPENCER DAVIS of Dallas, Tex., said that in the injection of whole blood we had the therapeutic means of increasing the white blood corpuscles, that in many cases a crisis in the disease could be brought on, and that the destruction of bacteria in the body was hastened. He had found it of great value in the acute infectious diseases of children, such as scarlet fever. Like all other therapeutic measures, it sometimes failed where it was most needed, and its value was dependent upon the ability of the individual to respond to the injection. He had never seen any bad results following the injection, although at the site of the injection he had the same series of color changes which occurred in an ordinary bruise.

Scurvy Versus Rheumatism.—Dr. DANDRIDGE P. WEST of New Orleans stated that the prognosis of scurvy depended upon the early recognition of the disease, severity of the symptoms, and the complications. Death in untreated cases resulted usually from hemorrhage, exhaustion, and bronchopneumonia. In recognized cases, the treatment was highly satisfactory, and none was more easily instituted. It might be covered briefly by the rule: Discontinue all previous feedings, especially if they have been patented, boiled, or sterilized; give fresh milk, fruit juices, and if the digestion would stand it puree of potato or green vegetables. In all suspected cases the effect of the treatment, the therapeutic test, was of the greatest value, inasmuch as the results showed in forty-eight hours, and no harm, as a rule, could be done by waiting so long. If in doubt, when the baby was unduly irritable on being handled, and showed perhaps local manifestations of joint pain, preclude first the idea of rheumatism, change the diet to raw milk, and give orange juice.

Bronchial Gland Tuberculosis.—Dr. MARY E. LAPHAM of Highlands, N. C., said that in a very healthy hill district, where there had not been a death from tuberculosis in ten years, Hillenberg found that from 25 to 50 per cent. of the children gave positive reactions to tuberculin. A large percentage of their school children gave these same positive reactions and in the majority of cases no tuberculous foci were found. It was thought that the residence of tubercle bacilli in the bronchial glands accounted for these reactions and for the absence of demonstrable foci of infection. The presence of tubercle bacilli did not necessarily mean the development of tuberculous processes. It had been shown by autopsies that the bronchial glands were exceedingly oftenest infected, but that there were times when the tissues were simply swarming with tubercle bacilli, and yet there was not the slightest trace of structural changes even under the microscope. From birth to puberty bronchial gland tuberculosis might dominate the clinical picture, but after puberty we

must admit tuberculosis. Given sufficient time, the tuberculous processes in the bronchial glands of children might extend into the lungs and create the pulmonary tuberculosis of adults. A thorough comprehension of the tuberculous processes in the glands of children with all their possibilities of danger from adults, taught us the importance of discovering and arresting them at the very start. The tuberculosis expert knew full well that healthy school children were in far greater danger from the unsuspected extension of tuberculous processes than the sick ones were because bad health stimulated examinations and good health prevented them.

Common Sense and the Fever Thermometer Versus the Stethoscope and the Microscope in the Diagnosis of Early Pulmonary Tuberculosis.—Dr. S. E. THOMPSON of Carlsbad, Tex., said that in his paper he endeavored to prove the following points: (1) We were finding only a very small per cent. of our incipient tuberculosis patients. (2) That this was due largely to faulty teaching. (3) That as a result of this faulty teaching we could not rely on the stethoscope. (4) That the microscope would not make a sufficiently early diagnosis. (5) That in using common sense and the fever thermometer we could find a large number of early cases. Our attitude toward tuberculosis should be one of eternal suspicion. The white plague was everywhere. It was the most common, the most frequent of all diseases. The finding of our early cases was the general practitioner's burden, and if he would depend less upon the stethoscope and microscope and rely more on competence and the fever thermometer, he would find a much higher per cent. of his early cases and thousands of lives would be saved annually.

Rest and Exercise in Tuberculosis.—Dr. THOMPSON FRAZER of Asheville, N. C., said that in his paper he summarized briefly the chif points as follows: (1) A thorough knowledge of the principles of rest and exercise must underlie the treatment of tuberculosis. (2) Neither exercise nor rest was to be prescribed offhand, but so long as there were symptoms pointing to an overworked body rest was indicated, the character and amount to be carefully prescribed, and that with improvement exercise slowly increased provided the safest means of regaining health and strength. (3) Exercise must be very gradually increased as a single act of over-exertion might delay the recovery months, years, or even make it impossible to attain. (4) The transitional period referred to should be continued under careful medical supervision until the patient was able to stand without harm more than he would be called upon to stand when he took up active work. If these points were duly considered, and, if instead of vaguely advising rest or exercise we limited the amount and character of each to the age of returning our patients to a condition in which they would be able to successfully cope with their changed environment, in the future we should hear less and less of relapses and should be able to accomplish what should be our chief aim—an economic cure.

The Recognition and Treatment of Occult Tuberculosis.—Dr. SYLVIO VON RUCK of Asheville, N. C., said that in many cases the diagnosis of an obscure clinical condition depended upon what happened to enter the phsyician's mind as possibly standing in relation. If it was kept in mind that tuberculous infection was practically universal, that the majority of persons possessed a fair resistance which, however, might be broken down temporarily or permanently by many factors; that tuberculous disease might be latent in the sense that it presented no symptoms at all, or that the symptoms might be atypical and that the obscure cause of certain clinical manifestations might be a specific toxemia, it became evident that the idea of such a toxemia having a tuberculous origin was not far fetched. It was characteristic of many conditions, and this would aid in the appreciation of their true nature, that they resisted the modes of treatment which were ordinarily effective, as was pointed out in the case of pseudochlorosis by Trousseau, and as was insisted upon by many authors in the case of tuberculous rheumatism, in which the salicylates were useless. In cases, therefore, in which the ordinary indicated remedies remained without effect, it would be proper to keep the possibility of a tuberculous intoxication in mind and at least to make a diagnostic tuberculin test which should be subcutaneous, or still better made with the vaccine, because this preparation would at the same time exert its therapeutic effect. In accordance with the old truism that the cures of diseases demonstrated their nature, it was in this manner that an obscure clinical condition could be established, and that simultaneously a curative remedy was introduced which would exert its beneficial action in those cases in which a tuberculous intoxication or an occult tuberculous process stood in relation to the clinical symptoms.

Therapeutic Hints.

Weeping Eczema.—Unna says the simplest method of treating moist eczema is to coat it often with a thin layer of some drying paste. This does away with the necessity for dressings and the microorganisms die when excluded from the air. The thinner the layer and the oftener it is applied the better. As the germs are killed the itching subsides. The formula he advises is a mixture of 10 parts sulphur lotion, 10 parts calcium carbonate, and 80 parts zinc ointment. This paste is also useful to apply to a vaccination pustule as soon as the vaccine shows that it is going to "take." The course of the pustule is not interfered with, but there is no redness or swelling and the whole process is shortened.—*Berliner klinische Wochenschrift.*

Ingrowing Toenail.—

℞ Acidi hydrochlorici, ♏xii.
Glyceriti pepsini (N.F.), ʒss.

M. et signa: Apply on lint to the affected toe, covering the entire nail and its valla.

Hemorrhoids.—

℞ Potassii iodidi, gr. iij.
Pulveris opii, gr. v.
Pulveris camphoræ, gr. x.
Acidi tannici, ʒii.
Adipis lanæ hydrosi,
Petrolati, āā ʒss.

M. et signa: Apply on lint.

Amenorrhea.—

℞ Extracti aloes, ʒss.
Ferri sulphatis exsiccati, ʒi.
Asafœtidæ, ʒij.

M. et ft. pil. No. 50. Signa: One or two pills after each meal.

Paraffin Oil Emulsion.—Dr. Eric Pritchard, who claims to have been the first to use liquid paraffin in the treatment of constipation, administers it by preference in the form of an emulsion, known as the "Marylebone petroleum emulsion," of which the following is the formula:

℞ Paraffin liquidi, B.P., 33.0.
Acidi benzoici,
Glusidi (saccharin) āā 0.05.
Olei cinnamomi, 0.10.
Decocti chondri crispi (Irish moss), q.s. ad 100.0.

The dose of this emulsion is nearly three times that of the pure oil.

Calcium lactate has been found by White to give excellent results in many varieties of skin diseases, including urticaria, erythema multiforme, pernio, and hyperhidrosis. He recommends the following formula:

℞ Calcii lactatis, gr. clx., 10.0 grams.
Tinct. capsici, ♏. viii, 0.5 c.c.
Aq. chloroformi, ʒxx, 500.0 c.c.

Solve et misce. Sig.—Two tablespoonfuls (25 c.c.) in water before meals.—*Journal of Cutaneous Diseases.*

Acne.—Make a paste containing beta-naphthol, gr. 1; precipitated sulphur, ʒss.; lanolin and green soap, of each ʒii. Cover the affected portions of the skin with a thin layer of this paste for 20 minutes; then wipe off the skin and dust with talcum. —Lassar.

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Original Articles.

THE REMOVAL OF DISEASED TONSILS BY A METHOD MINIMIZING HEMORRHAGE.

BY ANTONIE P. VOISLAWSKY, M.D., F.A.C.S.,
NEW YORK.
ASSOCIATE ATTENDING LARYNGOLOGIST TO ST. LUKE'S HOSPITAL. CONSULTING LARYNGOLOGIST AND OTOLOGIST TO S. R. SMITH INFIRMARY, ST. VINCENT'S HOSPITAL, STATEN ISLAND, THE HARLEM EYE AND EAR INFIRMARY, AND THE MANHATTAN MATERNITY HOSPITAL.

TOGETHER WITH

A SKETCH OF THE HISTORY OF TONSILLOTOMY.

BY D. BRYSON DELAVAN, M.D., F.A.C.S.,
NEW YORK.
CONSULTING LARYNGOLOGIST TO ST. LUKE'S HOSPITAL.

THE HISTORY OF TONSILLOTOMY.

WHILE the records of neither Assyria, Babylonia, nor Egypt appear to contain reference to this subject, the recognition of diseased conditions of the tonsils and the surgical treatment of the gland when enlarged must have existed from a very early period. Coming more and more into popularity during recent generations, few operations have been so frequently performed, with a greater measure of benefit to the patient, and, until recently, with less advancement in the positive scientific knowledge of the surgeon.

Theories innumerable as to the physiology and pathology of the tonsil have been advanced, and countless methods proposed for its treatment when diseased. Much controversy has therefore arisen regarding it, which, far from having been settled in our time by well-organized scientific investigation, still continues to hinder progress and to vex the professional mind.

Without question the urgent present needs in this department are, a clearer knowledge of the physiological value of the tonsil, recognition of the necessity for accurate diagnosis of its diseased conditions based upon recognized pathological principles, and, finally the practical, scientific testing of promising methods of treatment, the careful comparison of the relative values of these methods as observed in large numbers of operated cases, and, finally, the long-continued study upon the individual of end results.

Of the various methods employed in recent years, radical extirpation of the tonsil by so-called enucleation has been heralded as the latest improvement, and has gained many advocates. Strange to say, the first mention extant made in recorded history of any surgical method for the removal of the tonsils refers to this very expedient; for Celsus, writing in the year 10 A. D., nearly twenty centuries ago, says: "Tonsils which remain indurated after inflammation, if covered by a thin membrane, should be loosened by working the finger around them and then torn out. But when this is not practicable, they should be seized with a hook and excised with a scalpel."

Aetius, no less than 500 years later, the next whose writings have brought us mention of the subject, assumes a position of far greater caution than did Celsus. He advises that the portion of the tonsil which projects, namely about one-half of the entire gland, may be removed; and he emphasizes the fact that "those who extirpate the entire tonsil, remove at the same time structures which are perfectly healthy, and in this way also give rise to serious hemorrhage."

While Aetius could not have recognized the full import of his objection to the complete removal of healthy tonsillar tissue, he seems to have been the first to sound the warning against it which at the present time is claiming so much serious and intelligent attention; and thus at the very outset to have inaugurated the discussion upon "Tonsillotomy versus Tonsillectomy," a controversy which having flourished for 1500 years is still maintained with ever-increasing vigor.

In the ages following the time of Aetius, the interest of the profession in the subject waxed and waned, sometimes seeming to have altogether expired, and again being revived with more or less energy. But always the knowledge was vague, and the differences of opinion numerous and unreconciled.

Dionis, writing in 1672, opposed the removal of the tonsils because of his belief in their physiological importance.

As late as 1809, William Cooper of London, in his Dictionary of Practical Surgery, describes the various methods of operation then in vogue, and says that the most popular were the knife, the scissors and the ligature. His article ends with the statement that "the best modern practitioners for this operation prefer the common knife to any other instrument." During the twenty years following this statement of Cooper, interest in the subject became active in the United States. Several attempts were made here to improve the conditions of operation, and in particular to devise some satisfactory means by which the application of the silk ligature or the wire loop to the base of the tonsil to be ablated might be facilitated.

Much attention seems to have been awakened to the subject, especially in Philadelphia, Physick and Smith of that city, and Alexander Stevens of New York, devising instruments of considerable ingenuity, generally of the ecraseur type. None of these, however, long survived.

In 1828, Physick gave to the world the invention which was destined to revolutionize the practice of the time, an instrument which has probably been more widely accepted, more extensively modified and more persistently utilized than any other contribution to practical surgery of the century. Perfected by the genius of Sir Morell Mackenzie,

for many years it ranked without a successful rival; and to-day, as the so-called "Sluder modification," again heads the list in popular favor.

In 1832, Dr. W. B. Fahnestock of Lancaster, Pa., published a description of a ring-knife tonsillotome in which, contrary to that of Physick, the action of the cutting edge of the instrument was from behind forwards. This device was soon taken up by various instrument makers, especially in Continental Europe, the best known and most effective of its countless modifications being that of Matthieu, of Paris.

It is an interesting fact that the models of Physick and Fahnestock, made in this country at nearly the same time, have dominated the entire world of laryngology for nearly a century. Meanwhile, following them other workers were not idle. Time after time the discussion upon the removal of the tonsil was revived, perhaps nowhere more vigorously than in New York City under the influence of Dr. Horace Green, who in 1845-65 founded the science of laryngology and incidentally taught his generation the value of tonsillotomy, operating after the manner of Louis of Paris with a bistoury or with scissors aided by a sharp-toothed holding forceps.

The prevalence of hypertrophied conditions of the tonsils of late years has been calling attention to this subject more than ever; while the method of operating under general anesthesia, inaugurated by Sir Morell Mackenzie about thirty years ago, and the still later discovery of local anesthesia, have opened the way for practically all of our modern improvements, and have enabled work of a thorough and satisfactory character to be performed. Strange to say, this seems to be the only feature of importance in this connection suggested outside of the United States.

As from the beginning, however, opinions relating to the general subject of the tonsil vary, discussion is active, and there is still much to be learned.

By far the most important question now at issue is that of diagnosis, for a clear distinction must be made between glands which are enlarged merely from temporary conditions of congestion, and those which are chronically hypertrophied and radically diseased. If, as many with good reason believe, the physiological function of the tonsil is a matter of serious importance in the general economy of nature, and, therefore, the organ should not be unnecessarily destroyed, especially at a time of life when its presence may be most needed as a factor in the normal development of the child, too great care cannot be taken to differentiate between cases demanding removal and those in which a proper course of treatment would effect a cure. Many of our clinicians would do well to acquaint themselves with the warning of Dr. John Noland Mackenzie, of the Johns Hopkins Medical School, against this crying evil, and to reconsider the dictum that every tonsil, from whatever cause enlarged, should be at once completely extirpated. Fortunately efforts are being made by Dr. Thomas R. French of Brooklyn, and in various other parts of this country, to improve the general knowledge of the subject and to evolve a perfect system of diagnosis and treatment.

This we also are trying to do at St. Luke's Hospital, where all patients are carefully examined as to the necessity for the removal of the tonsils before operation is advised, and where, through the liberality of the management, patients operated upon at the clinic are provided with beds until such time as they may be safely dismissed. Under the able supervision of the Associate Attending Surgeon a method of operation has been developed which appears worthy of attention. A description of it by him follows.

THE REMOVAL OF DISEASED TONSILS.*

When in January, 1912, the Clinic of the Department of Laryngology and Rhinology of the Out Patient Department at St. Luke's Hospital was

FIG. 1.—The submerged tonsils; Jennings mouth gag; electric illumination thrown from the angles of the mouth

formally opened the most important problem presented was the disposition of the many cases of diseased tonsils and adenoids which presented themselves. The Director of the Clinic had long

FIG. 2.—Left tonsil raised out of its bed (with the Beck instrument) before engaging; showing also the Titus tongue

believed and taught that the proper care of such patients after operation was an important feature of their treatment and that the custom of dis-

*Read at the meeting of the Laryngological Section of the New York Academy of Medicine, Oct. 27, 1915.

missing them at once from the Clinic and allowing them to return to their homes was unscientific and dangerous. He considered this especially true of those operated upon under general anesthesia. The superintendent of the hospital recognizing the wisdom of this persuaded the Board of Directors to open a ward of seven beds in the Out Patient Department for the accommodation of children under twelve years of age. With this nucleus the operative work was begun. In November, 1914, the service was still further benefited by the opening of a male ward and a female ward in the main building of the hospital to adults and to children over twelve years of age.

FIG. 3.—Right tonsil engaged in the Beck instrument

Efforts were at once made to improve the technique of the operative work of the clinic. Tonsillectomy having taken the place of the old time tonsillotomy in cases requiring the thorough removal of the gland, our operations were begun by blunt dissection and then enucleation with the Mosley snare. As time went on other snares were used, but gradually the operative procedure followed the methods of Sluder and Beck in operations under general anesthesia, and that of Justus Matthews in local tonsillectomies.

FIG. 4.—Both tonsils engaged in the Beck instruments.

Without criticism of other methods, in our hands the Beck instrument gives most satisfaction in the majority of cases, under anesthesia. The technique of the procedure which we have developed may be described as follows:

FIG. 5.—Both tonsils engaged, tenaculum applied

The patient is anesthetised with gas-ether anesthesia until the secondary stage is reached, and draped for operation in the usual manner. Lying prone on the table, without a pillow, the Denhart, Jennings, Whitehead, or Murdoch mouth gag (depending on the formation or condition of the teeth) is introduced, opening the mouth to its full capacity, and is held in place by the anesthetist; the chin slightly elevated to allow free breathing. The Titus suction tongue depressor is then introduced and the throat cleared of mucus. The advantage of this instrument is that it avoids injury to the mucous membranes and dispenses with unnecessary bleeding caused by the use of gauze or cotton sponges.

FIG. 6.—The tenaculum with enucleated tonsils.

With the right hand a Beck snare is introduced from the left angle of the mouth, the loop passing posterior to the right tonsil. The tonsil is then forced through the loop, the catch is sprung and the

snare wire drawn tight and locked. Two or three turns of the screw insure the engagement of the snare, which is now handed over to the assistant. In like manner the left tonsil is forced through the loop of a second Beck instrument and engaged,

Fig. 7.—The pharynx after operation.

the manipulation of the instrument being with the left hand. This snare is also placed in the hand of the assistant.

The assistant then gently raises the snares, thus approximating the tonsils in the median line; the operator applies a tenaculum to both tonsils at the same time. The assistant takes one instrument, the operator the other and slowly the tonsils are enucleated, the assistnt removing the tenaculum holding both tonsils.

What little bleeding follows the operation is usually controlled by gentle pressure, by placing vaseline coated gauze pledgets, held on sponge sticks, between the pillars. Hemorrhage seldom occurs if this method is adhered to.

This operation has many advantages. Aside from

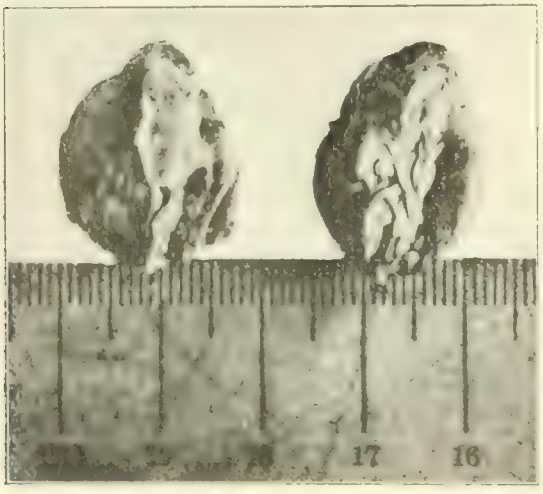

Fig. 8.—The tonsils.

the small quantity of blood lost there is no method that leaves so little traumatism; the uvula is never sacrificed or bruised and the pillars are left intact. Pain following the operation is minimized, the slough quickly disappears and healing occurs in a very few days, leaving perfect anterior and posterior pillars.

The linear scar so frequently met with after tonsil operations, showing adhesion between the styloglossus and stylopharyngeus muscles is never present.

The after-treatment is of the simplest kind: children are seldom detained longer than twenty-four hours and are dismissed with the admonition to gargle or wash their mouths with cold or warm water according to preference and advised to chew flavored gum for a few days, the threefold object being to get rid of the unpleasant after taste of anesthesia and of sloughing tissue and to exercise their jaws.

In adult patients when general anesthesia is not advisable local tonsillectomy is performed as follows:

The patient is given Magendie solution, ♏ vii, with atropine sulphate gr. 1/150, an hour prior to operation and kept quietly in bed until wheeled into the operating room; then seated in a chair and draped. The mucous membrane of the mouth and pharynx is painted several times with a 10 per cent. solution of cocaine and after an interval of ten minutes the tongue is depressed and a ½ per cent. solution of novocaine is injected into the anterior and posterior pillars, parallel to and ⅛ inch from the free border. After an interval of one minute and with the tongue depressor again in position, using the Robertson curved tonsil knife (sharp on both edges and dull at the point), an incision is made beginning at the lowest point of the anterior pillar and with a quick movement of the hand carrying the incision upward to the angle between the pillars then, sweeping downward behind the tonsil and between it and the posterior pillar, using the other edge of the knife, to a point opposite the place of beginning. The left tonsil is firmly grasped with a tenaculum at the highest possible point, gentle traction made on it with the left hand, and the tonsil separated from its bed by the knife, in the right hand, making pressure first against the stylopharyngeus muscle, then the lateral constrictors and, finally, the anterior pillar. A snare is then used to free it from its lower point of attachment. The patient is quickly given an iced saline mouth wash, which is usually sufficient to control bleeding, after which the right tonsil is similarly removed.

The patients as a rule complain of little pain except during the separation of the tonsil from its bed, when traction is made upon it.

The after treatment consists of an ice bag to the angles of the jaw, the length of time suiting the patient's pleasure; a gargle of alkaline saline solution; orthoform tablets gr. v dissolved on the tongue ad libitum, and codeine gr. ¼ to control pain if present. The latter is repeated until comparative comfort is obtained. The following day several local applications of glycerite of tannin are made to the raw surfaces, the slough disappearing in from two days to a week, depending on the size of the wound.

The results obtained by these methods after a year's trial are encouraging and seem to warrant a continuance of them.

I wish to express here my thanks to Dr. Arthur B. Eisenbrey for the photographs and to Dr. Thomas R. French for his kindness in retouching same.

FRACTURES OF THE ELBOW.

By JACOB GROSSMAN, M.D.,

NEW YORK.

ORTHOPEDIST TO LEBANON HOSPITAL O.P.D.

THIS paper is based on the study of fifty cases of fracture of the elbow, which were treated by the acute flexion position and in which we have succeded in obtaining good functionating limbs in some and a cure, with normal functionating limbs, in the majority.

Some of these cases were not diagnosed before coming to our clinic; these were treated as sprains, twisted tendons, and contusions of the elbow. There were two cases in this series, in which the fragments were not properly reduced, resulting in an almost complete ankylosis of the elbow. This necessitated prolonged, painful after treatment, which was usually avoidable, as our series had taught us. At this date, almost three months after the injury, there is still present limitation of flexion and extension, which we doubt will ever be entirely overcome.

Most of the cases treated by the acute flexion position, with early massage, passive movements and exercises, have recovered as near the normal with good functionating limbs within three to four weeks' time.

The majority of the cases occurred in childhood. In children the elbow is a center of traumatism because it is a point of diminished resistance. The lower end of the humerus is in the process of development and ossification and is unprepared to offer resistance to an unusual strain. In the cases where the children fall upon the outstretched palm of the hand, the shock is transmitted from the ground to the shoulder and is centered at the elbow, especially upon the lower extremity of the humerus and the articular end is not only broken but the fragment usually dislocated. This is particularly so in supracondyloid fractures. The elbow is usually swollen and ecchymotic and manipulation is extremely painful. In supracondyloid fractures the ecchymosis usually surrounds the elbow and in fractures of the condyles it is localized at the sides.

Where the condyles and the olecranon process are intact and their normal anatomical relations are not disturbed, one usually suspects a supracondyloid fracture. In the normal elbow, when the forearm is fully extended the tip of the olecranon and the condyles lie on the same transverse line and any modification of this normal relation of the three bony points is due to fracture or dislocation.

In supracondyloid fractures we find that the tip of the olecranon process is pulled backwards and upwards, but it maintains its relative position, *i.e.* a straight transverse line with the epicondyles. There is fulness in front of the elbow caused by the overriding fragments, which produces a deformity that simulates backward dislocation of the elbow joint.

It is very important not only to make a clinical diagnosis of fracture about the elbow, but also to confirm it by means of the Roentgen ray. After the diagnosis is confirmed, the reduction made and the dressing applied a second Roentgen ray picture should confirm the accuracy of the results.

With the exception of those cases of fractures of the elbow primarily irreducible, such as those rare cases of impaction, or the interposition of the fragments in the joint where the interarticular obstacle opposes reposition, a good prognosis can be given. These cases left to themselves inevitably produce unsatisfactory results; they must be relieved by surgical intervention.

There are other cases which present certain difficulties in reduction even after the clinical diagnosis and the Roentgen Ray have confirmed the findings and reduction seems simple. Such cases are those with very small fragments and tremendous swelling, such as interarticular fracture of the condyle or fracture of the neck of the radius. The fragments are so small that the fingers can secure little hold, especially in the presence of much swelling. Many of these cases escape unreduced and result in defective consolidation.

One must always have in mind the importance of proper retention of the fragments after reduction. The fragments have a remarkable tendency to secondary displacement after reduction. We have found in this series of fifty cases, the acutely flexed position of the arm best adapted for maintaining reduction in this variety of cases.

Our fifty cases were divided as follows: Internal condyle, 24; external condyle, 14; supracondyloid, 8; olecranon, 4.

Supracondyloid Fractures.—This fracture is fairly common. It runs across the humerus just above the joint; the line of fracture may be irregular and very often is oblique. The forearm and elbow are carried upward and backward and the lower fragment goes with them so that the lower end of the upper fragment lies in front of the elbow. The lower fragment is also bent somewhat forward. It is very important to reduce the deformity as the movements of the elbow joint are greatly interfered with. In our series of cases there was practically no loss of flexion or extension.

Treatment: Reduction.—Where possible an anesthetic should be used. Flex the elbow to a right angle and then make extension with one hand, while the fragments are manipulated into position with the other. If kept in this position the recurrence of the deformity is very apt to occur. Acute flexion is the only one that is likely to maintain the fragments in good position. Supinate the forearm fully and flex the elbow as far as it will go. This will bring the point of the elbow forward and will push the lower end of the upper fragment backwards. This flexed position is maintained by means of a flannel bandage; it is of especial value in children.

The bandage is applied as follows: when the fracture has been reduced the bare arm is fully flexed so that the hand on the affected side rests on the opposite shoulder and the elbow is carried well forward on the chest. In the majority of cases this position retains the fragments in proper position. The forearm is now bandaged to the arm by figure of eight turns (see Fig. 1). Before applying the bandage the arm should be dried and powdered and a piece of boric acid lint placed in the elbow crease and axilla to absorb the perspiration and keep the parts dry. The limb is kept in position by a sling about the neck. It is very desirable, if possible, to take an *x*-ray picture to see if the fragments are in good position. Should the *x*-ray show bad position the dressing should be removed and the deformity corrected.

At the end of a week or ten days the bandage is removed and careful passive movement is begun. In performing passive movements grasp the elbow with one hand and flex, extend, pronate and supinate the forearm to its full extent. This should be done

once only at first and repeated three times a week. Massage once or twice daily can be given. On account of adhesions and callus usually a long period of massage is required. The acuteness of flexion is now gradually diminished by lengthening the sling. Flexion must be maintained for at least three weeks. The object of this is to prevent the formation of callus in the coronoid fossa. Callus may form in the olecranon fossa and lead to some limitation of extension, but this is of less importance than limitation of flexion. An arm that can be moved from full flexion to a little beyond the right angle is a serviceable limb, whereas movement from full extension up to a right angle means a comparatively useless one. If the limb can be used voluntary movements in the form of exercises should be encouraged as they will increase the range of movement, but where the limb is not serviceable the full extent of movement may never be regained.

Exercises.—The following exercises have been tried in our cases and have proven very satisfactory.

1. (*a*) The patient stands straight, heels together, head straight, arms extended by the sides of the body, palms being inwards. (*b*) The arms are brought straight out, forming a cross with the body. (*c*) Then by the side of the head touching the ears and as straight as possible. (*d*) Return in the same manner to the position of rest.

2. The same position as above, (*a*) start movements from the following position: the elbows close to the side, forearm bent upon the arm, fists closed, with the thumb side to the shoulder. (*b*) Then the length of the body. (*c*) Then in a cross. (*d*) Then vertically upward by the side of the head, touching the ears, and as straight as possible.

3. The palms upwards, the arm describes a half circle, to rejoin at the sides of the head; there the fingers cross each other, the patient stretches out as far as possible and brings the arms back parallel to the side of the body by describing a half circle in a vertical plane.

4. The head straight, arms extended at the sides of the head, bend the trunk forward at the hips so that the fingers, united by their palmar surfaces, touch the ground; return to the previous attitude with the arms in the same position.

5. The patient standing opposite a wall and an arm's length from it, stretches out the arms horizontally in front and applies the hands flat against the wall; without moving his feet the patient slowly approaches his body to the wall by bending the arms on the forearms, then he slowly recovers.

6. The patient stands straight, feet together, head straight, a rod or stick about 4 feet long is then grasped firmly by the hands about 2 inches or more from the ends and raised above the head, the hands still remaining the same distance from the ends. The rod is next lowered behind the back as far as possible. The hands must still retain their position on the rod, but the elbows must be bent. Alternately raise and lower the rod.

The efficacy of these exercises can be increased by the use of dumbbells and also with a Dowd's machine. They should be practised daily and not long enough to exhaust the patient.

Case I.—Anthony D., six years of age. Fell and struck on his left elbow. He complained of severe pain and disability in the injured limb. Examination showed that the elbow was held in flexion of about 130°. There was ecchymosis localized to the outer side of the elbow, swelling, tenderness over the external condyle. Crepitus, false mobility and deformity were absent.

Diagnosis: Fracture of the external condyle of the left humerus, subsequently confirmed by a Roentgen ray picture.

Treatment: Acute flexion position as shown in Fig. 1, followed by proper after-treatment.

Fig. 1.—Case I.—Shows the acute flexion position and the manner in which the limb is retained in this position.

Subsequent History: Patient discharged with normal flexion, extension, supination and pronation.

Case II.—Albert K., six and one-half years of age. A few days before coming to our clinic the patient tripped and fell on the outstretched palm of his left hand, with the elbow extended. He suffered from dis-

Fig. 2.—Case II.—An *x*-ray picture showing the lateral displacement of the fragments.

ability of the left elbow due to the severe pain which he experienced when he attempted to use same. Examination showed that the left elbow was held at an angle of about 160° extension, and was swollen and ecchymotic, the ecchymosis being about the elbow joint.

Tenderness, which was excruciating and localized to the lower part of the humerus, prevented a prolonged examination of the limb. Voluntary and passive flexion and extension were limited.

Diagnosis: Supracondyloid fracture of the left humerus. A subsequent Roentgen ray picture (photograph 2) confirmed our diagnosis.

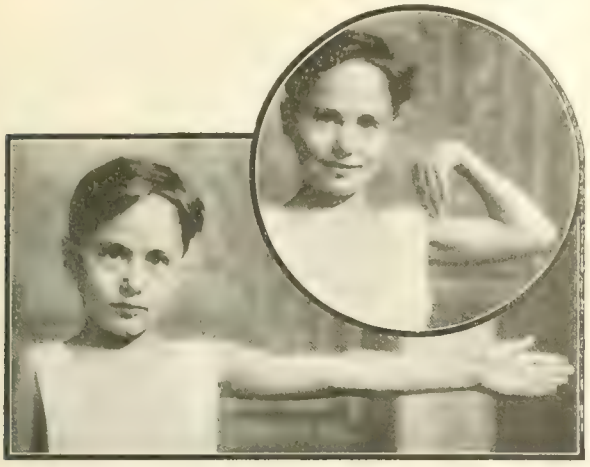

FIG. 3.—Case II.—Showing the flexion and extension present when the patient was discharged.

Treatment: Acute flexion, followed by the treatment previously described.

Subsequent History: Figs. 3 and 4 show the flexion and extension present at the time the patient was discharged.

CASE III.—Sidney E., eight years of age. Fell a distance of several feet striking on the outstretched palm of his left hand. Examination showed that there were marked swelling, disability, ecchymosis and deformity. Flexion, extension, pronation and supination were limited.

Diagnosis: A supracondyloid fracture of the left humerus, subsequently confirmed by a Roentgen ray picture. I might add that a wrist drop, probably due to an injury to the nerve, complicated this case. Fig. 4 is the *x*-ray picture. Note the posterior and upward displacement of the lower fragment, and the anterior and downward displacement of the upper fragment.

Epicondyles.—Either condyle may be fractured, the line of fracture starting above the condyle and running obliquely downwards into the elbow joint between the condyles. There is generally displacement forward of the broken fragment, which is very difficult to overcome. It is very important to set the fracture accurately.

FIG. 4.—Case III.—Roentgen ray picture showing the injury.

In our series the internal condyle was the one most frequently fractured. The detached fragment is usually pulled downwards and forwards by the muscles attached to it. The displacement is slight as a rule and fracture is usually outside of the joint. After reduction place the limb in acute flexion as described above. Where reduction is impossible operation should be advised.

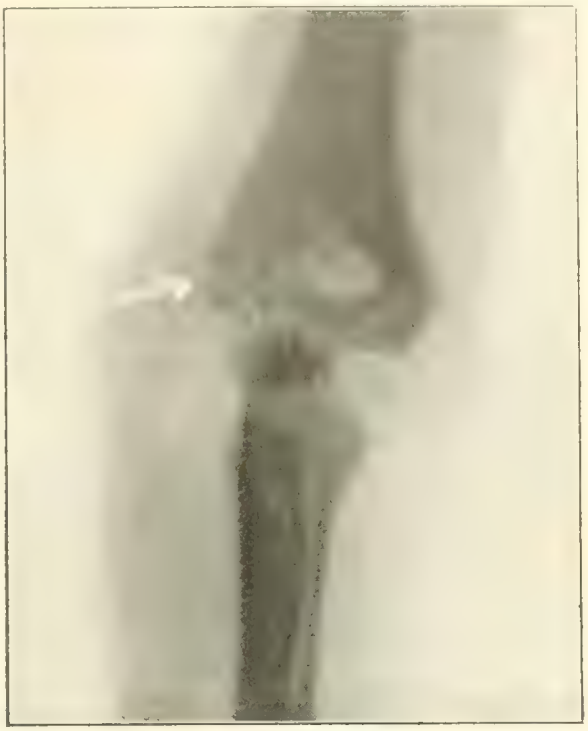

FIG. 5.—Case IV.—*X*-ray picture showing the extent of injury.

CASE IV.—Mildred K., seven years of age. A few days before coming to our clinic, she fell, injuring her right elbow. She complained of pain and inability to use the injured limb. Examination showed that the injured elbow was held in flexion of about 140°; there was ecchymosis over the inner side of the elbow; there was no deformity of crepitus, but there was excruciating tenderness over the internal condyle.

Diagnosis: Fracture of the internal condyle of the humerus with no displacement.

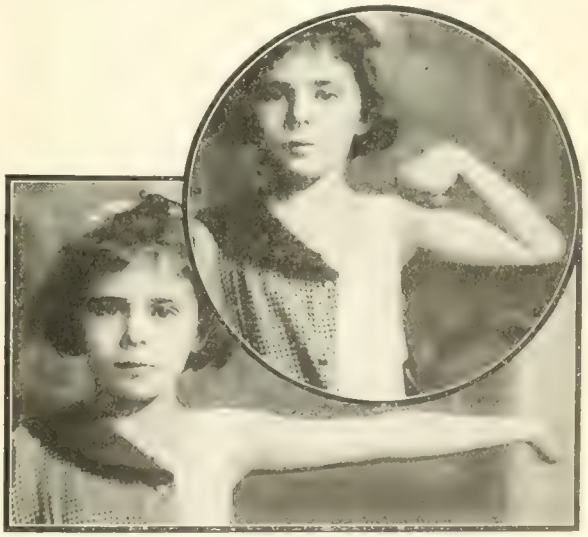

FIG. 6.—Case IV.—Showing normal flexion and extension at the time of discharge.

Treatment: Acute flexion position, with the proper after-treatment, early passive movements, massage and exercises.

Subsequent History: This patient was discharged as cured. Fig. 5 is the *x*-ray picture of this case. Note

the absence of displacement of the fragment. In spite of this there was marked disability and tenderness. Fig. 6, taken after the patient was discharged, shows normal flexion and normal extension.

CASE V.—Eugene H., four years of age. A few days

FIG. 7.—Case V.—Showing the flexion and extension present when the patient was discharged

before coming to our clinic, he fell and injured his right elbow. He complained of pain and disability. Examination showed the right elbow held in flexion of about 100°; there were ecchymosis localized to the inner side of the elbow, crepitus due to the fragment having been completely torn away, false mobility for the same reason, and excruciating tenderness over the inner condyle of the right humerus.

Diagnosis: Fracture of the internal condyle of the right humerus.

Treatment: Replacement of the fragment followed

FIG. 8.—Case VI.—A skiagraph picture showing the displacement of the fragment.

by the acute flexion position and later, early passive movements, massage and exercises.

Subsequent History: This patient was discharged as cured three weeks after the onset of the injury. Fig. 7, taken after he was discharged, shows the amount of flexion and the normal extension present. Pronation and supination were normal.

CASE VI.—Michael S., four and one-half years of age. Fell and struck on his left elbow a few days before coming to our clinic. He complained of pain

FIG. 9.—Case VI.—From photographs taken one week after massage and passive movements had been begun, showing the flexion and extension present at this time.

and disability. Examination showed that the left elbow was held in flexion of about 130°, there were ecchymosis localized to the outer side of the elbow, crepitus and false mobility due to a complete tearing away of the fragment, and excruciating tenderness over the external condyle of the left humerus.

Diagnosis: Fracture of the external condyle of the left humerus.

Treatment: Replacement of the fragment followed by the acute flexion position and later passive movements, massage and exercises.

Subsequent History: This patient was discharged as cured. Fig. 11, photograph 8 is an *x*-ray picture of this case. Note the complete tearing away and displacement of the fragment. Fig. 12, taken some time

FIG. 10.—Case VII.—Lateral *x*-ray picture.

before the patient was discharged, shows the amount of flexion present. Fig. 13, taken at the same time, shows the amount of extension present. Subsequent to the taking of these pictures flexion and extension were normal.

Case VII.—Steve M., five years of age. Fell and struck on his left elbow. Complained of pain and disability. Examination showed that the left elbow was held in flexion of about 120°. There were ecchymosis localized to the outer side of the left elbow, crepitus,

Fig. 11.—Case VII.—Anteroposterior *x*-ray picture. Note in Figs. 10 and 11 the displacement of the fragment.

false mobility and tenderness over the outer side of the elbow.

Diagnosis: Fracture of the external condyle of the left humerus.

Treatment: Acute flexion followed by early passive movements, massage and exercises.

Subsequent History: This patient was discharged as cured. Flexion, extension, pronation, and supination

Fig. 12.—Case VIII. Lateral *x*-ray picture.

were normal. Figs. 10 and 11 are *x*-ray pictures of this case.

Case VIII.—Alfred R., six years of age. Fell and hurt his right elbow one day before coming to our clinic. Complained of severe pain and total disability of the injured limb. Examination showed that the right elbow was held in flexion of about 100°. There was marked swelling and ecchymosis about the elbow joint. Crepitus, false mobility were lacking. Tenderness localized to the outer side of the right elbow was very severe.

Fig. 13.—Case VIII.—Anteroposterior *x*-ray picture. Note in Figs. 12 and 13 the separation of the fragment.

Diagnosis: Fracture of the external condyle of the right humerus.

Treatment: Acute flexion followed by passive movements, massage and exercises.

Subsequent History: This patient was discharged as cured. Flexion, extension, pronation, and supination were normal. Figs. 12 and 13 are *x*-ray pictures of this case.

Olecranon Process.—The fractures in these cases were near the base of the process. There was very little separation of the fragments. The cardinal signs of fracture were present and the diagnoses were confirmed by *x*-ray pictures.

Treatment: These patients were treated by

Fig. 14.—Case IX. From a photograph taken ten days after massage had been begun.

forms of mechanical apparatus. Operation was not resorted to and they recovered with a fairly normal degree of flexion, extension, pronation and supination. The method used, a very simple one, is one

in which a straight plaster of paris splint is placed along the arm and forearm, with a pad in the elbow bend so that the limb is not fully extended. The fragments of the olecranon process were kept in position by means of narrow strips of adhesive plas-

FIG. 15.—Case IX.—From photographs taken at the end of treatment, showing the degree of flexion and extension present.

ter applied with their center above the fragment (over which is placed a small pad of lint) and the ends are brought obliquely downward to the sides of the splint below the elbow. The strapping required daily inspection and frequent renewal. The marked effusion which was present necessitated the use of an ice bag.

Subsequent Treatment: The limb was kept in the extended position for three weeks. From time to time the splint was removed and passive movements given. Care must be taken to avoid separation of the fragments. In spite of this early passive

FIG. 16.—Case IX.—An x-ray picture showing the extent of the injury.

motion and massage there was considerable stiffness, which was eventually overcome by persistent careful massage, baking, passive movements, and exercises.

CASE IX.—Philip G., fourteen years of age. Fell and struck on his right elbow. Complained of pain and inability to use the injured limb. Examination showed that the right elbow held in flexion of about 140°. There were ecchymosis localized to the posterior part of the elbow, excruciating tenderness over the base of the olecranon process, slight crepitus and false mobility.

Diagnosis: Fracture of the olecranon process of the right ulna.

Treatment: As previously described.

Subsequent History: At the present date the patient has normal flexion, supination and pronation, extension of about 175°. Fig. 14 taken ten days after passive movements, massage and exercises had been instituted, shows flexion of about 90° and extension of about 135°. Pronation and supination were normal. Fig. 15 taken some time later, shows extension of about 160°, and flexion almost normal. The ultimate result in this case will be normal extension. Fig. 16 is an *x*-ray picture of this case.

The following is a summary of our cases giving the end results obtained:

Internal condyle, 24; R. 13; L. 11. Sex: Males, 16; females, 8. Age: 10 years or below, 17; above 10 years 7. Discharged normal, 24.

External condyles, 14; R., 8; L., 6. Sex: Males, 13; female, 1. Age: 10 years or below, 9; 10 to 15 years, 5. Discharged normal, 14.

Supracondyloid fractures, 8. Sex: Males, 8. Age: 10 years or below, 6; 10 to 15 years, 2. Discharged normal, 7; discontinued treatment, 1 with Flex. 70°; Ext. 160°.

Olecranon Process, 4; R., 3; L., 1. Sex: Males, 3; female, 1. Age: 10 years or below, 2; above 10 years, 2. Discharged normal, 2; discontinued treatment, 1 with Flex. 90°; Ext. 140°. Still under treatment, 1 with Flex. normal; Ext. 160°.

Conclusions.—1. Every case of injury to the elbow where the diagnosis is doubtful should be placed in the acute flexion position until the diagnosis is cleared up by the Roentgen ray (except fractures of the olecranon process).

2. Begin massage and passive movements about the tenth day and continue thereafter until the movements in the elbow joint are normal and free from pain.

3. Guard against the displacement of the fragments when passive movements are begun as faulty reduction causes periosteal proliferation that locks the joint.

4. Proper retention is just as important as proper reduction.

5. These few precautions will prevent a great deal of unnecessary suffering and diability which usually follow too long immobilization, improper reduction and improper retention of the elbow joint.

6. I wish to express my gratitude to Dr. Samuel Kleinberg for his kind encouragement and to Dr. Jacob Bower for the *x*-ray pictures.

1051 BOSTON ROAD

TRICHINIASIS.*

BY MICHAEL G. WOHL, M.D.,

OMAHA, NEB.

PATHOLOGIST TO THE NICHOLAS SENN HOSPITAL; FORMERLY PROFESSOR OF PATHOLOGY OF TEMPLE UNIVERSITY AND PATHOLOGIST OF HOWARD AND SAMARITAN HOSPITALS, PHILADELPHIA.

SINCE Zenker[1] in 1860 made the accidental post mortem discovery of the trichinæ in a girl who died of typhoid fever, a great number of cases of human trichiniasis have been reported. It has been estimated that up to 1914 there were reported in the literature over 15,000 cases among which 830 proved fatal. In some epidemics the mortality reached 16

*From the Pathological Department, Nicholas Senn Hospital.

per cent. or even 30 per cent., as in the Hedersleben epidemic in 1865.[2] Cases of sporadic trichiniasis are more common than hitherto supposed, yet trichiniasis is very frequently overlooked, and mild cases are almost never diagnosed. This is probably due to the fact that the disease so often resembles typhoid fever, or "muscular rheumatism." Therefore, we believe that it would not be amiss in the report of our cases to review briefly the disease in general.

Man acquires the disease from eating raw or rare pork. The larvæ will stand considerable heat. Melvin,[3] chief of Bureau of Animal Industry of United States Department of Agriculture, recommends that pork should be cooked until it is no longer red but white in all portions, at the center as well as near the surface. The larvæ may remain alive in the muscle for years; according to Sicard[4] they may live in the muscle of the hog as long as twenty years. In man they have been known to retain their vitality within the muscle as long as twelve years.[5]

Upon being swallowed, the cysts in the raw or in-

Fig. 1.—Showing the hyaline degeneration and marked round-cell infiltration.

sufficiently cooked pork are destroyed in the stomach, and the larvæ pass to the small intestine and remain in the bowel for three days until they reach full development; then they copulate, and the male worm soon dies after copulation. The female remains within the bowel for from five to twelve weeks, and burrows beneath the submucosa of the duodenum and deposits the embryos in the lymphatic spaces. Many of the embryos escape with the feces, although they are rarely to be demonstrated. From the lymph channels of the intestines the embryos are carried to the thoracic duct, from here to the superior vena cava and the heart; however, they very rarely lodge within the myocardium itself.

Askanazy[6] found the embryos in clots in the heart and hemorrhagic foci of the lungs of rabbits upon which he experimented. The embryos then enter the striated muscle, especially the diaphram, tongue, muscles of the neck, larynx, etc., and become encysted. At first they involve the sarcolemma but soon go to the muscle fiber itself and produce degenerative as well as inflammatory changes, there being a round cell infiltration in the intermuscular tissue, an accumulation of the eosinophiles, and formation of fibroblasts, also hyaline degeneration. After a time all the cells become absorbed and the rest is changed into connective tissue, or a clear chitinous cyst results in which the parasite lies coiled up, surrounded by granular detritus. In making a diagnosis one may not find the embryo encysted in the muscle, yet the degenerative changes are present in the great majority of cases. The excised piece of muscle from one of our cases shows a marked round cell infiltration and a hyaline degeneration. The section from another case posted at the Garretson Hospital, Philadelphia, shows the trichinæ coiled up in the cyst.

The secondary pathological changes of the different organs of the body which are produced by the toxin of the trichinæ are of a degenerative nature. That the trichinæ secrete a toxin has been disputed by a number of men, but the work of Romanowitch[7] seems to have settled this question. He transferred the toxin contained in the serum of the infected animals to rabbits by subcutaneous injection.

Gastel,[8] however, believes that the toxin of trichinæ is not a true toxin in the sense of Romanowitch; yet the violent temperature fluctuations, the edema, the extreme fatigue, and the capillary hemorrhages cannot be explained merely by mechanical disturbances set up by the parasite.

Flury[9] has shown that the poisonous products are derived from trichinæ, and besides these toxic products there is also absorption of chemical products which arise from degenerated muscle tissue. That there is a definite change in the muscle metabolism can be seen from the high creatinin excretions in one of our cases (Creatinin No. 40). This is in accord with the work of Flury and Groll,[10] who demonstrated an alteration in the muscle chemistry in trichiniasis.

Herrick[11] believes that the constant inoculation of the patient with the foreign protein from the invasion of the body by the embryos and split products of the degenerated muscle, accounts for the symptom complex of trichiniasis. The marked eosinophelia which is so characteristic of the disease, is undoubtedly due to the stimulation of bone marrow by the same products, since[12] Ahl, Schittenhelm, Schlecht, Herrick, and others have established the fact that introduction of foreign protein or its split products by parenteral routes into animals is followed by a marked eosinophilia. The lesions are produced by the poisons—exogenous secreted by the trichinæ and endogenous formed by destruction of muscle tissue—and consist, as we pointed out, of parenchymatous degeneration of the kidneys, liver, and myocardium, and a low-grade inflammation of the brain.

Honne and Höffner[13] observed delirum and dullness in cases of trichiniasis. In our case the toxin of trichinæ precipitated an epileptic fit, while the patient had two epileptic attacks within six months tions in one of our cases (creatinin 40). This ing the disease, which was of about five weeks' duration, he had one attack.

That the muscular symptoms are due to both the toxemia and the mechanical irritation caused by the parasite is too well known; that the nervous symptoms are due to this combination seems likewise probable. Van Cott and Lintz[14] for the first time demonstrated the presence of trichinæ in the spinal fluid.

Blood.—We owe to Brown and Thayer[15] the demonstration of the increase of eosinophiles in trichiniasis. From normal 1-4 per cent. they may rise to 68 per cent. Kerr[16] has reported an eosinophilia of 86.6 per cent. In our case the eosinophiles were

Fig. 2.—Showing the cysts containing the coiled-up trichinæ.

as high as 46 per cent. The increase in eosinophilia dates, according to Opie,[17] from the beginning of migration of the embryos, the maximum eosinophile count being at the time of migration of the parasite from the intestine to the muscular system. Trichinæ not only produce a toxin, but also act as a true antigen, giving rise to the formation of antibodies.

Ströbel[18] made use of this fact for diagnostic purposes, employing the complement fixation test. He found that the antibodies persist as late as a year and a half after the infection, although they do not appear in the blood before the tenth week. Herrick and Janeway[19] found the trichinæ in the blood. Lamb[20] also demonstrated their presence in the blood as early as the sixth or seventh day after the infection.

Symptoms.—Symptoms of the disease appear about two weeks after ingestion of infected pork, some times earlier. The symptoms of gastrointestinal irritation are diarrhea, abdominal cramps, and tenderness in the epigastrium, the symptoms bearing close resemblance to typhoid fever. On migration of the parasite there are severe muscular pains and high fever; this fact may cause the disease to be confused with muscular rheumatism. The symptoms which are due to absorption of toxins are anorexia, malaise, headache, continued fever, great prostration, mental dullness, delirium, and quite commonly edema of the face and ankles. Minot and Rackman[21] point out that the pulmonary symptoms, such as cough and râles at the base of the lung, are severe enough to lead to serious consideration of an actual diagnosis of a purely pulmonary condition. Symptoms such as pain and burning in the eyes may be present. Edema is a common sequel of the disease.

Diagnosis.—The diagnosis is made from the blood examination showing high eosinophile count, and by finding the trichinæ or hyaline degeneration with round cell infiltration in an excised piece of muscle. In the stools the trichinæ are rarely found, for according to Fielder[22] trichinæ are dissolved in the small intestines; however, the presence of Charcot-Leydencrystals is of some value. Persistent search for parasites in the stools made by Mrs. Mary Griffith of our laboratory failed to show them.

Treatment.—Administration of anthelmintics is of questionable benefit to the patient. As the parasites burrow beneath the ephthelium of the crypts and villi and discharge their young into the tissue itself, it is doubtful if cathartics and intestinal antiseptics do any good. Osler[23] recommends the use of thymol and calomel.

After the parasites have left the intestines, all treatment must be symptomatic and supportive. Since specific antibodies have been demonstrated in the blood of patients suffering from trichiniasis we would think that the administration of vaccines prepared from trichinæ of infected hogs would be a logical step. Merrick[24] has given a method of isolating trichina embryos free from muscle fiber by digesting the muscle in hydrochloric acid and pepsin, and precipitating the parasite by centrifuging. In conclusion we shall outline briefly the

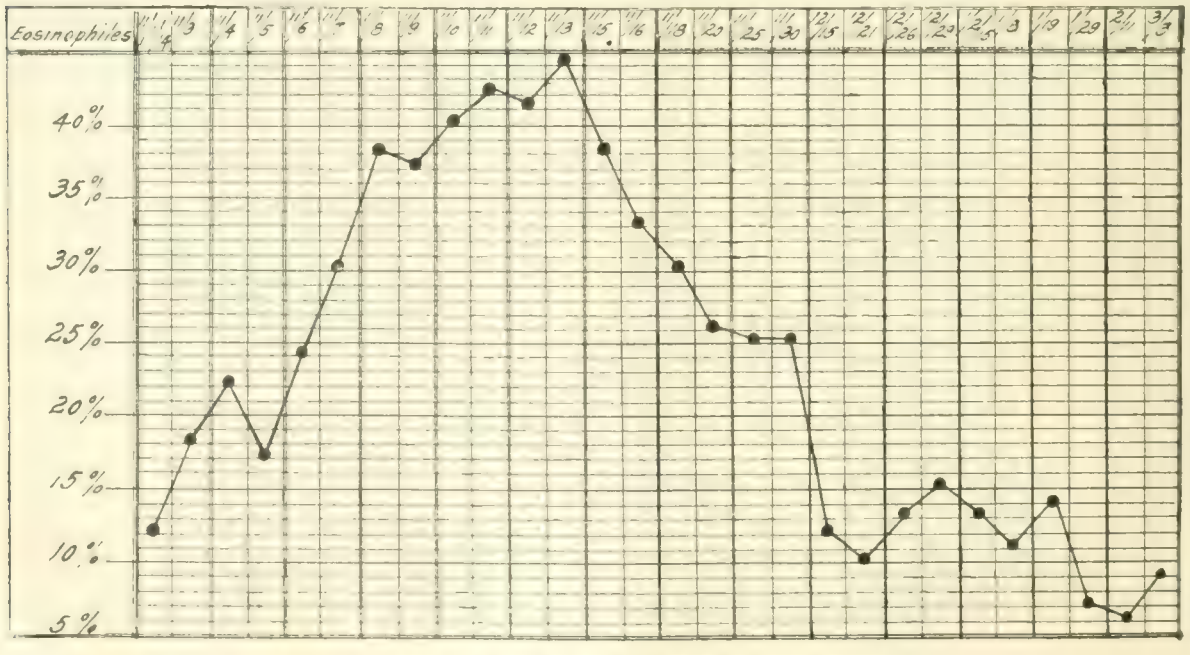

Fig. 3.—Showing the increase in eosinophiles.

history and course of the disease in a case treated at the Nicholas Senn Hospital.

R. M.; age 32 years; entered the Nicholas Senn Hospital November 7, 1914. Past history, no typhoid or pneumonia. Ordinary diseases of childhood. Some spells of dizziness during the past four years and in the last six months has twice lost consciousness and has fallen. No history of tuberculosis or chronic cough.

The present illness began about three weeks ago. He had symptoms similar to the prodromes of typhoid for about a week, then he began to have an afternoon rise in temperature. He did not go to bed. For one week before his admission to the hospital his temperature reached 100° each afternoon. Ten days before entering the hospital he had a Widal made, which was negative and a blood examination which is shown on the accompanying chart. He was advised to come to the laboratory every two days for a blood examination. On November 7 his eosinophiles had reached 18 per cent. Trichiniasis was suspected.

He entered the hospital and a piece of muscle was excised and the characteristic microscopical findings above described were noted. During the three weeks that he was an ambulatory patient he suffered much from muscular pains and soreness, fatigue, and exhaustion. The pains while present involved the deltoid and flexors of the forearm and nearly all the muscles of the leg. No pectoral pain at any time, no chills, some slight diarrhea in the beginning. The patient had lost much in weight and cerebrated with much difficulty, in fact his mental lethargy was quite marked for some days after his admission to the hospital. On the fifth day after entering the hospital, he had a severe epileptic convulsion.

Temperature at time of entrance was 100° and respiration 18. The temperature rose to 101° and came down to normal and then varied from 102° to normal. Respirations varied from 18 to 24, and pulse from 92 to 102. He remained in the hospital for two weeks, at the end of which time the muscular pain and soreness had practically disappeared, temperature was normal, appetite much improved, and he had gained some in weight. The treatment instituted was eliminative, intestinal antiseptics were given, salol being the principal one. A simple supportive treatment was about all that could be done. The course of the disease lasted between five and six weeks, as nearly as we can figure from the history. A laboratory report is appended, which shows the blood and urinary findings.

Laboratory Report.—The absolute leucocyte count varied between 5400 on admission and 15,400 at height of disease. The eosinophile count is indicated on the chart accompanying. Widal negative. Diazo negative. Urine analysis: creatinin 40, the other urinary findings of no importance.

The history of the other case is not known, as the body was sent by the Anatomical Board, Philadelphia.

I wish to express my thanks to Mrs. Mary Griffith for the laboratory reports.

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FLAT FOOT: ITS RELATION TO NEURITIS AND ITS TREATMENT.*

BY WILLIAM MARTIN, M.D.,
ATLANTIC CITY, N. J.

DURING recent years there has been a clearer conception of the part played by postural defects upon the nerve structures. An example is that of scoliosis in its effect upon the various nerves supplying the parts. There seems, however, to have been little or no attention given to the part played by relaxed or fallen arches upon the sciatic nerves, so far as I am aware, in the present day literature, which will account for this paper, as during the past few years my attention has been attracted to this condition by a series of most interesting cases.

As a rule, these patients apply for relief from what they think to be flat foot, as the pain is in the main referred to the arches and ball of the feet. They may mention as an incident that there is an occasional backache, but the main complaint is that of the feet. As will be shown later, there is almost invariably a painful response to the static wave current. Whether the nerve inflammation is primary or secondary to the relaxed or fallen arches is a problem to be solved in each individual case. In some cases I am satisfied that the nerve involvement has been primary, and through nerve innervation, allowing a subsequent relaxation of the arch or arches. In other cases the involvement has been secondary, through a form of traumatism due to postural defects producing pressure and tension.

In order to bring clearly to mind some of the reasons for arch drop, it will be well to refresh our memories with a short statement of the anatomical features of the arch. As you know, the foot in its construction is composed of two arches: the anteroposterior and the lateral. The former is formed by the os calcis, scaphoid, three cuneiform, and the metatarsals with the astragalus as a keystone. These are held together firmly by ligaments, the plantar binding the os calcis to the scaphoid. This powerful ligament, together with the long plantar, binds firmly together the various bones of the foot and completes what has been termed the first line of defense of the anteroposterior arch. The second line of support consists of the short muscles of the foot together with the tibialis anticus, which helps by lifting the proximal end of the first metatarsal bone. The lateral arch is an imperfect one, as its support is at the outer side only, the body weight being borne by the os calcis, cuboid, and

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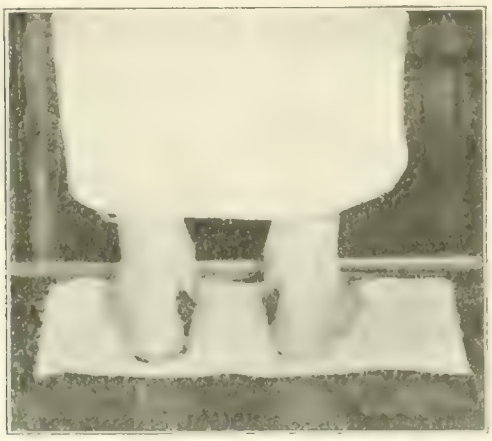
5th metatarsal. The arch rises upward and inward, and its free unsupported edge is formed by the astragalus, the scaphoid, and the internal cuneiform, with the first metatarsal.

The main support of the lateral arch is from the tendon of the peroneus longus, which crosses the foot diagonally from the cuboid to the first cuneiform, and by the ligaments which bind together the adjacent bones; it also receives some support from the tibialis anticus.

The line of body weight supported by the arches is directly down through the tibia and astragalus, which weight tends to spread the arch and stretch the long and short plantar ligaments. This brings the inner side of the foot down and the lateral arch yields to the flattening process, as it is the unsupported part of the arch that gives way. The flattened instep projects inward, causing a bulge at the centre of the inner line of the foot, the outline changing to a convex instead of a concave, or even a straight line.

The typical flat foot shows a turning out of the line of the heel, with a convexity of the inner side of the foot, and a concavity of the outer side, while a tracing of the foot shows no instep.

A great deal of study and investigation has been given to the subject of flat foot by orthopedic and



other surgeons, and various mechanical appliances and shoes have been placed before the suffering public with the view of correcting this condition.

The greatest sufferers from this form of painful feet are those whose occupations require much standing, and the obese. Faulty posture is another factor which will throw the body weight from the normal line and bring uneven pressure to bear upon the arches. This has been ably demonstrated by Dr. Percy W. Roberts of New York City in the *N. Y. Medical Journal*, Aug. 28, 1915, and I will therefore use some of his statements in explanation of the mechanics of flat foot.

He stated that "it seems to have escaped observation generally that the os calcis has a more or less globular shape of its inferior bearing surface, and that because of its firm union to the anterior part of the foot and its rounded bearing surface, is one of the most important single factors in the production of lateral instability of the foot." As he has so well demonstrated, the weight of the body out of the center line will tilt this bone one way or the other, according to the line of weight. It is purely a question of mechanics; therefore if the os calcis is rotated, the rest of the foot must rotate with it. The method of correction of this rotation will be considered under the head of treatment.

The association of sciatic inflammations and irritations with flat foot is more common than is generally supposed. This can be demonstrated by the use of the static wave current applied to all cases

that come under the care of the physician for painful feet.

The amount of pain is not always commensurate with the amount of foot drop, as some cases of relaxed arches will cause more pain than the flat foot. If in time this relaxation develops into a full and complete flat foot, the nerves sometimes adapt themselves to the changed conditions, and thus the suffering abates. Unfortunately this is not a constant result, for in my experience, some have shown increasing pain with the developing flat foot.

A careful examination of each case presenting must be made in order to get the best results of treatment, and by this I mean, an examination of the feet bared, and from all sides, together with tracings, if need be. With this I deem it essential that the wave current be applied to the course of the sciatic nerves and their branches, following its full course down the legs, if necessary to find the most sensitive parts. Usually the sciatic notches will be found the most painful, and the tenderness lessening as the nerve is followed downward.

The treatment of this condition is more or less complex, and cannot be done empirically. Mechanical measures have been long advised and used, with varying results. The arch-lifts, lately of the adjustable kind, have been mainly relied upon, and the adjustment left largely to the patient, who cannot have a clear conception of the needs. This often entails much suffering from the bruising of the tender structures pressed upon, and in some cases under my notice, has been more painful than the actual foot drop itself.

A careful examination will show whether the condition is one of relaxation of the arches or a full flattening, and the treatment can then be logically applied, as it must necessarily differ in the two types of cases. If the former, exercises alone with

the treatment of the sciatic nerves with the static wave current applied as previously suggested, for a considerable length of time, will usually bring about the desired result. If the full flat foot is

found, remember this rotation of the os calcis, as it may prove to be the one factor by which a correction will mean a cure, if used in conjunction with the other measures necessary. Dr. Roberts has solved this problem very satisfactorily in my estimation, as the one case cited below will demonstrate. These plates are totally different from any on the market, and must be made for each individual case, as a perfect fit is absolutely essential. A plaster cast of the feet must be made, full length to the end of the great toes, allowing the plaster to come well up the sides and back of the heels, and to the full height of the side of the great toes. From these casts the manufacturer makes his perfectly fitting heel plates, which correct the rotation of the os calcis, and securely hold it in its proper position. These plates are made from light but strong metal, and fit the shoe so well that the wearer forgets their presence, differing so decidedly from the ever present arch lifts, which cannot be forgotten.

The treatment by exercises is one of the very important factors toward a cure. In light cases of relaxed arches, they need not be practised longer than a few months, but in the severe types, they should be pursued for at least a year or more, according to the exigencies of the case. At the beginning I recommend only three of the exercises following, as the muscles tire and become sore from them, but gradually the rest can be added one by one, as the patient becomes accustomed to them, as he usually does soon.

These exercises are a modification of these recommended by Dr. McKenzie in his work on "Exercise in Education and Medicine," 2d edition:

1. Patient sitting, leg extended and supported just above the ankle. Grasp the right foot just above the ankle with the left hand. Place right hand on sole of foot. With thumb pointing toward toes, grasp foot firmly, circumduct foot slowly as follows; extension, inversion, flexion, eversion. This should be done by attendant with as much force as can be used without pain, and repeated thirty times. Each part of the movement should be separated by a pause.

2. These same movements done by patient without help.

3. Patient standing, toes in and heels out, and about 12 inches apart. Rise on toes and press out slowly. Repeat thirty times.

4. Standing, feet parallel and 6 inches apart. Raise the inner side of the feet, throwing the weight on the outer side. Repeat thirty times.

5. Standing with feet parallel, weight resting on outer side of the feet. Walk forward and backward thirty steps, keeping feet parallel, and forcing down ball of feet.

6. Standing, feet 12 inches apart, and parallel, knees bending, and outward pressing.

7. Standing, feet 6 inches apart and turned in. Rise on toes and walk forward and backward thirty steps, crossing feet and keeping toes in.

8. Standing firm, right lunge forward, neck firm, bend right knee until heel is forced from floor, keeping weight on the outer side of foot. Repeat ten times, and do the same with the left.

9. Standing, feet parallel, 6 inches apart. Sway slowly forward and backward on heels and ball of feet, chest active and chin in.

10. Raise heel one inch from floor and walk without bringing heel down, as if the heel was painful. May be done repeatedly with both heels.

In all of the cases associated with a neuritis, there must be the same dietetic care used as in the ordinary types of nerve inflammation, with a toxemic intestinal condition underlying. In addition to the static wave current, static sparks, the brush discharge, and resonator effleuve, may all be used, according to the best judgment of the operator. This line of treatment will be best illustrated by a brief citation of three typical cases.

Case I.—This case is that of the writer, who can testify personally to the suffering of relaxed arches. Some years previous to this condition I had received a severe strain of the sacroiliac joint from a difficult forceps labor case, which had given me considerable pain, and had developed into an arthritis, which diagnosis was substantiated by roentgenograms. A few years ago, when changing from general practice to my present work, I began to suffer with my back, the pain extending to the feet. My conclusion was that the old injury was responsible for the pain in the back, and constant standing accounted for that in the feet. Gradually the feet became progressively worse, and naturally the thought was that the arches had fallen, so I applied to my instrument maker for arch lifts to correct this supposed condition. An examination made by him corroborated this supposition, and they were accordingly placed. The relief was transient, following the sore bruised stage which promptly appeared. Some time later I removed them, and sought relief by wearing a much lauded type of shoe that was guaranteed to cure all kinds of flat foot. These shoes were worn with little more relief, and were objectionable on account of their shape and weight. Still suffering and without much hope of relief, during an especially severe attack of the arthritis, I applied the static wave current to the part, with a plate large enough to reach over the sciatic notch. To my great surprise, as the pain subsided in my back, it did also in my foot. This gave me a thought, and I followed out this line of treatment for a considerable time, with a final end of my foot trouble. It was this experience that led me to examine other cases carefully and use the static wave current in my examinations of all cases of foot drop and relaxations, and this care has led me into a most interesting line of experiences and results.

Case II.—This case is one of a physician druggist, who had consulted a number of physicians for relief from painful feet, which had been diagnosed by all in turn as flat foot, but all were unable to give him the desired relief. An examination of his bared feet showed relaxed but not dropped arches. Examining his sciatics in the usual way by means of the static wave current, the expected result was immediately found. The sciatics were so painful that he could bear but a half-inch spark gap current. He stated at once that he did not remember ever having pains referred to his back or legs, except at rare intervals there had been some leg spasms of a mild type.

Treatments were pursued daily for about six weeks, with occasional interruptions. Improvement was prompt, and a positive cure was secured at the end of this time. In this case there were no exercises used, and nothing but sparks in addition to the static wave current, which is evidence to my mind, that the relaxed arches were the result of sciatic neuritis.

Case III.—A young lady, school teacher, has been suffering for three years with severely painful feet, and pursuing her vocation under great difficulties, as can be imagined. As her history is by far the most interesting one of all, I will give it in more detail.

A little over three years ago, the arch of her left foot gave way suddenly in school, and she was thrown to the floor helpless and suffering great pain in the foot. She was helped up and to her home, and placed in bed. Both feet became swollen and inflamed, the left more particularly so, and for five weeks she was confined to her bed. The physician in charge called the trouble rheumatism, and placed her upon remedies for this condition.

Following the acute stage, there has been ever since a great deal of pain in the feet, more in the left, and this pain and soreness has extended to the hips. During the three years that have elapsed, she has consulted several physicians, but without relief to any great extent. During the three years she has worn arch lifts of the adjustable type, and has gradually increased the

elevation, keeping up a constant soreness in addition to the pain ever present, although there has been some improvement in that regard.

During the mid-summer just past, she came under my care, following a short course of static wave treatments applied over the leg muscles to relieve muscular spasms, given by a physician in a neighboring city, but which did not bring the relief desired.

A careful examination of the bared feet showed a full and complete drop of both arches. Manipulation of the feet showed an absolute relaxation of the muscles and ligaments of the lateral and anteroposterior arches of both feet. Examination of the sciatics of both sides showed acutely painful responses, and the soreness could be traced all the way down to the feet, more severe in the left nerve. The posterior view of the feet showed decided rotation of the oscalcis, more exaggerated on the left, which has been all through the more involved. Her general health was good, no great amount of intestinal toxemia found, kidneys were normal, but smears from the tonsils showed some bacilli, streptococcus and staphylococcus, and the tonsils while small, were diseased. No doubt this infection has played a part in the sciatic involvement. On this account, there has been some surgical attention given to these. The diet was made a restricted proteid type, and occasional doses of castor oil administered, so that the intestinal condition soon cleared. The exercises mentioned in this paper were instituted in the manner stated, and after a time the sore muscle condition abated, and the whole ten were used faithfully, and are still in use.

From the start, the high candle-power lamp was used to the extent of a decided hyperemia, over the whole back and hips. This was followed by long seances of the static wave current applied to the sciatic notches and over the nerve course, and some of its branches on both sides, as the painful places were found. For a time, owing to the time consumed in the treatments, I used the static induced current, thus cutting the time in half, and with equally as good results, so far as I could determine. Static sparks were used liberally at each treatment, and were applied all along the course of the nerve in each leg.

Noting the rotation of the os calcis, the case offered a most excellent chance to test the method of Roberts, and as she was willing to go through the troublesome ordeal, I made plaster casts of both feet, and sent them on to the manufacturer in New York for the purpose of having the heel plates made. These were perfectly satisfactory in the fit, and have been worn with absolute comfort. She unhesitatingly states that at the end of two months of treatment, during which time these plates were worn, she has secured perfect relief from all pain in the feet, and all that remained was some soreness and ache in the mid-thigh region, particularly after a long auto ride, but that she can walk for miles without realizing that she ever had painful feet. This patient is still under treatment, remaining longer in order to make a complete recovery from all the pain in the sciatics, which will not amount to a great deal more time.

This case illustrates the most severe type of flat foot, while the other two represent the milder forms, and the three are selected for the purpose of typifying the relationship of nerve pains, either associated or caused by relaxed or fallen arches, and I trust will be in some measure helpful to others in giving relief to this class of sufferers, of whom there are so many.

Maryland and Pacific Avenues.

CIRSOID ANEURYSM TREATED BY THE DIRECT APPLICATION OF BOILING WATER.

By John A. Wyeth, M.D.,

New York,

Senior Surgeon, New York Polyclinic Medical School and Hospital.

The following is the record of a case of extensive arterial angioma (cirsoid aneurysm) of the right temporal and parietal regions in which coagulation of the blood and vascular occlusion were effected by the direct application of water at a high temperature.

Charles J. Meilke, 26; connected with the United States Army Medical Service, Second Division, Field Hospital Company No. 3, El Paso, Texas, consulted me at the Polyclinic Hospital, Dec. 1, 1914, with the following history:

In 1906 he was thrown from an automobile, striking with considerable violence upon the right temporal and parietal region. Although the scalp was scraped and severely bruised, there were no symptoms of fracture of the skull, and the patient recovered promptly from the immediate effects of the accident.

In 1908, he first noticed an abnormal throbbing sensation in the temporal artery, near the zygoma. This gradually increased, until the forehead and a large portion of the right parietal region was a mass of tortuous arteries, in which a distinct aneurysmal bruit and fremitus were present. The patient informed me that Dr. Bannister, U. S. A., referred him to the Mayo clinic, and that an operation was not deemed advisable.

On Dec. 7, 1914, at the Polyclinic, the field of operation was made analgesic by free infiltration with one-half per cent. novocain, and about one-fourth of the vascular area was coagulated by boiling water and steam subdermally administered. In order to maintain the necessary degree of heat (although boiling water was placed in the steel syringe) after the needle was introduced, a candle was held under the barrel, until the noise of escaping steam could be distinctly heard beneath the scalp. The patient complained of no sense of pain. This procedure was repeated on three other occasions, with an interval of two days, until the mass was solid and pulsation absent.

He was discharged, cured.

So far, since I introduced this method of treating angiomata in 1902, it has been uniformly satisfactory in a very considerable number of cases of arterial and venous angiomata.

244 Lexington Avenue.

TREATMENT OF DEMENTIA PRECOX WITH SODIUM NUCLEINATE.

By Charles F. Read, M.D.,

Peoria, Ill.

Assistant Superintendent Peoria State Hospital.

Inasmuch as there has been some discussion of late concerning the use of sodium nucleinate in dementia precox, it seems wise that cases treated in this manner should be reported until a sufficient number are assembled to clearly testify either for or against this method. The treatment is an empirical one based upon the observation that mental cases of this type occasionally improve during the course of infection, and that injections of sodium nucleinate tend to produce fever and leucocytosis.

The writer has not used the Lundvall formula, but has given sodium nucleinate according to the method of Donarth, who uses it as a 10 per cent. solution in physiological salt solution with the addition of small amounts of sodium cinnamate, of which solution from 5 to 40 c.c. is given in rapidly increasing doses, the average dose being about 25 c.c. The injection is made under the skin of the abdomen with a large glass syringe fitted to a lumbar puncture needle which is especially sharpened so as to give it a long, sharp bevel. When given in this way, the treatment, though painful, is not severe and the solution is absorbed rapidly. Ordinary aseptic precautions are observed and the solution is usually made up fresh for each administration, though it can be kept for some time in a refrigerator without deterioration. There has been no abscess formation and practically no induration following some 150 injections. Aside from the in-

jections, the patients received only routine care. The cases were unselected save that, so far as possible, newly admitted patients were treated. The previous duration of mental trouble ranged all the way from six months to several years.

It would be tiresome and unnecessary to describe at length all of the cases treated. The following are typical of the results obtained. All were patients in the Chicago State Hospital.

Case I.—Catharine R., aged 23. A young woman with a history of onset a year previous to admission, when received was very indifferent to her surroundings, seemed somewhat suspicious at times, refused to eat, and answered but few questions. Treatment was begun soon after admission and eight injections in all were given, rapidly ascending to 25 c.c. at intervals of about a week. There was no rise of temperature save once to 100.4° and the leucocyte count made upon five occasions ranged from 6,600 to 12,400. After eight treatments, the patient became quite normal in conduct and talked freely, but had no insight. She was paroled in excellent condition and has not been heard from since.

Case II.—Selma A., aged 32. Onset six months before admission, but possibly much longer, was said to have always been somewhat peculiar and seclusive. She seemed depressed when admitted and had ideas of reference, voices seemed to come to her from the ceiling, she had a feeling that she could not think, worried over sexual indiscretions, and thought she had some evil disease. She was given eleven treatments beginning with 3 c.c. of the solution and ascending to 25 c.c. After the first treatment her temperature rose to 103° but subsided in a few days and after this did not go higher than 100.6°, upon which occasion the leucocyte count rose from 9,800 to 15,400. During treatment, patient improved, became less seclusive, seemed more cheerful, and worked at fancy work. She was paroled after some months very markedly improved, but still odd in her behavior and without insight. There is some question here of a manic-depressive psychosis but the weight of the evidence favors dementia precox.

Case III.—Stella N., aged 28. Onset six months previous to admission. She was resistive, restless, and refused to eat when first admitted. She laughed a great deal, had very disturbed spells in which she screamed and threw herself about the room and impulsively attacked the physician. Treatment was commenced some months after admission. Ten injections were given without any noticeable rise of temperature, and without alteration of the white blood count. The patient made no improvement whatever.

Case IV.—Sarah S., aged 18. This case is a recurrent one, presenting stupor without retardation. Unfortunately complete notes are not at hand. The patient received twelve treatments from the latter part of April to the latter part of July without apparent effect. The leucocyte count varied from 5.500 to 9,600 and the temperature never went above 100.4°. She did not improve until several months after cessation of treatment when she cleared up rapidly and went out apparently well but without much insight. The same improvement had been noticed on a previous occasion without treatment.

Case V.—Jennie M., aged 22. Onset was about three months previous to admission. She had been in another hospital where she was restless, careless, indifferent, noisy, irritable, hallucinating, and delusional. She was removed without change and returned to the Chicago State Hospital where her condition, when admitted, was essentially as described. Sodium nucleinate treatment was instituted and she began to improve gradually. Ten injections were given, with but slight temperature rise on two occasions, and no leucocyte increase. Three months after treatment was begun, she was paroled in excellent mental condition, but with no insight.

Case VI.—Edward McC., aged 22. This patient when admitted was an acute case of short standing, was very untidy in habits, had the habit of urinating upon other patients, and was much disturbed at times. Three treatments were given. Following the first the temperature went to 101.6° and the leucocyte count from 9,400 to 16,800. Following the second treatment without rise of fever, leucocyte count went to 20,800. We have no record of the third treatment. Following the first treatment the patient improved in his conduct remarkably but relapsed somewhat and again improved following his second treatment. This improvement was noted to be rather like that of a bad boy who feels he is being punished and must mend his way. However, the patient continued to do much better and finally escaped, since when he has not been heard from.

Case VII.—George D., aged 27. This patient has been in the hospital for three years and is a typical case of hebephrenia. Ten treatments were given without material result, although with a change to another ward and some very simple work in the industrial shop he improved enough to cause his parents great satisfaction.

Case VIII.—Bessie S., aged 19, colored girl. Onset two weeks previous to admission when she became worried, refused to eat, had screaming spells, feared the devil, struck her mother, etc. Upon admission she was restless, assaulted the night nurse, assumed constrained positions, repeated words and phrases over and over, was spoon-fed, and remained in bed in a stuporous condition much of the time. She received eight treatments. Following the first treatment her temperature went to 100° and with each injection there was a rise of two to four degrees. The leucocytes varied from 11,000 to 14,000. The treatment extended over two months, following which she began to improve quite rapidly and was finally paroled in what was apparently a normal condition, though she had very little insight.

Case IX.—Oswald W., a boy of 16. A history was difficult to obtain because the father is not bright and does not talk English, but it would seem that the boy had never been considered a defective and had had an amount of schooling commensurate with his age. Some time before admission he had an elated period, but a month previous to admission became depressed, refused to eat, and stood about staring and pointing to the wall, etc. When admitted he was agitated, thought he was going to die, was restless, untidy, moaned and cried, practised self-abuse continuously, was fed by persuasion, and assumed constrained attitudes. Just previous to treatment he was upon a ward for the untidy, in an apparently stationary condition but after one treatment of 10 c.c. he reacted with a high fever and over night became, as his nurse expressed it, "50 per cent. better." He received three more treatments and his improvement continued until he became apparently himself again and was removed by his father. At this time he had very little insight. He could not explain his previous difficulties save that he had had a pain in the head. He knew he had talked much and worried about the police being after him. He professed not to remember his practise of self-abuse. He recalled that he had been untidy but could not explain this, other than that he thought he was to be drowned when taken to the bathroom. He refused food because he had no appetite and could not at all explain resting stiffly on his elbow for hours at a time, talking through clenched teeth, etc. After leaving the hospital he obtained employment but soon complained that he was overworked. He was returned to the hospital in the course of a few weeks and at that time was in a curious state, closely resembling that seen in some high grade defectives during a state of mild excitement. He was quite irresponsible, teased other patients, constantly complained, and asked to go home. He was finally paroled again, and again returned a short time ago in a condition closely resembling catatonic excitement. The diagnosis here of course, is in question, lying as it does between that of a period of manic-like excitement in a defective, and catatonic precox. The case is interesting in view of the sudden great improvement following immediately upon the injection of sodium nucleinate in a patient who was apparently in a stationary condition.

Case X.—Joseph D. A case of acute onset in a young alien. When admitted he was quiet, stupid and mute, later on was noisy, at times would attitudinize, smile peculiarly and refuse food, would allow food to remain in his mouth, would sit and look out of the window by the hour or stand in a corner. The patient received seven treatments with a temperature rise upon three occasions to 102°. White blood cells ranged from 6,800 to 14,000. At about the time the last treatment was given, the patient showed a change, became interested in his surroundings, smiled, talked, and complained of being among untidy patients. When placed upon another ward he improved rapidly, becoming very pleasant and a good worker.

The above cases are sufficient to give a fair idea

of the various results obtained with sodium nucleinate injections administered as previously described. Aside from the recoveries already noted, one other patient made a late recovery some months after treatment had been discontinued, but she had had a previous remission without treatment. Four other patients improved to some extent. In nine cases no improvement whatever was noted. Of the four cases that underwent a quite complete remission during treatment, two were catatonic and two hebephrenic. The two showing late improvement were catatonic, as was probably the case of Oswald W. (Case IX) who later relapsed. The six who showed more or less improvement were of types varying from simple hebephrenia to those of a more complicated character.

The writer is not prepared to generalize from the above results. If anything can be said for this treatment, it is that in certain cases it *seemed* to precipitate an improvement which very possibly might have occurred later on without treatment. The treatment certainly does no harm, and may be tried out until definite statistical results are obtained.

SYPHILIS INEXPLICABLE.

By WALTER S REYNOLDS, M.D.,

NEW YORK.

THE inexplicable vagaries of syphilitic infection are well known. They are well illustrated in a case that recently came under my observation, and for this reason, together with the fact that it may be of service in teaching us lessons of the greatest importance regarding the treatment of the disease, I have deemed it worthy of briefly reporting.

A man 27 years of age was referred to me in July, 1915, with the following history: In 1907 while serving in the navy he contracted a lesion on the penis. He was treated by the naval surgeon who said "it did not amount to much." He was advised to keep it clean, using peroxide of hydrogen as a wash. It became steadily worse and after much pleading he was admitted to the hospital. He was then told that he had a "chancre" and for three months he received treatment by mercury pills. The lesion eventually healed and as his time of service had now expired he was discharged. When leaving he was told that he "was all right now." No further treatment was advised nor was anything said in regard to the nature of his trouble except what was told him at first—that he had a chancre. He returned to his home and in 1914 married, supposing himself perfectly well as he had had no symptoms whatsoever of his former trouble. Three or four months after he married an ulcer on his leg developed for which he was treated by a physician who inquired if he had ever had syphilis. The man explained that he had had an ulcer of the penis and the other circumstances concerning his trouble in 1907. An ointment was used on the leg but no further advice or medication was given him. The ulcer gradually decreased in size but was not entirely healed when I saw him. Four or five weeks before I saw him he began to have sores in his mouth which would improve somewhat when he would stop smoking for a time, but gradually became worse so that he was compelled to seek advice, and the nature of his trouble being recognized, he was sent to me.

The examination showed a well nourished, robust man. On the right leg was a cicatrix about four inches in diameter in the center of which was a crusted rupia-like lesion about an inch in size. There were no other signs of lesions on the body. The tonsils and mucous membrane of the mouth were covered with mucous patches making deglutition and swallowing difficult. The nature of his trouble was made clear to him, and, the probability of his wife having been infected being explained, it was arranged that I should see her as soon as possible. He was quite positive in his statement that he had never known the nature of his trouble and that he was told that he was "all right" on his discharge from the navy. Treatment was immediately begun with neosalvarsan, mercury ointment for the ulcer, and inunctions of mercurial ointment, with nitrate of silver applications for the mucous patches, and the stopping of smoking. Within two weeks all the lesions were entirely healed.

The examination of his wife showed no evidence of infection. The Wassermann was negative at this time, as it was when taken one month later.

Some of the important points which may be brought out are the following: A man after three months' treatment with mercury pills is told that he is well; seven years later he marries, and within a short time develops severe manifestations of syphilis, having had no signs of trouble since his discharge from the navy, seven years previously. It is evident, as I have had occasion to point out before, that too much care cannot be taken in explaining to patients the nature of their trouble. A chancre may mean almost anything to most patients. To have sent this man out after three months of treatment with pills with the statement that he was "all right now" hardly seems credible. And yet I believe the man's statement was true.

That his wife should have escaped infection seems beyond belief, for we know that the saliva of such patients is swarming with spirochetes, and as he had no reason to think there was any danger of infection no precautions were taken against his wife becoming infected. As a result of all this they separated, temporarily at least, although I explained that the danger of infection was not great, provided they lived as I recommended.

132 WEST SEVENTY-THIRD STREET.

A STUDY OF THE DIAGNOSTIC VALUE OF THE RUSSO REACTION.

By MAX KAHN, M.D., PH.D.,

NEW YORK,

AND

LAWRENCE WECHSLER, M.D.,

PITTSBURGH.

IN 1905, Russo described a test which he thought was diagnostic of typhoid fever. As this test has not attained to the general vogue of the Ehrlich diazo reaction has attained, we thought it advisable to study this reaction in various diseases and to compare it with the diazo reaction of Ehrlich and the Weiss urochromogen reaction.

Two years ago one of us[1] reported before the Columbia University Biochemical Association in the form of a preliminary communication his findings with this test. We now wish to dwell somewhat more extensively on this reaction and to compare it with the other urinary tests mentioned above.

The technique of the Russo test is very simple and is as follows: The reagent consists of a 0.1 per cent. aqueous solution of methylene blue. Several drops of this reagent are added to a few cubic centimeters of urine. A positive reaction is characterized by the fact that the urine assumes a mint-green or emerald-green color. If any trace of a bluish tint is present the reaction is negative. This distinction of color must be strictly adhered to for the proper conduction of the test. In order to obviate possibilities of error we compared the color obtained with tinted pieces of glass. We found this to be a very great aid in distinguishing doubt-

(From the Biochemical Laboratories of the Beth Israel Hospital, New York City, and the Western Pennsylvania Hospital, Pittsburgh, Pa.)

ful hues of blue from the true green color. The positive reaction is not affected by boiling the urine, or by the previous ingestion of such substances as phenacetin, salol, quinine, and calomel.

The performance of the Ehrlich diazo reaction is so much in vogue that we shall not describe it, but we shall say a few words regarding the urochromogen reaction of Weiss.

To perform the latter test a reagent is made which consists of a 1.0 per cent. watery solution of potassium permanganate. The urine is now diluted four or five times with water (if the urine is very highly colored it is diluted still further) and to it are added several drops of the permanganate solution. A positive reaction is indicated when the urine assumes a distinct yellowish color, which should not be mistaken for a pink or a light red color.

For the performance of these tests it is absolutely necessary to have daylight, and to be very careful in reading the various hues. With a little experience the tests are very easily carried out.

Webster,[2] in his text book, states that a positive Russo reaction is obtained, in addition to typhoid fever, in measles, smallpox, chronic and suppurative tuberculosis; but it is negative in varioloid, varicella, scarlet fever, miliary tuberculosis, appendicitis, and malaria.

Rolph and Nelson have pointed out that urines containing bilirubin react to this test, so that this fallacy must be borne in mind.[3]

We have examined altogether a series of 758 urines from as many patients. In this number of cases there were included many of the acute infectious diseases, chronic infectious diseases, and constitutional and organic affections. The following table will give the number of the cases of each disease studied and the incidence of the various tests in each disease.

Diagnosis	No. Cases	Russo Test		Diazo Test		Weiss Test	
		+	-	+	-	+	-
Typhoid	53	31	22	29	24	2	51
Pneumonia	38	7	31	1	40	0	41
Typhus	11	1	10	0	11	3	8
Influenza	9	0	9	0	9	1	8
Rheumatism	26	1	25	0	26	0	26
Diphtheria	9	0	9	0	9	1	8
Measles	16	1	15	3	13	2	14
Erysipelas	5	1	4	0	5	0	5
Tuberculosis	102	10	92	7	95	4	98
Syphilis	81	0	81	0	81	1	80
Empyema	6	4	2	1	5	0	6
Diabetes	57	1	56	0	57	8	49
Cancer	63	0	63	1	62	4	59
Exophthalmic goiter	2	0	2	0	2	0	2
Anemia	7	1	6	0	7	2	5
Leukemia	2	0	2	1	1	2	0
Hemophilia	2	1	1	0	2	1	1
Bantis disease	1	0	1	0	1	0	1
Arteriosclerosis	5	0	5	0	5	1	4
Cardiac diseases	27	0	27	0	27	2	25
Kidney diseases	35	0	35	0	35	2	33
Gastro-intestinal diseases	27	0	27	1	26	2	25
Cholelithiasis	31	1	30	0	31	4	27
Cholecystitis	14	1	13	0	14	4	10
Renal stone	8	0	8	0	8	1	7
Glioma	1	0	1	0	1	0	1
Pregnancy	14	0	14	0	14	1	13
Miscellaneous diseases	115	18	97	1	114	2	113

In most cases of typhoid fever the reaction of Russo appears toward the end of the first week and persists even through convalescence. The incidence of this test in typical cases of typhoid fever is in about 60 per cent. of the cases, equalling the incidence of the positive diazo reaction in this disease. Positive Russo reaction has been obtained by us in about 10 per cent. of cases of tuberculosis, even a higher ratio of positive findings than with the diazo reaction in this condition. So that the statement current that we can differentiate miliary tuberculosis from typhoid fever by the Russo reaction, which is supposed to be negative in tuberculosis and positive in typhoid, is not proven. It is curious to observe that in cases of fractures or such surgical conditions which involve the exudation and absorption of large blood clots, etc., we obtained positive Russo tests in 18 out of 115 cases. In these conditions both the diazo and the Weiss reactions are almost all negative. It will be observed by glancing at the accompanying table that positive Russo reactions were obtained occasionally in quite a number of the various diseases studied, especially in pneumonia, empyema, and certain of the anemias. In a total of 758 cases we obtained 79 positive Russo tests. The Weiss test seems to be entirely inconstant in any disease and is in our opinion of doubtful value.

It seems advisable to adopt the Russo reaction for routine work in the usual clinical laboratory. A positive Russo and diazo reaction in the same urine should have some weight in the clinician's mind in making his diagnosis.

In conclusion we wish to thank Mrs. Rahil Wattnan Kahn for having performed most of these examinations.

REFERENCES.

1. M. Kahn: *Biochemical Bulletin*, 1913.
2. Webster: Diagnostic Methods, 1914, p. 325.
3. Rolph and Nelson: MEDICAL RECORD, 1911, LXXX, p. 373.

Medicolegal Notes.

Practising without License.—The Kansas City Court of Appeals holds that the offense created by the Missouri Rev. St., 1909, Sec. 8315, punishing any person practising medicine without a license from the State Board of Health, and the offense created by Sec. 8314 punishing any person holding a license who neglects to record it in the county of his residence, are separate and distinct offenses and should not be charged in one count. —State vs. Huxoll (Mo.) 178 S. W. 866.

Retroflexion of the Uterus—Probable Causes.—Action was brought against a street-railway company for an injury sustained as a result of a collision between two of the defendant's cars, which it was claimed caused a retroflexion of the uterus. Upon the first crash of the collision the plaintiff jumped up. The second crash threw her back onto the seat. The retroflexion was discovered by her physician six weeks after the accident. One of the defendant's physicians, who had examined her within thirty-six hours after the accident, testified to finding no evidence of pelvic disturbance or conditions indicating that a retroflexion of the uterus was present. Other witnesses for the defendant testified that her condition was the result of overwork, lack of sufficient nourishment and anemia, and that retroflexion of the uterus could not result from an injury unless the injury was of a severe crushing or piercing character; that the condition of retroflexion is usually the result of a gradual wearing down of the ligaments supporting that organ, and that it frequently occurs among overworked, overtired, under-nourished, and generally anemic women.

The plaintiff testified that prior to the accident she had been in good health, and her physician's testimony was to the effect that the condition of retroflexion found on his examination made six weeks or two months after the accident was due to some external violence, and that such violence so weakened the uterine structure that the uterus prolapsed; and further that there was a relation between the condition of the plaintiff at the time of the trial and the accident in question. The evidence was held sufficient to present a question for the jury as to whether the accident was the proximate cause of the condition found as against the defendant's claim that the condition was the result of natural causes.—Murphy vs. Chicago City R. Co. 191 Ill. App. 431.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

PUBLISHERS

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See fourth page following reading matter for Rates of Subscription and Information for Contributors and Subscribers.

New York, January 15, 1916.

REPORT OF THE SURGEON GENERAL OF THE UNITED STATES ARMY.

THE report of the Surgeon General of the United States Army for the calendar year 1914 has just been issued. The report is a lengthy and, from the scientific and public health standpoints, an extremely interesting document. The mean enlisted strength of the army for the year under review, as reported on the monthly sick report of the Medical Department, was 87,228. During the year 1914 American troops were stationed in the United States proper, the Philippine Islands, China, Alaska, Hawaii, and the Canal Zone. During 1914 the admissions to sick report show a satisfactory decrease. The rate is 665.83. The admission rate for disease only is 539.46. The 1914 rate is the lowest ever reached in the history of the army. The highest admission rates were caused by the following diseases, named in their order of prevalence: venereal, 110.69; diseases of the pharynx, 56.96; bronchitis, 33.83; diarrhea and enteritis, 31.39; malarial, 20.07. For venereal diseases the rate for white troops was 109.48; for colored, 128.70. The rate in the Philippines, for these troops, were 174.79 and 233.76, respectively. As pointed out in the report, these high rates are due to local social conditions and indicate that radical changes in these conditions must be brought about ere rates comparable to those in the United States may obtain. Measures already introduced have effected a great reduction of the rates for venereal diseases in the Philippines, and, therefore, further progress in the direction of checking these diseases may be hopefully anticipated.

The noneffective rate is the true criterion of the nonefficiency of an army from sickness and injury. Judged from this angle, the condition of the United States Army for 1914 was satisfactory, for the rate for that year was the lowest recorded noneffective rate in the history of the army.

The total death rate for American troops for 1914 was 4.45, which is a low record for the army. The death rate from disease for the United States enlisted men was 2.52 per 1,000. That from external causes was 2.30. The total from diseases and external causes was 4.82. Tuberculosis caused 29 deaths; measles, 8; lobar pneumonia, 15, and cancer, 6.

With regard to the prevalence of special disease, there were seven cases of typhoid fever during the year in the army stationed within the geographical limits of the United States. In connection with this disease it is interesting to mention that among all the troops scattered along the Mexican border and in the large camps in Texas not a single case of typhoid fever has occurred in an inoculated man since June 4, 1912.

Again reverting to the venereal disease scourge, according to the report, it is believed that the instruction of soldiers as to the dangers arising from the malady is inadequate. An intelligent and comprehensive service of lectures should be given at recruit depots on hygienic matters, including venereal diseases. This instruction should be aided by illustrations and moving pictures adapted to the subject. This mode of instruction should be kept up at posts and should include questions of general interest in military sanitation. This system is to be recommended when certain details have been determined.

The admission rate for alcoholism in the United States Army for the year 1914 was 13.46, which is lower than the preceding year, when it was 14.24. Since 1907 the rate has shown a steady diminution. No marked improvement in the health of the American troops stationed in the Philippines was exhibited during the year 1914 as compared with 1913. The higher rate for venereal diseases is, in particular, a matter of great concern. The admission rate for all fevers of the malarial class was considerably less.

VISUAL EFFICIENCY.

AS the most dignified of the senses—"the five gateways to the soul"—it is little wonder that so much attention is now being riveted on the conservation of vision either from the standpoint of preventable disease, defect, or blindness, or, and especially, from the standpoint of visual acuity, of visual efficiency, in otherwise disease-free eyes. While the element of heredity enters into the development of visual defects in perhaps 10 per cent. of the cases, it is generally conceded that the bulk of the visual conditions are environmental, that is, industrial or educational in origin. On the other hand, it seems that the diminution of visual acuity is either a necessary outcome of the occupational, educational, and living tendencies of modern times, or else the increase is only apparent and not real and brought about by the refinements in diagnosis. The question of the efficiency of the eyes comes into more relief as there is greater intensity in the use of them. Aboriginal races, such as the American Indian or the Esquimo, have always been thought to have vastly more acute vision than modern races. In countries of the highest scientific development upward of 60 per cent. of the population suffer with visual defects. In certain occupations upward of 75 per cent. of the individuals thus engaged were found to suffer with visual defects (Bulletin 71, Hygienic Laboratory, U. S. P. H. S.). In all likelihood, however, the great visual acuity attributed to aborigi-

nal races is not due to a physical-sense superiority, but rather to their great ability in interpreting what they see. They have larger visual capacity though not greater visual acuity. Very nearsighted people may often recognize indistinct objects better than the farsighted, because put to the necessity of learning to interpret. Visual perception is not in proportion to the strength of the physical sensation, but is a judgment derived, as are all judgments, from other senses, previous visual perceptions, and experiences. A great variety of sensations rather than greater visual strength leads to greater capacity.

Even the most meager inquiry into the matter of visual acuity reveals how little is known as to the extent of vision of the farsighted and still less of the nearsighted. Nor, in view of the necessity of doing all of the finer works at the visual near point, is it possible to say which of the two forms of vision is the more desirable. We do not know how much ultimate loss of efficiency there is from one-eyed vision. Binocular vision permits a greater field to come before the retina at one time, but there is no greater acuity than in one-eyed vision. Indeed, if there is required a greater intensity in a given field, it is a natural tendency to obscure the vision of one eye.

The standard test type for determining visual acuity takes no cognizance of the actual minimum visual requirements in the various fields of endeavor, although it does purport to set out a general minimum. In transportation occupations the maximum amount of distant vision is almost absolutely necessary. Any appreciable reduction of vision in this respect, even of the kind that occurs in later life, is fatal to this occupation. On the other hand, the greater the acuity for distance the more difficulty there is in accommodating constantly to near work, and most of the eyestrain comes from trying to harness the farsighted to near work. Certain occupations almost demand nearsighted vision. The nearsighted, for example, are particularly fitted, because of their power of magnification, for such work as is exemplified by the engraving occupations.

If the test-type criterion is applied as a uniform test of visual efficiency, certain individuals with a low distant acuity will be barred from occupations for which they are, perhaps, peculiarly fitted, while certain others may be admitted on the strength of these tests into occupations for which they are not fitted particularly, because of their high acuity for distance. In determining visual efficiency, tests must not be made in the abstract but in relation to definite occupations. Almost no amount of nearsight, except perhaps in those pathological conditions found in extreme myopia with posterior staphyloma, bars one from work requiring near application. While correction of refractive errors is absolutely essential for comfort, to increase acuity, and especially to prevent greater defect, very few high defectives, particularly myopes, can get anywhere near a full correction. There is, however, no mathematical relation between distant and near vision. Near vision may be corrected to the recognized normal, while in the same individual the distant vision will hardly be affected. A great many misfits can be prevented by determining the kind of occupation the individual will be best fitted for. In the last analysis it should be the aim to educate the vision one has to greater powers by calling to aid all sources of orientation—to educate and train visual perception so that one may perceive more of the objects within the field of one's vision.

DRUG ADDICTION IN THE UNITED STATES.

THE newspapers of the country, and especially the more sensational ones, are responsible in a great measure for the growing belief that the number of those addicted to the harmful use of drugs in America is so widespread as to be a national menace. Lurid and wild statements on this subject are too frequently published, and while it is well that the facts should be as nearly as possible known and made public, it is contrary to the best interests of the community at large that misleading assertions should be put forward.

Martin I. Wilbert presented a paper dealing with the matter at the meeting of the Pennsylvania Pharmaceutical Association held at Forest Park, Pa., June 22-24, 1915, which was published in the Public Health Reports, Aug. 6, 1915. It is pointed out in this paper that most of the statements made are not based upon reliable data, and while it is not denied that the number of drug addicts in this country is disgracefully large, it does not, and obviously cannot, even approximate the maximum that has been asserted.

Perhaps the most instructive part of the paper referred to is that which relates to the origin of the drug habit. C. E. Terry of Jacksonville, Fla., in the report of a study of local conditions, published in the *American Journal of Public Health*, 1914, v. iv., p. 32, states that 213 cases of drug habituation studied by him personally, their origins in the order of their frequency were as follows: Through physicians' prescriptions or treatment personally administered, 54.6 per cent.; through the advice of acquaintances, 21.6 per cent.; through dissipation and the example of evil companions, 21.2 per cent.; through chronic and incurable disease, 2.4 per cent.

The conclusions reached by Terry that from 90 to 95 per cent. of the persons using narcotics habitually do so in a wholly unnecessary manner is in agreement with those come to by Brown, and probably by the majority of observers. Wilbert concludes that, "To secure efficient restrictions on the sale and distribution of narcotics, and to demonstrate that they are not primarily to blame for the generation and continuation of the addiction referred to, pharmacists individually should not alone be willing to comply with existing requirements under the law, but should see to it that others engaged in the same line of business comply fully with the spirit as well as the letter of existing laws and regulations." The Federal antinarcotic law may aid in solving the problem, though it has not yet demonstrated its value in this or any other direction.

The Widal Reaction in Tuberculous Persons.

In the application of the results of the Widal reaction in diagnosis it has been the custom to warn the clinician that he must be especially careful to exclude the possibility of tuberculosis since a certain percentage of tuberculous persons will give a positive Widal. This custom is based upon a number of observations made by reliable investigators and clinicians and has found, for the most part, ready acceptance. There has been no satisfactory explanation of this phenomenon yet proposed and it has always seemed curious that a reaction as specific as the agglutination test should be positive in infections due to such widely differing organisms. The problem has attracted the attention of several investigators, some of whom have been successful in finding the typhoid bacillus in the stools of tuberculous patients who had positive Widals. Chesley and Wade have had access to a large amount of material drawn both from private practice and from sanatoria. They report (Trans. Natl. Assn. Study and Prev. Tuberc., 1915, page 250) the examination of blood from 1,017 patients suffering from tuberculosis. In nearly all the cases the examination of the sputum revealed the presence of tubercle bacilli, while in the others the patients were residents of tuberculosis sanatoria and the diagnosis was accepted as correct. Of these cases 28, or 2.7 per cent., showed a positive Widal in dilutions of 1:50 or over, while 7 gave a partial reaction. Circumstances were such that the authors were able to pursue their investigations in only eleven of these cases. In seven of them the *B. typhosus* or *B. paratyphosus* was isolated from the urine or feces. In the other four cases the attempts to isolate similar organisms have as yet been unsuccessful, due, the authors believe, either to the difficulty of securing specimens or to an insufficient number of examinations. This is very significant work for it clears up a point which has been more or less of a stumbling block in diagnosis and does it very decisively. The authors' concluding words seem to be amply justified by the evidence: "It appears that there is little reason for believing that the Widal reaction in the tuberculous indicates anything short of present or recent infection with members of the typhoid group."

An Epidemic of the "Fourth Disease."

Very little is heard nowadays of the so-called "fourth disease," described by Filatow in 1885, and by Dukes in 1900. There is no consensus of opinion as to the exact nature of this condition, some writers regarding it as a distinct clinical entity occupying a position intermediate between scarlet fever and rötheln, other writers characterizing it as a mild type of scarlet fever. An epidemic of about one hundred cases of the "fourth disease" was observed by Diego Guigo y Costa (*La Pediatria Española*, August 15, 1915), on the island of Tenerife from February to July, 1914, the maximum incidence occurring during May. The clinical aspect of the cases corresponded to that described by Dukes, with certain modifications probably dependent upon the differences of climate. The eruption was more marked in adults than in children, but there were fifteen children affected to every one adult. A cervical polyadenitis was a constant phenomenon, but the enlarged glands were perceptible only to the touch. A slight albuminuria was observed during the febrile period and not as a late manifestation as occurs in scarlet fever. The incubation period varied between seven and thirteen days. In some instances there was distinct evidence that the disease was carried by a third person.

News of the Week.

Federal Quarantine for New York.—A Washington dispatch, dated January 12, brings the gratifying announcement that the New York quarantine station is to be placed at once under Federal control. The transfer is a temporary one, made at the suggestion of Governor Whitman, to continue until the New York Legislature can take the necessary steps to make it permanent. Surgeon General Blue has detailed Dr. L. E. Cofer of the Public Health Service to take over the station. At a meeting of the New York Academy of Medicine four years ago, Dr. Cofer delivered an eloquent and convincing address in advocacy of the national control of the quarantine station at this port, and it is therefore most fitting that he should be the first federal official to be placed in command of the station.

Vital Statistics for 1915.—The Department of Health reports that during the year just closed there were recorded in New York City 76,193 deaths, giving an estimated death rate of 13.61 per thousand of population, which is three-hundredths of a point less than the rate for 1914. Influenza and the acute respiratory diseases showed an immense increase over 1914, causing 12,000 deaths, or 1,500 more than were recorded the previous year. The mortality of these diseases being estimated as 20 per hundred, it is estimated that 60,000 cases occurred during the year. Despite the prevalence of measles during the early part of 1915, the deaths due to contagious diseases decreased by 186, and there was an actual decrease of 94 in deaths due to tuberculosis. The deaths from cancer totaled 186 more than those during the previous year, the mortality from this disease having shown a gradual increase for a number of years past. There were 13,872 deaths among infants under one year of age, an increase of 560 over last year, the infant death rate being 99 as compared with 95 in 1914. The increased mortality was due principally to gastro-enteritis, measles, and pneumonia. During the year 141,356 births were reported, giving a rate of 25.56, as compared with 140,642 births, and a rate of 25.65 for 1914. The marriage rate also was lower in 1915 than in 1914, 9.11 as compared with 9.67, the total number of marriages reported being 50,-998 and 53,052. The decrease in the birth and marriage rates is attributed to the financial depression and the decrease in immigation because of the war.

The Epidemic of Grip.—The mortality from the epidemic of grip which seems to be widely spread throughout the country was very heavy during the last week of 1915 and the first of 1916, in New York City alone 375 deaths being ascribed to pneumonia during the last week of the year, as compared with 85 during the first week of November. The number of cases of pneumonia during the week was estimated at not less than 2,000. The research laboratory of the department is carrying on a bacteriological investigation to determine the exact nature of the infection. Chicago reported 1,112 deaths from grip and pneumonia during the last week of December, breaking all previous records; in Denver 100 deaths during the month were ascribed to

these two causes, and in Ann Arbor, Mich., the surgical work of the University Hospital was, it is reported, brought to a standstill because of the prevalence of grip and pneumonia among the nurses. It was hoped that the clear, cold weather prevailing during the second week of the year would greatly improve conditions. In New York City the health commissioner has requested the cooperation of the police commissioner in a vigorous enforcement of the section of the sanitary code covering the filthy and unsanitary habit of spitting in public places.

To Protect Watershed.—In his annual message to the New York Legislature regarding the State budget, Governor Whitman says: "I have included no appropriation either for the Mohansic Hospital for the Insane or the New York State Training School for Boys at Yorktown Heights in the tentative budget proposal, and I recommend that the construction of these institutions be abandoned, in view of the opposition of the City of New York toward the continuance of them on the Croton watershed. Pending a decision on this matter I have ordered work on all contracts in connection with these two institutions stopped. To meet the problem of relieving the congestion in the insane hospitals in the metropolitan districts, I recommend the construction of buildings for the care of the aged insane, of which there are a large number in our State hospitals, first at Middletown, and elsewhere as the necessity presents itself."

Fire in Hospital.—A small fire in some soiled linen at the bottom of a clothes chute in the Metropolitan Hospital on Blackwell's Island, New York, on January 5, was extinguished without serious damage.

Gifts to Columbia.—At a meeting of the Trustees of Columbia University on January 3, the following gifts were announced: $75,000 from Mrs. William Douglas Sloane, to be added to the endowment of the Sloane Hospital for Women; $1,000 from Mrs. Emily Ladenburg, to be applied toward the medical school removal and rebuilding fund, and $400 from an anonymous donor for salaries in the department of the practice of medicine.

China Medical Board.—The members of the China Medical Board of the Rockefeller Foundation, who sailed from San Francisco last August for China, to arrange for the reorganization of the Union Medical College at Pekin, have returned to this country much pleased with the reception accorded them. The board was composed of Dr. William H. Welch of Johns Hopkins University, Dr. Simon Flexner of the Rockefeller Institute, and Dr. Wallace Buttrick, secretary of the General Education Board. The board reached the conclusion that the school should be reestablished on the highest plane, and have under consideration an invitation to establish another medical school at Shanghai, to take the places of the medical school of St. John's University, the Harvard Medical school, and the medical school of Nankin University. Nearly thirty medical schools in China were visited by the board, as well as the imperial universities at Tokio and Kioto, Japan, and the Union Medical College at Seoul, Corea. At Changsha, China, where the Hunan Yale Medical School has recently been established, Dr. Welch laid the cornerstone of the new hospital building, which is to cost $200,000.

An Aerial Ambulance.—The use of aeroplanes as ambulances by the French Army during the recent retreat from Serbia has been reported. A number of wounded soldiers were just behind the line of retreat, it is said, and it was found impossible to carry them on stretchers. Six aeroplanes were thereupon pressed into service and the transfer was successfully accomplished.

Health Department Pharmacy Closed.—The drug laboratory and pharmacy of the New York City Department of Health passed out of existence on January 1, its functions being transferred to the general drug department of the Department of Charities. The laboratory was abolished for the sake of economy after a long controversy between the Health Department and the Department of Charities.

Typhus in Mexico.—Recent reports from Mexico indicate that the present situation there in regard to typhus fever rivals that of Serbia last year. It is said that in Mexico City alone during December there were 30,000 to 50,000 cases of the disease, and that the Mexican Government having refused outside help is endeavoring to suppress the facts.

Recognition of Nurse's Services.—The Medical Board of the Willard Parker and Riverside Hospitals at a recent meeting adopted resolutions in honor of the devotion to duty of Miss Katherine B. Holden, for nearly thirty years a nurse in the Department of Health, whose death occurred on December 7.

Industrial Insurance.—The American Medical Association has recently appointed a committee to cooperate with the American Association for Labor Legislation in drafting a model bill for the establishment of industrial insurance in each State. The committee consists of Dr. Alexander Lambert, New York, Dr. H. B. Favill, Chicago, and Dr. Frederic J. Cotton, Boston.

Hospital Unit in Berlin.—The hospital unit sent out recently by the American Physicians' Expedition Committee under the charge of Dr. Frederic Kammerer of New York, reached Berlin on January 4. The unit will be given charge of the military reserve lazaret at Deutsch-Eylou, East Prussia.

Drug Raid.—Large quantities of cocaine and heroin were captured in a raid made on an apartment house in East Nineteenth Street, New York, on January 3, and three prisoners, said to be members of a large operating gang, were taken.

Personals.—Dr. GEORGE L. WALLACE of Wrentham, Mass., has been asked by the Commissioner of Charities to become superintendent of the New York City Children's Hospital and Schools on Randall's Island.

Surgeon General RUPERT BLUE of the U. S. Public Health Service has been renominated by President Wilson for another term of four years.

Major General GORGAS at a banquet in Chicago on January 8 was presented with the gold medal of the Geographic Society of Chicago, for his distinguished services to humanity. Only twice before has this medal been awarded, once to Captain Amundsen and once to General Goethals.

Dr. JOHN F. ANDERSON, formerly director of the hygienic laboratory of the U. S. Public Health Service, has resigned to take charge of the Squibb Research and Biological Laboratories. He is now in Europe studying the methods in use in the French and English armies for the prevention and treatment of wound infections.

The de Roaldes Prize.—Dr. D. Byron Delavan, chairman of the prize committee, announces that the de Roaldes prize, a gold medal, of the value of

$100, the object of which is to encourage the advancement of the sciences of laryngology and rhinology, is now open for competition to practitioners in regular standing in the United States and Canada, not members of the American Laryngological Association. Essays must be typewritten, the customary means being taken to prevent disclosure of the author's name. They must be placed in the hands of the secretary of the association, Dr. Harmon Smith, 44 West 49th Street, New York, prior to April 20, 1916.

Harvey Society.—The fifth lecture of the series will be given at the New York Academy of Medicine on Saturday evening, January 15, 1916, at 8.30 P. M. by Dr. Donald D. Van Slyke, his subject being "The Present Significance of the Amino Acids in Physiology and Pathology."

Committee of American Physicians for the Aid of the Belgian Profession.—Dr. F. F. Simpson, treasurer, 7018 Jenkins Arcade Building, Pittsburgh, reports the following contributions for the two weeks ending January 8:

Dr. W. C. Cahall, Philadelphia, Pa. (second contribution)	$1.00
Dr. D. S. Lamb, Washington, D. C.	5.00
Receipts for the two weeks ending Jan. 8	$6.00
Previously reported receipts	7,930.86
Total receipts	$7,936.86
Previously reported disbursements:	
1,625 standard boxes of food at $2.20	$3,575.00
1,274 standard boxes of food at $2.30	2,930.20
733 standard boxes of food at $2.28	1,671.24
Total disbursements	7,310.04
Balance	$626.82

Medical Society Elections.—MEDICAL SOCIETY OF THE COUNTY OF HERKIMER (N. Y.): Annual meeting on December 7. Officers elected: *President*, Dr. James W. Graves, Herkimer; *Vice-Presidents*, Dr. Charles J. Diss, Ilion; Dr. William P. Earl, Little Falls; Dr. U. G. Williams, Newport; *Secretary*, Dr. A. Walter Suiter, Herkimer; *Treasurer*, Dr. George W. Graves, Herkimer.

MEDICAL SOCIETY OF SOUTH CAROLINA: At the 126th anniversary meeting of this society held at the Roper Hospital, Charleston, a portrait of Dr. Samuel Wilson, one of the early presidents of the society and founder of its medical library, was presented by the faculty of the Medical College of the State of South Carolina to the society. The following officers were elected: *President*, Dr. Lane Mullally, Charleston, *Vice-President*, Dr. Edward Rutledge, Charleston; *Secretary*, Dr. Albert Mathau, Charleston; *Treasurer*, Dr. D. L. Maguire, Charleston.

SEDGWICK COUNTY (KAN.) MEDICAL SOCIETY: The following officers were elected at the annual meeting held on December 21 at Wichita: *President*, Dr. J. Gray Dorsey, Wichita; *Vice-President*, Dr. Martin Hagan, Wichita; *Secretary-Treasurer*, Dr. Edward D. Kilbourne, Wichita.

JEFFERSON COUNTY (KY.) MEDICAL SOCIETY: Annual meeting at Louisville on December 20. Officers elected: *President*, Dr. J. Garland Sherrill, Louisville; *Vice-Presidents*, Dr. B. J. O'Connor, Louisville, and Dr. Oscar E. Bloch, Louisville; *Secretary*, Dr. E. O. Grant; *Treasurer*, Dr. Albro L. Parsons, Louisville.

PUEBLO CLINICAL AND PATHOLOGICAL SOCIETY: Under this title the physicians of Pueblo, Col., organized a new society recently with the following officers: *President*, Dr. Crum Epler; *Vice-President*, Dr. Elmer A. Elder; *Secretary-Treasurer*, Dr. D. E. Hoag; *Historian*, Dr. Fred Heller.

CALDWELL COUNTY (KY.) MEDICAL SOCIETY: Annual meeting at Princeton on December 17. Officers elected: *President*, Dr. J. M. Moore, Princeton; *Vice-President*, Dr. W. P. Morse, Princeton; *Secretary-Treasurer*, Dr. W. L. Cash, Princeton.

SEVENTH DISTRICT (S. D.) MEDICAL ASSOCIATION: At the annual meeting held at Sioux Falls on December 16, the following officers were elected: *President*, Dr. E. L. Perkins, Sioux Falls,; *Vice-President*, Dr. H. R. Hummer, Canton; *Secretary-Treasurer*, Dr. G. Zimmermann, Sioux Falls.

BASTROP COUNTY (TEX.) MEDICAL SOCIETY: Annual meeting at Bastrop on December 17. Officers elected: *President*, Dr. F. J. Kroulik, Smithville; *Vice-President*, Dr. N. B. Harris, Red Rock; *Secretary-Treasurer*, Dr. Carter.

GRAFTON COUNTY (N. H.) MEDICAL SOCIETY: Twelfth annual meeting at Woodsville on December 14. Officers elected: *President*, Dr. Elmer M. Miller, Woodsville; *Vice-President*, Dr. Percy Bartlett, Hanover; *Secretary-Treasurer*, Dr. George A. Weaver, Warren.

The Late Dr. A. A. Smith.—The following minute was adopted by the Medical Board of Bellevue Hospital at its meeting held on January 3, 1916:

"Dr. A. Alexander Smith, whose death in the sixty-ninth year of his age occurred suddenly on December 13, 1915, had, for thirty-three years, been a member of the Medical Board of Bellevue Hospital, and for the greater part of that time on its executive committee. The genial quality of his temperament and his abounding faith in his fellows made of Dr. Smith a peculiarly lovable man, endearing him to all with whom he came in contact, but lessening in no wise the forcefulness of his character. He was instant in service, and gave to the poor and needy of his best; not mere outward service, but that supported by strong sympathy and deep religious conviction. Apparently enjoying the best of health he continued his work actively until almost the very day of his death, and it came as a distinct shock to his colleagues to learn that the silver cord of his life had been loosed, the golden bowl broken. This minute is to record the sorrow of the medical board, their sense of profound loss, and to express their sympathy with the surviving relatives."

The Late Dr. Francis Delafield.—The New York Pathological Society at its meeting December 8, 1915, adopted the following minute:

"Dr. Delafield became a member of the society in 1867, and was its president in 1875. For many years he gave his active and consistent support to all the interests of the society. At its meetings he presented the results of much of his early pathological work and gave evidence of that remarkable genius for careful observation and sound interpretation of pathological processes, which formed the foundation stone of his great eminence in medicine. Dr. Delafield left a permanent impress on the science of pathology. His researches on the pathological anatomy of the kidneys and the lungs were epoch making and they formed the basis of a system of pathology peculiarly his own. It was his constant endeavor to correlate clinical medicine with the lesions found after death. He devised technical methods which received world-wide adoption. His conception of inflammation has been recognized as both profound and practical. His 'Studies on Pathological Anatomy' established a standard rarely attained, and will always remain classic. He was not only a thoroughly versed morphologist, but a pathological physiologist as well. Although a highly skilled technician he prepared

beautiful gross and microscopical specimens for the chief purpose of gaining a deeper insight into the pathogenesis of lesions and symptoms. Having applied this method of study over a wide range of medicine he became a master in the interpretation of clinical phenomena. He thus became a truly great clinician. No one has had a greater and more wholesome influence on the theory and practice of medicine in this country than Dr. Delafield. The retrospect of his carefully planned and well rounded career reveals a model of deliberate preparation and logical attainment which leaves a permanent influence upon the host of pupils, colleagues, and personal friends, and upon the entire American medical profession. The Pathological Society recognizes in his loss the passing of one of its most valued members and one of the great lights of the medical profession."

Obituary Notes.—Dr. ARTHUR L. REEVE of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1896, died at his home on January 4.

Dr. EDWARD C. KROOS of Brooklyn, N. Y., a graduate of the New York University Medical College, New York, in 1892, and a member of the American Medical Association, the New York State and Kings County Medical Societies, and the Brooklyn Medical Society, died at his home on December 30, aged 53 years.

Dr. DAVID L. DEAL of Pacific Grove, Cal., a graduate of the Cooper Medical College, San Francisco, in 1864, died at his home on December 14, aged 73 years.

Dr. DENIS F. RAGAN of San Francisco, a graduate of the Cooper Medical College, San Francisco, in 1887, and a member of the American Medical Association, the Medical Society of the State of California, and the San Francisco County Medical Society, died at his home, after a long illness, on December 19, aged 54 years.

Dr. ADOLPHUS M. SCHEEL of Belleville, Ill., a graduate of the University of Munich, Germany, in 1876, and a member of the American Medical Association, the Illinois State and St. Croix County Medical Societies, the Southern Illinois Medical Society, and the Belleville Medical Society, died at his home after a long illness, on December 16, aged 64 years.

Dr. HENRY CLAY FAIRBROTHER of East St. Louis, Ill., a graduate of the Washington University Medical School, St. Louis, in 1872, a veteran of the Civil War, and a member of the American Medical Association and the Illinois State and St. Clair County Medical Societies, died at his home, after several weeks' illness, on December 15, aged 70 years.

Dr. ALFRED A. WEBER of Chicago, Ill., a graduate of the University of Vienna, Austria, in 1885, died suddenly at his home, from heart disease, on December 19, aged 58 years.

Dr. IRA D. PAYNE of Des Moines, Ia., a graduate of the State University of Iowa, College of Medicine, Iowa City, in 1880, and of the Bellevue Hospital Medical College, New York, in 1886, died suddenly at his home on December 11, aged 63 years.

Dr. FALK TENNYSON of Minneapolis, Minn., a graduate of the University of Minnesota, Minneapolis, in 1893, and a member of the Minnesota State Medical Association and the Hennepin County Medical Society, died at his home from meningitis, on December 17, aged 48 years.

Dr. HENRY LAURENS METCALF of Natchez, Miss., a graduate of the Tulane University of Louisiana, School of Medicine, New Orleans, in 1878, died at the home of his brother, on December 14, aged 48 years.

Dr. OTTO STUCKERT of Whiteside, Mo., a graduate of the College of Physicians and Surgeons, Keokuk, Ia., in 1890, died on December 20, aged 53 years.

Dr. JOHN H. KEMP of Philadelphia, Pa., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1900, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Philadelphia County Medical Society, died at his home on December 14, aged 36 years.

Dr. WILLARD H. GREENE of Providence, R. I., a graduate of the Jefferson Medical College, Philadelphia, in 1865, a veteran of the Civil War, and a member of the American Medical Association and the Rhode Island and Providence District Medical Societies, died at the Rhode Island Hospital on December 19, aged 83 years.

Dr. WILLIAM A. SWIMLEY of Winchester, Va., a graduate of the Cincinnati College of Medicine and Surgery in 1876, died in the King's Daughters' Hospital, Staunton, Va., on December 18, aged 69 years.

Dr. GEORGE W. ADAMS of Huntington, W. Va., a graduate of the Cincinnati College of Medicine and Surgery in 1889, died at his home, after a long illness, on December 15, aged 64 years.

Obituary.

JAMES CLARKE WHITE, M.D.,

BOSTON, MASS.

DR. JAMES CLARKE WHITE of Boston, emeritus professor of dermatology in the Harvard University Medical School and well known as an author and lecturer, died at his home, after a long illness, on January 6, aged 83 years. Dr. White was graduated from the academic department of Harvard in 1883, and from the medical school three years later. In 1871 he became professor of dermatology in the school, retiring in 1902. He was a member of the American Dermatological Association, of which he was the first president, the Boston Dermatological Club, the Royal Society of Medicine of Great Britain, and the American Academy of Arts and Sciences, and a member and former president of the Massachusetts Medical Society.

ACHILLES ROSE, M.D.,

NEW YORK.

DR. ACHILLES ROSE died on Monday of this week from pneumonia. He was born in Germany in 1839, and after completing his gymnasium course in that country, came to America at the age of 22 years. Here he began the study of medicine, receiving his degree from the College of Physicians and Surgeons in 1872. Dr. Rose devised a number of therapeutic measures which were well received, but he was best known as a champion of philological purity in medical terminology. His interest having been aroused by an editorial article in the MEDICAL RECORD advocating the adoption of Modern Greek as the international language of science, he took up the study of this language and soon became proficient in it. The later years of his life were then devoted to an endeavor to recast the language of medicine in a pure Greek mould, a task which he pursued with zeal and an earnestness of purpose worthy of a less hopeless cause.

Correspondence.

IODINE INTERNALLY IN THE TREATMENT OF ERYSIPELAS.

To the Editor of the Medical Record:

Sir:—In the issue of your excellent journal of December 18, I noticed a short paragraph stating that Magi had gotten some excellent results in painting the affected area of erysipelas with tincture of iodine, etc. I wish to relate a little experience I have had with the internal administration of tincture of iodine in two cases of erysipelas: one of the scalp and the other of the nose.

Some twenty-odd years ago I was practising medicine in a small town and country district. During one autumn I had several cases of erysipelas occurring in the same neighborhood in rapid succession.

One was of the leg, caused by a red hot wagon wheel tire falling against the blacksmith's leg that had an old ulcer, the hot tire striking and burning the ulcer. Erysipelas set in from this burn and the patient died in about ten days. Another case I had about the same time was that of a prosperous merchant about fifty-five years of age. This was of the scalp. I do not recall that there was any wound or abrasion whatever. He was a drinking man, and the onset was with high fever, rapid pulse, and characteristic flushed face and scalp. He also developed an acute alcoholic delirium that was intense for twenty-four hours. The treatment then was after the methods recommended by H. C. Woods in his work on "Therapeutics"—large doses of the tincture of the muriate of iron, with some local application like lead water and tincture of opium. This patient made a long, tedious recovery.

Another case I had about the same time was erysipelas of the scalp in a large muscular colored man about twenty-five years of age. This man lived near the residence of the merchant mentioned above. The fever ran high, the pulse was rapid, and the swelling in the face and scalp was immense; the eyes were completely closed. I was fearful of losing the patient on account of the violence of the attack. I gave him twenty-five drops of tincture of iron every four hours, well diluted with water, in addition to the usual local applications. When the first prescription of tincture of iron had been given I ordered it refilled and to be continued. I saw the negro at nine o'clock one morning, when the prescription was refilled, with the understanding that they continue giving it. I went out of town to attend a case of labor and did not return until the next day. When I got home I found a man waiting for me to go to see the patient again. I asked him how the patient seemed. He replied better, but he felt sure some mistake had been made in refilling the last prescription, and to prove it showed me the medicine. I readily recognized that the druggist had dispensed tincture of iodine in the place of the tincture of iron. I asked the man if the patient had been taking the twenty-five drops every four hours, as he had been taking the former prescription. He said he had. Knowing that twenty-five drops of tincture of iodine was a pretty heroic dose, as three to five drops is a dose usually recommended by medical writers, I went immediately to see results. You can imagine my surprise when I entered the cabin door and found the negro sitting up in bed eating a piece of corn bread and drinking a glass of buttermilk with great relish. All fever had gone, and the swelling of the face and scalp entirely relieved; in fact, he was a well negro. I asked him how he felt. He said all right, but that the last medicine "shore was stout." He was all right from that time on.

I waited twenty years hoping that fate would throw another case of erysipelas of face or scalp in my way, for I was determined to test the efficacy of iodine again. On the first day of September, 1914, I was appointed superintendent of State Charity Hospital, Jackson, Miss. I had not been in the hospital many days when the assistant surgeon asked me to see a case with him. We readily recognized a case of erysipelas of nose and face. The man, about twenty-five years of age, robust, strong, and muscular had gotten into a street fight, his antagonist biting him through the nose. They were sent to the city jail. A few days afterward erysipelas set up in the bitten nose. The man was sent to the hospital for treatment. I told the assistant surgeon of my former experience and ordered the patient be given twenty-five drops of the tincture of iodine every four hours. In his case, as in the case of the negro the temperature began going down, the swelling of the face and head was relieved. On the fourth day he was discharged from the hospital in good shape.

Of course, I know the remedy has not been sufficiently tested to enable us to reach any definite conclusion, but I believe it worthy a further trial, and merely furnish the above report with the hope that others having a larger field of operation may test it out and give results.

L. S. Rogers, M.D.
Jackson, Miss.

PROSTATIC TOXEMIA.

To the Editor of the Medical Record:

Sir:—I should like, with your permission, and provided the expression has not been used before, to file a caveat for the term prostatic toxemia. Many physicians must have felt that in many cases of enlarged or congested prostate the symptoms produced were altogether out of proportion to what one would expect, and could only in small part be accounted for by the mechanical obstruction to urination. The severe somatic and psychic symptoms produced by a diseased prostate and the remarkable—one feels occasionally like using the term magical—improvement which often follows one thorough prostatic massage make the conclusion almost inevitable that a toxic substance is produced by the prostate which is absorbed by the blood-current. The term prostatic toxemia, signifying an absorption into the system of a toxic substance generated by an abnormal prostate, is therefore both necessary and appropriate.

William J. Robinson, M.D.
12 Mount Morris Pk. W., New York.

Progress of Medical Science.

Boston Medical and Surgical Journal.

December 30, 1915.

1. Foot Strain and Other Common Foot Defects. Herman W. Marshall.
2. The Prognosis of Incipient Senile Cataract. David W. Wells.
3. The Radical Treatment of Peritonsillar Abscess by Tonsillectomy During the Acute Stage of the Disease. Harry A. Barnes.
4. Notes of Conference on the Medical and Social Aspects of Syphilis of the Nervous System. (Continued.) Harry C. Solomon and Hilmar O. Koefod.

1. **Foot Strain and Other Common Foot Defects.**—Herman W. Marshall groups these cases into: (1) Simple relaxations and strains. (2) Rigid flatfoot and allied conditions. (3) Foot strain accompanying other distinct pathological states. (4) Miscellaneous lesions confused or associated with foot strain. After discussing each of these groups he concludes that one should avoid the use of any single special method of treatment. In simple relaxations and strains, or in rigid flatfoot, the feet should be supported with adhesive straps at the outset and simultaneously suitable tonic eliminative drugs should be prescribed. Later, from response to these two measures, and after taking into consideration all circumstances and special conditions of the patients, the strapping may be continued, shoes changed, plates fitted, special exercises prescribed, or plaster casts applied, according to the physiological requirements. These conditions are sometimes due to vascular defects, and the regulation of vascular defects sometimes is simple, although the defects themselves are complicated or unknown. Unnecessary surgery and too much treatment with orthopedic appliances should be avoided by taking into account the severity and duration of abnormal symptoms and by remembering that pronounced anatomic peculiarities are often compatible with continued normal physiological activities. One should explain to patients the limitations and possibilities of comprehensive methods of treatment and of special ones sufficiently for them to understand the necessity of the former for the best results, and one should also demonstrate the inadequacy of any single method of treatment, old or new, in fulfilling the various requirements likely to be met. Common and comparatively trivial foot troubles require nearly as comprehensive understanding for their skillful treatment as serious orthopedic conditions in other parts.

2. **The prognosis of Incipient Senile Cataract.**—David W. Wells endeavors to show that a much more optimistic prognosis is justifiable in incipient senile cataract than is usually given by medical men who have not devoted special attention to the eye. He has found from the records of private patients over fifty years of age that have come under his observation from 1900 to 1915 that 23 per cent. had some demonstrable capacity of the lens, though in many cases the sight was but little if at all affected. Sufficient time has now elapsed to enable the writer to report on the cases seen between 1900 and 1905, and as nearly as can be estimated not more than one per cent of the truly incipient cases have matured and not more than 5 per cent. of these have materially advanced. From this it appears that the prognosis of incipient senile cataract untreated is extremely good. Most of the cases that have come to operation have been nearly or quite mature when first seen. With a preliminary iridectomy and a preliminary capsulotomy the immature lens may be safely extracted. The preliminary iridectomy is done three or four weeks before extraction. The preliminary capsulotomy, which is performed if the lens is immature, consists in introducing the knife needle through the cornea and incising the capsule. The object sought is the loosening of the capsule from the cortex by allowing the aqueous to penetrate it. This is done the evening prior to the extraction. Most incipient cataracts never advance enough to need operation; therefore, one should avoid the term "cataract" and give the most hopeful prognosis until it is evident that it is progressive. Then if it does mature operation offers a good prognosis. If the sight of the better eye is insufficient for reading, the immature cataract of the more advanced eye can be removed without waiting for ripening.

3. **The Radical Treatment of Peritonsillar Abscess by Tonsillectomy During the Acute Stage of the Disease.**—Harry A. Barnes says that for many years he has been operating on peritonsillar abscess by a capsular dissection of the tonsil backward until the abscess cavity is reached, and with very satisfactory results. At the suggestion of Dr. A. Coolidge he has carried the operation a step further and dissected the tonsil out completely. The theoretical dangers that a general anesthetic is not safe on account of the possibility of pulmonary infection from inspired pus and that operation on an acute inflammation of the tonsil opens a fresh field for infection do not exist beyond that which may be present in the dissection of any tonsil. The operation in these cases differs only slightly from the usual procedure by the dissection method. It is essential that the dissection be a clean one and that the muscular walls of the sinus be as little injured as possible. To avoid opening the larger veins it is essential that the field of operation be seen at every step. The writer describes the technique by which he manages to do this. After the first incision in the plica is made, a rectractor not unlike the Kinnian retractor for the lacrymal sac, is inserted by an assistant under the free edge, and the pluca and pillar gently pulled outward and forward. At the same time the tenaculum holding the tonsil is pulled inward, so that the line of demarkation between the capsule and the sinus wall is easily discernible at the apex of the resultant V-shaped cleft between the two tissues. The slightest touch of a sharp knife deepens and widens this cleft, which is in this manner extended backward until the abscess cavity is reached. When the pus is completely evacuated the dissection is carried on as before until the tonsil is sufficiently freed to allow of the easy application of the snare. The results of the operation are particularly gratifying, especially to the patient, since symptoms subside with remarkable rapidity.

4. **Notes of a Conference on the Medical and Social Aspects of Syphilis of the Nervous System.**—Harry C. Solomon and Hilmar O. Koefod present a study consisting of interval cell counts in cases diagnosed as general paresis or cerebrospinal syphilis (assuming that it is not always possible to make the differential diagnosis) in a series of 46 cases. Treatment consisting of mercury, salvarsan intravenously, and potassium iodide was given in 19, the other 27 cases receiving no treatment. The counts were made at varying intervals in the cell chamber of Fuchs-Rosenthal, staining with Unna's polychrome methylene blue in the pipette. Other tests were also performed on these fluids, namely, the Nonne-Apelt test for globulin, Mestrezat test for albumin, Lange's gold sol test, and the Wassermann reaction. The authors conclude that one is not justified in drawing any conclusions as to whether the case is cerebrospinal syphilis or general paresis, nor the time the process has been active, nor the severity of it from the cell count. The cell count may vary greatly from month to month, or when the interval is but several days, while at other times it may remain very nearly the same after an interval of months. Cases showing natural remissions may show no reduction in the cell count or other spinal fluid findings. Treated cases having the cell count fall to normal may at the same time become very much worse and develop more marked paralytic symptoms. In general paresis the cell count in no way parallels the other spinal fluid findings. The change in cell count seen in syphilitic disease untreated, is also found in non-syphilitic diseases, as brain tumor. The cell count offers nothing of prognostic importance in syphilis of the nervous system, unless accompanied by improvement of other labora-

tory signs. The cell count is not an index to the predominance of irritative or degenerative changes.

New York Medical Journal.

January 1, 1916.

1. Headache in Its Relation to Nasal Disease. Wolff Freudenthal.
2. Study of Drug Action. Thomas J. Mays.
3. Salvarsan in Primary Syphilis. Alexander A. Uhle and William H. Mackinney.
4. An Old Case of Chronic Insomnia. William Renwick Riddell.
5. Some Puzzling Features of Empyema. John H. Pryor.
6. Sugars and Starches in Infant Feeding. Thomas S. Southworth.
7. Headache. Fritz Neumann.
8. Physiological versus Symptomatic Therapy. Albert C. Geyser.
9. Simple Guides for the Artificial Feeding of Infants. M. H. Edelman.

1. Headache and Nasal Disease.—Wolff Freudenthal lays down the general rule that when headache is present on awakening this speaks in favor of its nasal origin. Again, if cocainization of the nose diminishes the headache, its nasal origin is the more likely, and this is also the case if it increases when certain diseased areas are touched with the probe. These tests are not, however, always positive evidence. Almost every pathological condition in the nose may be a cause of headache. Examination of the nose should never be neglected in intractable headache in any form. As to the situation of the pain in disease of the various sinuses, no definite localization is possible excepting perhaps in acute frontal sinusitis. The region most active in the causation of headache is not the nose but the nasopharynx. The commonest of all affections which every practitioner encounters is nasopharyngeal catarrh; by treating this condition the writer believes every physician could relieve 50 per cent. of all sufferers from headache. A patient may have an empyema or an hypertrophied turbinated body and besides may have heart disease, nephritis, arteriosclerosis, constipation, etc., and then the treatment is not so simple. For this reason one should never neglect the examination of other regions when a patient, after operation for a pathological condition of the nose or nasopharynx, continues to have headache. Furthermore, the regulation of diet, mode of living, etc., ought to be tried first before resorting to operation, which in some instances may thus be avoided.

3. Salvarsan in Primary Syphilis.—Alexander A. Uhle and William H. Mackinney record their five years' experience with salvarsan in a series of 57 cases seen in private practice. They have found that in spite of a large increase of syphilitic cases in private practice, there has been a gradual decrease in the number of chancres observed. This they attribute only to the extensive use of salvarsan or neosalvarsan in the treatment of syphilis. In this series the Wassermann reaction was never found positive in any chancre of less than seven days' duration, and was positive in every case examined after the fourteenth day. The earliest positive diagnosis of syphilis depends upon the demonstration of *Trepenoma pallidum* in the expressed serum of a suspected sore. The Wassermann reaction is of value in the diagnosis, as a positive reaction means the onset of systemic syphilis, while a negative reaction for practical purposes means a local infection only. When energetic salvarsan or neosalvarsan treatment is introduced before the advent of a positive Wassermann reaction, a radical cure is the rule. After the Wassermann reaction is once positive, such uniformly good results cannot be expected. When possible excision of the chancre is a valuable addition to treatment.

5. Some Puzzling Features of Empyema.—John H. Pryor calls attention to the difference in the behavior of empyema in the child and in the adult. Too frequently the condition is overlooked in the child and a diagnosis long delayed. Abdominal symptoms may divert attention from the chest; many cases of empyema in children having been diagnosed as tuberculous peritonitis. In the vast majority of cases doubt may be removed by excluding other conditions, particularly pneumonia, by obeying the cardinal rule of physical diagnosis, "Compare and always compare." The signs on the affected side are practically always different in quality and degree from those of the opposite side. Change of position will indicate altered levels of fluid. Experience seems to prove that evacution by incision is usually sufficient in the child. Recurrent empyema and undetected pockets of pus occur during childhood as well as in adult life. If good results are to be expected in the treatment of empyema the diagnosis must be early and relief prompt. When pus is sacculated, difficulties in diagnosis arise. In such cases success in diagnosis depends largely on the extent and thickness of pleural adhesions, the size of the pocket, and their number and distribution. The injection of bismuth solution followed by screening has proved an aid, but experience is required to interpret the view and to avoid false conclusions. Tuberculous empyema calls for the most conservative management, notably in advanced cases of tuberculosis. An opening into the chest should be avoided if possible and aspiration resorted to by preference. The writer cites several cases that bring out some of the difficulties encountered in the diagnosis of empyema.

7. Headache.—Fritz Neumann enumerates all the different forms and causes of headache, which are of interest to the general practitioner, and says that it must be admitted that there is no limited classification of headache, as one form may be associated with different causes and one and the same cause may give different headaches. There is only the general differentiation based on origin. This means the headache is either functional or organic. The differential diagnosis between these two is of the utmost importance, and the characteristics of the organic headache with its steadiness, varying only in intensity, its increase by mental or physical efforts or excitement, its peculiarity of not yielding so easily to symptomatic treatment as a functional headache, make it a matter of lesser difficulty.

Journal of the American Medical Association.

January 1, 1916.

1. Occupational Injuries Due to Radium; Report of Cases. Thomas Ordway.
2. The Physician and the Weather Bureau. Ford A. Carpenter.
3. Tardy or Late Paralysis of the Ulnar Nerve: a Form of Chronic Progressive Neuritis Developing Many Years After Fracture Dislocation of the Elbow Joint. J. Ramsey Hunt.
4. Hypertrichosis, Variations in Female Secondary Sexual Characteristics, and Internal Secretions. G. R. McAuliff.
5. Intramuscular Injections of Whole Blood in the Treatment of Purpura Hemorrhagica. H. W. Emsheimer.
6. Proteolytic Ferments of the Blood Serum in Tabes Dorsalis and General Paresis. Frederick Howard Falls.
7. The [illegible]
8. Candy Medicines. Bernard Fantus.
9. The Acute Typhoid Abdomen, with Especial Reference to Surgical Complications. Charles M. Remsen.
10. The Etiology of Current Epidemic of Respiratory Infections in Chicago: A Preliminary Note. George Mathers

1. Occupational Injuries Due to Radium.—Thomas Ordway says that during the past two years, the Cancer Commission of Harvard University has been engaged in obtaining data concerning the therapeutic value of radium which has necessitated the frequent manipulation of highly radioactive tubes and applicators. He reports nine cases of injury due to radium and in conclusion, says that it is evident that marked

changes may occur on the fingers of those engaged in routine work with radioactive substances. These local objective changes consist chiefly of flattening of the characteristic ridges, thickening and scaling of the superficial layers of the skin, and even atrophy and intractable ulceration. The lesions are usually slight compared with the marked subjective symptoms, such as parasthesia, anesthesia of varying degree, tenderness, throbbing, and even pain. The persistence of such effects is noteworthy. Various general systemic symptoms and also blood changes may be produced by exposure to radioactive substances. To avoid such local and general disturbance, special protective and preventive measures have been devised, and those engaged in routine handling of radioactive substances are particularly cautioned.

2. **Physician and Weather Bureau.**—Ford A. Carpenter. (See MEDICAL RECORD, October 2, 1915, page 585.)

3. **Ulnar Nerve Paralysis.**—J. Ramsey Hunt reports three cases and concludes that tardy or late paralysis of the ulnar nerve is a well defined clinical type of chronic interstitial neuritis, consequent on old injuries and deformities about the elbow joint. The interval of time elapsing between the reception of the original joint lesion and the onset of neuritic symptoms may vary from six to thirty-nine years. During this latent period there are no symptoms other than those referable to the deformity and restricted movements of the elbow joint. The joint lesions most commonly associated with this form of neuritis are those resulting from old fractures and dislocations about the elbow joint, and very rarely old arthritis. Especially frequent is the fracture of the external condyle with cubitus valgus and alterations in the configuration of the ulnar groove. The neuritic symptoms are slowly progressive and run an extremely chronic course. They consist of atrophic paralysis limited to the ulnar distribution with corresponding sensory disturbances. The sensory symptoms, both subjective and objective, may be insignificant and in the earlier stages even absent. The diagnosis rests on the presence of an old joint lesion and the neuritic character of the symptoms. In differential diagnosis the progressive spinal atrophies and the hypothenar type of neural atrophy (compression neuritis of the deep palmar branch of the ulnar) will demand consideration. Surgical measures are usually necessary to check the progress of the atrophy and restore function. Among the procedures advocated in the different types of cases are: enlargement and remodeling of the ulnar groove; resection of the thickened portion of the nerve trunk; transposition of the ulnar nerve to the anterior surface of the internal condyle, and supracondyloid cuneiform osteotomy of the humerus to correct the valgus deformity.

4. **Hypertrichosis.**—G. R. McAuliff reports a case of marked hypertrichosis, observed in the gynecological service of Dr. L. E. Frankenthal at the Michael Reese Hospital, which was studied with the intent of determining the connection between abnormal hair development and genital changes. The writer and his colleagues who have been interested in this study believe that it is justifiable to assume that the suprarenal is the gland principally concerned with sexual characteristics, the pineal next, and then the hypophysis, ovary, thymus, and thyroid, in the order named. It seems that one functionally imperfect gland alone is not able to produce marked hypertrichotic changes, but that at the basis of such change there must be some profound and complex disturbance of the antagonistic and synergistic pluriglandular equilibrium.

5. **Intramuscular Injections of Whole Blood in Purpura Hemorrhagica.**—H. W. Emsheimer concludes that the best methods of treating this condition, in addition to the usual measures, are the subcutaneous or intravenous injection of human blood serum, transfusion, and intramuscular injection of whole fresh human blood. The intramuscular injection of whole blood is a simple, harmless, effective procedure in all cases of severe purpura hemorrhagica; it may also have a wide field of usefulness in hemophilia and other blood diseases; in bleeding from various parts of organs of the body; in wasting diseases, and in many infections.

6. **Proteolytic Ferments of the Blood Serum in Tabes Dorsalis and General Paresis.**—Frederick Howard Falls reports a series of cases of tabes dorsalis and general paresis which he has studied by the Abderhalden method. He has incorporated a series of cases of meningitis which may be regarded as control experiments, as they all gave negative or very faint reactions. Another series of pregnancy cases was also used for comparison, the results of which showed that certain of the cases of tabes and general paresis reacted fully as strongly as some of the cases of pregnancy. The writer concludes that the ferment activity of the blood serum is increased above the normal in tabes dorsalis and general paresis, and that this increase is greater in general paresis than in tabes dorsalis.

9. **Acute Typhoid Abdomen.**—Charles M. Remsen calls attention to the fact that it has been fairly well demonstrated that the occurrence of acutely inflamed appendices in typhoid fever is more than a coincidence. In a series of nine cases in which he has operated for suspected perforation, four showed acute appendicitis, and all showed surgical complications. The two factors contributing mainly to acute appendicitis are the inflammatory edema of the ceco-appendiceal opening, with consequent retention of its secretions, together with the associated circulatory and inflammatory complications usually found under such conditions, which may or may not be due to the activity of the Eberth's bacillus, and actual involvement of the appendiceal lymphoid tissue by the typhoid bacilli in a method similar to that seen in Peyer's patches. With the danger signals of peritoneal inflammation appearing, the possibilities must be carefully weighed, for without extreme care in the diagnosis a patient may be consigned to death whose chances of getting well should he be subjected to surgical intervention are 1:2 or 1:3.

10. **Etiology of the Current Epidemic of Respiratory Infections in Chicago.**—George Mathers has made a careful bacteriological examination in 24 cases of respiratory infection during the present epidemic. In 17 instances a hemolytic streptococcus has been found to be the predominating organism. The strains examined culturally presented all the characteristics of the *Streptococcus pyogenes* type. Green-producing streptococci and pneumococci have uniformly been found in these cultures. The *B. influenzæ* and *Micrococcus catarrhalis* have not been found in any of these cultures. A striking fact brought out by this study is that the diagnosis of influenza is rarely corroborated by bacteriological findings.

The Lancet.

December 18, 1915.

1. Notes on the Superstitions of Menstruation. Raymond Crawfurd.
2. The Early Operative Treatment of Gunshot Wounds of the Alimentary Canal. Cuthbert Wallace.
3. Responsibility for Crime. Bryan Donkin.
4. The Incidence of Renal Retinitis in Soldiers Suffering from Epidemic Nephritis. R. Foster Moore.
5. Bullet Wound of the Esophagus. A. W. Nuthall.

6. Subcutaneous Injection of Distilled Water for Multiple Ulcers. G. Arbour Stephens.

2. Gunshot Wounds of the Alimentary Canal.—Cuthbert Wallace finds that the percentage of abdominal perforating wounds to total wounds varies considerably at different clearing stations. Thus the figures of four casualty clearing stations give a percentage of 1.88, 1.5, 0.75, 0.62 perforating abdominal wounds to the total wounds. The statistics from nine field ambulances and six casualty clearing stations for a period of six months show that the mortality from wounds of this nature is 70 per cent. To this deaths at the base hospitals in France and England must be added. The author discusses the influence of position of the wound and direction of the missile on the probable nature of the internal injury in regions above the transpyloric plane, between the transpyloric and intertubercular planes, and below the intertubercular plane. Wounds in all these regions are of course very serious, but those between the transpyloric and intertubercular planes are very fatal. It is frequently difficult to make sure that a wound is penetrating. As a criterion of visceral penetration no reliance is to be placed on the non-obliteration of liver dullness, neither can rigidity nor the signs of hemorrhage always be depended upon. It can be definitely stated that the old belief in the spontaneous cure of a gut wound is fallacious and dangerous. It was based on insufficient data and has been responsible for loss of life. As to the results of early operation, at present it may be said that many lives have been saved, that all sorts of injuries have been successfully dealt with, and that no one who has practised operative treatment is in doubt as to the wisdom of the procedure. The mortality at the casualty clearing stations has been reduced, and that in spite of cases that formerly died at the field ambulances reaching the casualty stations, and in spite of a more accurate discrimination between penetrating and non-penetrating wounds which would tend to increase the percentage of mortality. In resection, circular enterorrhaphy has given the best results, as it is quicker than lateral anastomosis, and failure of the suture line need not be reckoned among the causes of failure.

4. Renal Retinitis and Epidemic Nephritis.—R. Foster Moore has made an ophthalmological examination of 119 soldiers suffering from epidemic nephritis recently returned from France. He says there is no doubt that the very great majority of these 119 men were suffering from a primary acute nephritis. In five of these men renal retinitis was present or developed while they were under observation. Of the remaining 114 there were seven in whom very small rentinal hemorrhages were present. The retinitis which developed did not differ in any essential from the retinitis of chronic nephritis. In each of the men in whom it occurred the general symptoms were severe, and in general, the more severe these symptoms the more extensive were the changes in the retina. The relation between an increased blood pressure and the development of retinitis is brought out by these cases for the average systolic pressure of 70 cases with normal fundi was 143 mm., whereas that of the five cases in which retinitis developed was 180 mm. This does not imply that local vascular disease is the main factor in the development of retinitis; indeed, the changes present for the most part were of the type considered to be an expression of the toxic element in the disease. It seems from this study that strength is lent to the view, that retinitis does not occur in primary acute nephritis, but that, when the acute condition gradually and directly merges into a condition of chronic nephritis, retinitis may coincidently develop. In this latter case the signs of retinitis may be seen as early as within seven or nine weeks of the onset of symptoms of the acute disease.

5. Bullet Wound of the Esophagus.—A. W. Nuthall reports this case because of the rarity of this injury, this being the only injury of this kind that he has seen among some 8,000 wounded treated in a casualty station in six months. The reason for this is the probability that injury to the esophagus is overshadowed by the more serious, if not immediately fatal, effects produced by wounds of important structures in its proximity. The patient was received at the clearing station in a condition of grave collapse and urgent dyspnea and died three days later. At autopsy it was found that the bullet had passed between the esophagus and the cervical spine, perforating the posterior wall of the gullet, behind the common carotid artery, wounded the right internal jugular vein on its posterior surface, crossed in front of the cervical nerve trunks, to come to rest on the scapula. The perforation of the esophagus had caused, by leakage and infection, a prevertebral abscess and below it a larger prevertebral abscess had burst through the dome of the pleura on its inner aspect into the pleural cavity.

British Medical Journal.

December 18, 1915.

1. A Classification of Meningococci Based on Group Agglutination Obtained with Monovalent Immune Rabbit Serums. Arthur W. M. Ellis.
2. Grouping of the Strains of Meningococcus Isolated During the Epidemic of Cerebrospinal Meningitis in 1915. Joseph A. Arkwright.
3. Some of the Effects of Exposure to Wet Cold and Their Prevention. (Prevention of "Frost-bite," "Trench-foot," "Water-bite.") S. Delépine.
4. The Carrier Problem at Home in Time of War. Edward C. Hort.
5. A Preliminary Note on Poisoning by Emetine. H. H. Dale.
7. Method for Quick Detection of S. pallida. W. H. S. Stallkartt.
8. Fallopian Tube and Ovary in Infantile Hernia. H. H. Taylor.

1. A Classification of Meningococci.—Arthur W. M. Ellis shows that by means of a specific immune reaction two types of organism causing cerebrospinal fever can be demonstrated, and that of 46 organisms studied all belonged to one or other of these types. Both types are widely distributed, having been found in each of six epidemic foci and they may occur with equal frequency. Both types have been found in the nasopharynx of healthy carriers. These two types have been designated Type I and Type II. In so far as evidence is available Type I has been more frequently the cause of the disease in recent epidemics than has Type II. In view of the wide distribution of the two types, both must, however, be held equally responsible as causative agents of cerebrospinal fever. The organism which the writer describes as Type II is probably identical with the parameningococcus of Dopter. It is suggested that in the treatment of cerebrospinal fever better results might be obtained and more exact knowledge of the adequacy of serum treatment gained, if monovalent horse serum of appropriate type, and therefore known to be active against the infecting organism, were employed in place of the polyvalent serums at present in use.

2. Grouping of the Strains of Meningococcus.—Joseph A. Arkwright writes an account of his observations on strains of meingococcus isolated from the cerebrospinal fluid or meninges of cases of meningitis. He found that 30 out of 32 strains of meningococci tested agglutinated with a polyvalent rabbit serum prepared with six strains isolated in the same epidemic. Thirty strains isolated during the present epidemic fall into two main groups according to agglutination tests. Five other strains presented difficulties in their classification. The two main groups correspond to Dopter's classifi-

cation into meningococcic and parameningococcic strains. The numbers falling into the two groups were 18 and 12 respectively. There is some evidence that two of the five unclassified strains were intermediate in character between the two main groups. Neither group was found more frequently among cases from one district than from another. Rapidly fatal cases of meningitis occurred with infection with either type of meningococcus.

3. **Effects of Exposure to Wet Cold.**—S. Delépine describes experiments made to determine the effect of exposure of the extremities of a healthy elderly adult to external media colder than the skin and finds the results widely different according to circumstances. The lowering of temperature caused by exposure to cold dry air was slight and not progressive. The loss of heat was obviously compensated by the heat yielded by the tissues and the circulating blood. The lowering of the temperature caused by immersion in a limited amount of water was rapid and considerable but not permanent. When the bulk of the water did not exceed twice that of the part immersed, enough heat was yielded by the tissues and circulating blood to warm the water to a temperature which was not detrimental to the part. The lowering of the temperature caused by immersion in a large amount of water at a temperature of 25° to 30° C. below that of the skin, or water in limited or unlimited quantity containing ice, was very rapid, considerable, and progressive. A pathological state, local frigorism, was invariably the result. This state was characterized by contraction of the small arteries, more or less complete arrest of the flow of blood, various degrees of anemia, and irritation of terminal nerves followed by nervous and muscular paralysis. Motion of the external fluid prevented the formation of a comparatively warm layer of fluid near the surface of the skin and accelerated the loss of heat. A thin layer of moderately dry air between the skin and a cold external medium was sufficient to reduce the loss of heat to such an extent that the circulating blood compensated for the loss after the temperature of the skin had been reduced a few degrees. A very thin waterproof covering used in combination with a woolen covering was found sufficient to secure an efficient air covering for the skin. The presence of some moisture under it reduced the efficiency of the waterproof covering, but did not render it useless. These facts suggested to the writer the possibility of devising suitable protection against wet cold which would be adapted to the needs of the soldier. He describes the waterproof bag which he has succeeded in making and shows that with the same material it is possible to secure a sufficient amount of protection against the effects of wet cold without discarding the boots at present supplied to the army.

4. **The Carrier Problem at Home in Time of War.**—Edward C. Hort describes the Addington Park War Hospital, the routine employed there in the search for carriers of the enteric group of organisms, and the technique employed in making fecal and urinary examinations, and serological tests. He says the experiences of the moment do not permit of definite statements.

Berliner klinische Wochenschrift.

November 1, 1915.

Diseases of Fishes.—Schiemenz objects to the saying "as sound as a fish in the water," for these creatures have a very extensive morbidity and mortality. The percentage of eggs which become sound adult individuals must be infinitesimally small. The supposed health of fishes arises from the fact that under ordinary conditions sick specimens are seldom encountered. These sink to the bottom, are washed up on the shores, and in any case are quickly devoured by predatory fish and fish-eating birds. To begin with the ova, many never hatch, aside from the great number which never become fertilized. Many kinds of fish, notably the eels, consume large quantities of spawn. The latter is also attacked by bacteria and protozoa, as are also the young fry. These two orders, along with young crustaceans and annelides, also cause many diseases which do not destroy outright. The bacteria form the worst enemy, some of them first attacking the digestive organs, and secondarily the muscles and skin. Other parasites attack the fish from without, and some literally eat them alive. In some cases these parasites convey trypanosomes into the blood. The fish often serves as a host for intestinal worms, which are not directly a peril, but which appropriate nourishment. Some of the predatory fishes are distended with tapeworms. Sporozoa attack the digestive organs, viscera, and skeleton, and form collections under the skin which rupture outwardly and thus spread the infection. Malformations are extremely common and varied in fishes, and neoplasms have in recent years been the object of much study.

Tuberculosis and Climate.—Schlesinger cites many interesting historical data on this subject. The fathers of medicine were accomplished climatotherapeutists. The elder Pliny was aware of the favorable influence of pine forests on tuberculosis. Galen sent his consumptives to Mount Angri, near Naples, while Avicenna recommended Crete. In modern times Laennoc recommended the sea air and Hufeland and Schönlein mountain air. It was noted by many that mountain dwellers enjoyed an immunity to consumption. But it is only too evident to the physician with insight that other factors must divide the credit for cures with mere altitude. There is the removal from the often depressing influences of the home circle, the regulated life, including suitable diet and clothing, the autosuggestion (naturally the author assumes that the patient has sanatorium accommodations). Moreover, there must be an acclimatization, which is not accomplished without some strain on the important body functions, depending, of course, on the altitude. Climate is a comprehensive term, which includes air pressure, prevalent winds, humidity, heat, light, precipitation, amount of ozone and other gases in the air, amount of dust and dampness in soil, etc., etc. Some of these conditions vary directly or inversely with others. As we rise progressively above sea level we get more and more precipitation, as well as more and more light, the temperature likewise sinking and the pressure rising. The motion of the air depends in the highest degree on the barometric pressure. Change in climate may involve a simple change in one particular regard, without abandoning the immediate neighborhood—as from the windward to the leeward side of a mountain slope—or a more radical change in which most of the factors are involved. It is in this direction that much work remains to be done. In any climatic change, despite diversity of factors, one of the latter must be dominant—as high, dry, etc. Immunity of natives must always be considered, and here we encounter most stubborn facts. For example, in the so-called Eastern Polar Regions tuberculosis is practically unknown, while in the corresponding Western area it is common. Such inexplicable data, along with the really myriad factors (some unknown) which go to make up a climate make the author somewhat skeptical as to the prospect of a scientific climatology.

Berliner klinische Wochenschrift.

November 8, 1915.

Difficulties in the Diagnosis of Cancer of the Gall Bladder.—Kehr has now treated forty-nine cases of this

lesion. At the outset, various clinical pictures may be presented. The course may be very mild, suggesting a simple gastric catarrh, or violent, simulating an acute empyema of the gall bladder. This diversity depends entirely on the location, the presence or absence of stones, etc. A small nodule of cancer in the fundus may cause no more disturbance than a cholesterin stone. When the serosa is reached the symptoms may still be mild; while if the cancer spread into the liver bed, it may give rise to no symptoms whatever. The picture changes entirely when the growth begins at the neck of the bladder. The cystic duct is at once closed. If stones are present an acute cholecystitis develops from infection. The diagnosis can be nothing beyond cholecystitis or cholangitis. A cholecystotomy cannot necessarily lead to a correct diagnosis. The author enumerates five cases of missed diagnosis in one of which even an inoperable cancer was overlooked. This was due partly to the fresh, blooming look of the subjects, one of whom was but 37 years of age. But these five failures were by no means the only ones, being given only as illustrations. Is there no way in which we can arrive at a suspicion of malignancy? The personal history is but seldom of use. How can a simple picture of cholecystitis with jaundice suggest a cancer in one case and not in another? Absence of typical biliary colic might have a very restricted value. Cancer pain is absent or at least obscured by the pains of cholecystitis or empyema. The author derived no benefit from seroreactions, but by all means advises their employment. Cholecystotomy is of little value *in vivo;* a simple ulceration can simulate a cancer. Concrements are present in the great majority of cancerous gall bladders, either as a coincidence or as a result of cancerous obstructions. In a small percentage of cases the irritation of the stone has determined the appearance of cancer. The only advice the author can give is to remove all gall bladders with symptoms of severe cholecystitis or empyema, but the indication for this course is already present. If severe symptoms are absent we can only know that an ectomy will now aid them to reveal an operable cancer; and if we have any suspicion of the latter we must extirpate the organ. For the rest the patient may decide if told that a sure prognosis requires a radical operation. Kehr also discusses difficulties of diagnosis in advanced cases of cancer of this viscus. We are supposed to have the symptom-complex of a hard tumor, jaundice and ascites with cachexia. Yet all these symptoms may occur without cancer. The hard, uneven mass felt in the gall bladder site may be only a calcification. Not a few lives have thus been lost because of the diagnosis of inoperable cancer. Masses of stones in the common duct have similarly been mistaken for cancer, especially by reason of the cachexia which finally overtakes victims of chronic cholangitis and pancreatitis. Ascites is by no means significant of cancer in these cases, as it may be due to extension of cholangitis to the liver and branches of the portal vein. Cancer pain is indistinguishable from cholangitis pain although true colic does not occur as a result of the former. Trial laparotomy cannot make the diagnosis with certainty. Whether or not because of these inherent difficulties of diagnosis the author has to his credit but one permanent cure (out of 49 operations) of gall bladder cancer.

Berliner klinische Wochenschrift.

November 15, 1915

Treatment of Renal Diseases.—Hirschfeld obtained far-reaching benefit in certain cases of contracting kidneys by a diet very low in protein—only 30 grams of absorbable albumin, to which he added 5 grains of sodium chloride. The diet was made up chiefly of vegetables, potatoes, rice, cream, sugar and fruit in large quantities. Under this regimen the polyuria sinks to ¾ liter in 24 hours and is usually alkaline or amphoteric. If still acid, alkalies should be administered as an alkaline reaction is a desideratum. As a rule a fall of blood pressure is noted after two weeks of this diet. Two hours daily of walking is also of the greatest benefit, because it shows up the nitrogen excretion and thereby spares the kidneys and reduces the albumin in the urine if this is present. The author evidently believes strongly in the anguinal origin of many cases of nephritis. The use of sodium chloride in these cases appeared to be largely intended to determine the degree of intolerance to the substance as the patients are elsewhere stated to be on a salt poor diet, and the attempts to keep the urine alkaline seem to be with the view of warding off an acidosis. The article will be continued and doubtless somewhat random statements will be properly summed up.

Positive Wassermann Reaction in Pemphigus Vulgaris.—Nathan refers to a recent communication by Hesse, from which it appears that in both pemphigus vulgaris and dermatitis herpetiformis a positive Wassermann reaction is often obtainable. Such finds do not straightway prove the syphilitic nature of either of these dermatoses, for syphilitics are predisposed to various eruptions, to say nothing of pure coincidence. The eruptions in question have never been associated clinically with syphilis, and moreover the reaction may be weakly positive in certain dermatoses which can hardly be confused with lues. Nathan selected twelve cases of pemphigus in which no evidence of syphilis was obtainable and tested them with a variety of sera. In not one test was a positive result obtained. Two of the cases tested were examples of pemphigus vegetans, an affection which may closely simulate syphilis at times. Cronquist of Denmark once claimed as a result of a positive Wassermann that a case of alleged pemphigus vegetans was syphilitic, but he was antagonized in this view by his colleagues. Doubtless Hesse used a too refined and sensitive extract, and his modified drop method may have been open to the same objections as those of others who have obtained a paradoxic reaction in the non-syphilitics. The greatest serologists have in fact advised the utmost caution in using the drop method.

Increased Consumption of Alcoholic Beverages in the United States.—The average annual consumption of distilled spirits, wines, and malt liquors in the United States from 1850 to 1914 is stated in gallons as follows, the figures being copied from the recently published "Statistical Abstract of the United States" issued by the Department of Commerce at Washington: 1850, 4.08; 1860, 6.43; 1870, 7.70; 1871-89, 8.79; 1881-90, 13.21; 1891-95, 17.12; 1896, 17.12; 1897, 16.50; 1898, 17.37; 1899, 16.82; 1900, 17.76; 1901, 17.65; 1902, 19.14; 1903, 19.57; 1904, 19.87; 1905, 19.85; 1906, 21.55; 1907, 22.79; 1908, 22.22; 1909, 21.96; 1910, 22.19; 1911, 22.79; 1912, 21.98; 1913, 22.68; 1914, 22.50.

Summer Eruption.—G. F. Stebbing reports a case of this condition in a girl, aged 14 years, who developed, five years ago, a rash on the hands and face, which has persisted ever since, with remarkable seasonable variations. Every winter the rash practically disappears, and every spring it comes back again. It is rendered worse by exposure to the sun; vesication and pustulation occur, and in some places there have been large weeping sores, which take several days to clear up. The red blood cells were about 6 millions, and of the white cells 50 per cent. were small mononuclears.—*Proceedings of the Royal Society of Medicine.*

Book Reviews.

TEXT-BOOK OF FORENSIC MEDICINE AND TOXICOLOGY. By R. J. M. BUCHANAN, M.D., F.R.C.P. Lond., etc. Professor in Forensic Medicine and Toxicology, University of Liverpool; Honorary Physician, Royal Infirmary, Liverpool, etc., etc. Eighth Edition. Revised and Enlarged. Pp. 417. Price, $3.25, net. New York: William Wood & Company, 1915.

THAT a work in its eighth English edition should be unknown in the United States is due to the fact that it is a lineal successor of Husband's Forensic Medicine, which has gone through seven editions. In the present edition it appears for the first time in two volumes. The first of these, PUBLIC HYGIENE, with Professor Hope's name on the title page, has already appeared. The present volume, evidently entirely from the pen of Professor Buchanan, is devoted to forensic medicine and toxicology, as the title states. Works on these subjects have to be conservative and must at the same time seek to value correctly all that is new and novel; and considering the very narrow limits allowed the author, the labor of condensation leaves little to be desired Perhaps a weak point is the extreme conservatism used in classifying and describing the forms of insanity, which would hardly be intelligible to our students of to-day. But this subject makes up a relatively insignificant portion of the book. The latter is well illustrated, chiefly with photomicrographs.

DISEASES OF THE NOSE AND THROAT. By ALGERNON COOLIDGE, A.B., M.D., Professor of Laryngology in the Harvard Medical School. Laryngologist in the Massachusetts General Hospital. Illustrated. Price, $1.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS work by Dr. Coolidge covers fully the subject of the nose and throat mainly from the clinical point of view. In fact the book was written with the object of guiding the student or practitioner of medicine in his clinical work, by giving him a ready reference to the important details of examination, diagnosis and treatment of the upper respiratory tract. It is conceived upon the plan of presenting the different subjects in their proper perspective which is all that a small manual is able to accomplish. Dr. Coolidge has succeeded well in his object, and there is no doubt that the book will serve the purpose for which it was intended excellently.

THE BOOK OF THE FLY. A Nature Study of the House Fly and its Kin, the Fly Plague and a Cure. By G. HURLSTONE HARDY, with an introduction by HALFORD ROSE. New York: Rebman Company, 1915.

THE menace of the house fly has been recognized but recently. However, now it is fairly well understood even by the general public that the house fly is a very fertile source of danger. In the book written by Major Hardy the house fly is discussed from the naturalist's point of view as well as from the standpoint of disseminator of disease. The result is a work which is at the same time interesting and instructive, useful and practical.

BACTERIOLOGICAL METHODS in Food and Drug Laboratories with an Introduction to Micro-Analytical Methods. By ALBERT SCHNEIDER, M.D., Ph.D., Professor of Pharmacognosy and Bacteriology in the College of Pharmacy of the University of California, San Francisco. Price, $2.50. Philadelphia: P. Blakiston's Son & Co., 1915.

"THIS volume is primarily intended as a guide to students who are interested in the bacteriological examination of foods and drugs." It is a compact and complete guide giving methods in detail and furnished with many illustrations which aid materially, especially in the recognition of microscopic findings. The appearance of such a book is a welcome index of the importance which has been attained by the bacteriologist in the standardization of our supplies of food and drugs. Already the standard of excellence for many of our foods involves a bacterial limit and in some drug preparations the absence of bacteria is highly essential and it is reasonable to suppose that in the course of time these standards will be made to include many other products. Such a work will therefore prove useful in the hands of many laboratory workers. One very complete section is devoted to the standardization of disinfectants. The few errors noted may be blamed on oversight, as where on page 198 the statement is made that pus cocci remain active in 10 per cent cocaine and five lines below that solutions of cocaine (1-10) "are usually quite free from bacteria." The susceptibility to eggs in some people is blamed on the presence of some toxin or to "idiosyncrasy." It certainly would be more accurate to classify it as anaphylactic. The book can be recommended to those interested.

HOW TO LIVE. Rules for Healthful Living Based on Modern Science. Authorized by and prepared in collaboration with the Hygiene Reference Board of the Life Extension Institute, Inc., by IRVING FISHER, Chairman, Professor of Political Economy, Yale University, and EUGENE LYMAN FISK, M.D., Director of Hygiene of the Institute. Price, $1.00 net. New York and London: Funk & Wagnalls Company, 1915.

THE purpose of the book is well presented in the preface. It is to promote the aims of the Life Extension Institute . . . (1) to provide the individual and the physician with the latest and best conclusions in individual hygiene; (2) to ascertain the exact and special needs of the individual through periodic health examinations; (3) to induce all persons who are found to be in need of medical attention to visit their physicians. . . . The subject matter of hygiene is treated in its relation to (1) the preservation of health; (2) the improvement in the physical condition of the individual, and (3) the increase of his vitality."

It is a book to be read—and reread at intervals. The person who is growing stout with increasing years, the person who fears a draft, the person to whom good food is an exaggerated pleasure, will all find reasons for readjusting to better standards of living. Statistics carefully used are strong arguments and such life insurance statistics as are used in this book make an impressive appeal.

The book is one of facts—the need of activity, the need of more vegetable food and less meat than is commonly used in America, the evil effects of tobacco and of alcohol are presented with equal honesty and poise. By following the directions in "How to Live" each of us might increase our efficiency and our length of life.

THE NOSE, THROAT, AND EAR; THEIR FUNCTIONS AND DISEASES. A Treatise upon the Breath-road, Food-road and Accessory Organs. By BEN CLARK GILE, Instructor in Otology in the University of Pennsylvania, and formerly Assistant in the Throat and Nose Dispensary of the University Hospital, etc. With 131 illustrations, eight of which are printed in colors; pp. 456. Price, $2.75. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS book may be termed a "good value" and will undoubtedly have an excellent sale among students of medicine. But why should any writer deem it commendable to substitute for respiratory tract, *breath-road*, for esophagus *food-road*, and for foreign bodies, *extranea?* This reversible pedantry may advertise the work by making it a theme of discussion but will affect unfavorably certain prospective buyers. The term *armamenta* for the physician's equipment is also freakish.

THE CLINICS OF JOHN B. MURPHY, M.D., AT MERCY HOSPITAL, CHICAGO. Vol. IV, No. III, June, 1915. Octavo of 196 pages with 90 illustrations. Published bi-monthly. Price, per year, paper, $8.00; cloth, $12.00. Philadelphia and London: W. B. Saunders Company, 1915.

THE value which the reviewer accredits to individual numbers of the clinics doubtless depends in no small degree upon his judgment of the relative values of the subjects discussed in increasing the general practitioner's efficiency. While the description of Murphy's technique for arthroplasty in cases of ankylosis of the jaw and the introduction of a series of excellent plates, showing the various steps in the procedure, make a very interesting and instructive chapter for the skilled operator, a section on the diagnosis of injuries of the carpus, and particularly of fractures of the scaphoid, is of infinitely more value to the practitioner for whose instruction the Clinics are primarily intended. We are glad to see that in this issue Murphy has devoted the section on diagnosis to these problems; and we commend at least this portion of the book to all readers. The comparative rarity of simple sprains of the wrist and the relative frequency of fractures of the carpal scaphoid can hardly be appreciated by one not associated with a large and active surgical clinic.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held November 22, 1915.

THE PRESIDENT, DR. HOWARD LILIENTHAL, IN THE CHAIR.

Election of Officers.—The following officers were elected: *President,* Dr. Frederic E. Sondern; *First Vice-President,* Dr. J. Bentley Squier; *Second Vice-President,* Dr. Charles H. Peck; *Secretary,* Dr. John Van Doren Young; *Assistant Secretary,* Dr. Daniel S. Dougherty; *Treasurer,* Dr. Charles H. Richardson; *Censors* (to serve two years), Drs. Howard C. Taylor, Willy Meyer, and Floyd M. Crandall.

The Diagnosis and Treatment of the Post-Operative Complications of Appendicitis.—Dr. JOSEPH WIENER read this paper, in which he said that as the post-operative complications of appendicitis were so many and varied he would consider only some of the most common ones and some of those less well known without attempting to cover the entire field. (1) Peritonitis. Dr. Gerster writing in 1910 reported on 3144 cases of appendicitis operated on in Mt. Sinai Hospital from 1899 to 1909, 461 of which had some free peritonitis. Since that time the number of cases of peritonitis in proportion to those of appendicitis had been steadily declining. This was due to earlier diagnosis, earlier consent to operation, to prophylactic treatment, the early and continued use of the Fowler position, the avoidance of cathartics and opiates before operation, and the use of salines per rectum post-operative. (2) Intestinal Obstruction. Cases of intestinal obstruction were much less frequent than formerly, but unfortunately they still occurred and one-third of them ended fatally. Among the measures that tended to prevent this complication were the introduction of a minimal amount of gauze to wall off the intestines, small incisions, rapid work, little or no drainage, except in abscess cases, frequent stomach washings, rectal irrigations and enemata, eserine and pituitrin subcutaneously, and nothing by mouth. In severe cases it might be necessary to open the abdomen and puncture the gut in several places. This was at times a life-saving procedure. (3) Fecal Fistula. This was a fairly common complication, being present in about 2.25 per cent. of 4400 cases. More than 80 per cent. of the fistulæ healed spontaneously; about 15 per cent. required secondary suturing and less than 5 per cent. required intestinal resection. The internal fistula in which the abscess had opened into the bladder or intestine usually required no treatment. In all persistent cases of fistula one should make a careful search for a foreign body, sponge, gauze, or drainage tube. If the fistula was high up in the intestine there was danger of starvation. In one such case the writer said it had occurred to him that he could collect the partly digested food as it left the proximal loop at the site of perforation of the intestine and inject this into the distal loop. There had been an extensive necrosis of the abdominal wall and he had been able to verify that there were two fistulous openings in the bowel, or rather that a large piece of the anterior wall of the gut had sloughed away. He passed a long rubber tube into each of these two openings and connected the end of each tube with a bottle. The patient was fed freely and a few hours after each feeding large quantities of chylous fluid flowed into bottle No. I. This fluid was slowly injected into tube No. II, and the tube was clamped off for an hour or longer. There was very little leakage from either tube and the patient's general condition immediately improved. By the end of a month she was able to survive a resection of the intestine at the site of the fistula and made a complete recovery. (4) Pelvic Complications. These might be divided into ordinary secondary pelvic abscesses and into tubo-ovarian and broad ligament infections. A mass could almost always be felt by rectal or vaginal examination and the treatment was incision through the rectum or vagina. (5) Thrombosis. This was one of the most important complications of appendicitis and in its broadest interpretations it would include iliac, femoral, mesentric, and portal phlebitis with all the complicating lesions caused by emboli, empyema, subphrenic and liver abscesses, gangrene of the intestine, and pyemic abscesses in any part of the body. With any inflammation of the appendix the veins in its mesentery might become inflamed and lead to thrombosis. This danger from thrombosis did not cease with the subsidence of an attack of appendicitis; neither did it cease with the removal of the appendix. Thrombosis might follow appendicitis by the direct extension of a thrombus from the deep epigastric to the eternal iliac and femoral veins. (6) Pneumonia. This complication was reported as having occurred 45 times in 4500 cases, with a mortality of 33 per cent. The lesion was almost always a bronchopneumonia. Here prophylaxis was of great importance; it included short anesthesia, raising the head and shoulders soon after the operation, frequent changes of position and encouraging the patient to take a number of deep breaths every hour. (7) Empyema. This affectation was either hematogenous, in which case either side might be involved, or it was often due to direct extension from the subphrenic space and then it was always right-sided. According to some writers the infection was also carried directly by the lymph channels starting from a retrocecal abscess. From this focus there might be an uninterrupted continuation of the lesion up to the subphrenic space. (8) Pyelophlebitis and Liver Abscess. At first sight it might be assumed that only grave lesions in the appendix gave rise to hepatic infections. Such, however, was not the case. If one bore in mind Sonnenburg's dictum that every patient that had had an attack of appendicitis was a possible thrombus carrier, one could readily see how, even after an operation was done in the interval stage, emboli might be dislodged from the veins around the appendix and be carried to the portal vein and thus infect the liver. This was by far the commonest method of infection. In some cases the infection took place through the lymphatics and in others through the arteries as part of a systematic infection, and also by direct extension of the suppurative process from the appendix through the retroperitoneal tissue, as Korte had pointed out. Judging from the cases reported, these last two methods were of rare occurrence. But all cases of liver infection did not go on to the formation of a serious lesion and spontaneous recovery in not a few mild cases did occur. The cardinal symptoms in all cases were fever, enlargement of the liver, pain, and emaciation. In some instances one found tenderness and rigidity in the right hypochondrium. Most cases had some icterus. Diarrhea was often present and added to the emaciation. In some cases one could hear a friction nib over the dome of the liver. The diagnosis might be obscured by a complicating pleurisy, empyema, or subphrenic abscess. In many cases the diagnosis could not be made until the aspirating needle found the pus. The prognosis was grave in all cases that went on to the formation of an abscess. The treatment consisted of free incision either by the transpleural route, or the abdomen should be opened and the liver explored and incised from below. (9) Subphrenic Abscess. Infections of the subphrenic space were the most fatal of all the complications of appendicitis. The mortality was over 50 per cent. and with some authors it was as high as 80 per cent. In some cases that gave the cardinal symptoms of subphrenic abscess the infection cleared up without operative interference. In two-thirds of Sonnenburg's cases of subphrenic abscess there was a complicating right sided pyothorax. Children were very rarely affected. There was an analogy in these infections to those of the liver, due to the fact that the channels of infection were the same in both instances. The characteristic symptoms usually began from the eighth to the thirtieth day after the operation, though in some cases several months had elapsed. In many cases a diagnosis could only be made by aspiration, and it was surprising how even a large collection of pus in this location would not be found even after many repeated aspirations with a large needle. In some cases the positive diagnosis could be made from a good radiograph. The aspiration was usually done in the operation room and preparations were made to cut down on the needle if pus were found. A large aspirating needle was passed through the diaphragm and as soon as pus was found a grooved director was introduced alongside the needle. Then a narrow dressing forceps widened the opening still further until the examining finger could be passed through the diaphragm into the abscess cavity. All the pockets were broken up so that there was but a single cavity to drain. The liver was palpated to see if there was any abscess which had

perforated into the subphrenic space. In some cases counter incision was needed to secure adequate drainage.

Dr. CHARLES L. GIBSON said that the theories advanced regarding the causation of pulmonary embolism were almost endless and never had there been found a true explanation as to why they should meet with it so often after operations for appendicitis. He spoke of the analogy between thrombosis occurring in the abdominal veins and the work they did in the axilla and neck, cleaning out the lymphatic nodes there with a great deal of trauma, and yet seldom if ever were seen instances in which pulmonary embolism occurred as a sequel. There were two things in particular which he thought very important for them to consider: They should disregard the popular theory that a great many cases of embolism might be referred to prolonged inactivity and rest in bed. The majority of these cases, to his surprise, came on within the first forty-eight hours. Again, the great majority of people had this sequela when they were in middle life. Dr. Gibson said he would like to see a systematic study of a long series of cases, 10,000 or more, in which the Wassermann test was employed; he believed that he would not be surprised to find that in these cases of pulmonary embolism there would often appear a positive reaction. Was the intestinal obstruction an immediate or remote complication in these cases? Was there a true mechanical obstruction? Was there a paresis of the bowel present, active and progressive, when the obstruction occurred within the first forty-eight hours, or three or four days? Dr. Wiener had mentioned a remedy which was absolutely in his opinion a life-saver—pituitrin. With this remedial agent the use of morphine became a humane treatment in the cases calling for it when, without the use of it, morphine would indeed be a dangerous drug. The combination of these two drugs gave great comfort to the patients. In many of the cases of obstruction occurring soon after the operation for appendicitis the reason was difficult of explanation. If it occurred immediately after the operation it would be the result, for the most part, of a paresis. He asked why mechanical obstruction was so hard to diagnosticate. He believed that in a great many cases a mild mechanical obstruction was due to an agglutination which pituitrin would help to overcome. In diagnosing incomplete obstruction of the bowel he favored giving powdered charcoal by the mouth; when other signs failed him, the use of charcoal gave him great aid in deciding whether to operate or not. This was not of value, of course, in the acute form. With regard to drainage, Dr. Wiener said he did little or none at all; however, if one was called upon to drain, one should drain efficiently. He did not believe in the use of the cigarette drain in these cases; it simply acted as a stopper and defeated the desired end. When very free drainage was necessary as in large uterocecal abscess, a Mikulicz tampon, made with perforated dental rubber dam was most efficient and prevented the adhesion of the intraabdominal contents to the drain.

Dr. ALEXIS V. MOSCHCOWITZ said that broadly speaking the subject of appendicitis was a most encouraging one and showed what a united profession could do if it only persistently hammered at a certain definite problem. Within a space of a few years it had reduced enormously the mortality of appendicitis, and as was to be expected had also reduced the frequency of its complications. It gave a hope that something would also be accomplished with that other dread disease, cancer. Dr. Moschcowitz said that he had noted in the paper just read that few points contained therein did not coincide with his, and he briefly referred to these as follows: (1) He had discarded the administration of salt solution per rectum. Most patients complained after operation biterly of thirst and he saw no reason for increasing their thirst by the needless addition of two teaspoonfulls of salt to every quart of water. He obtained just as good results by administering plain water. (2) He had not derived as great a benefit as Dr. Wiener had from the use of Cargile membrane in preventing adhesions. That desideratum of surgery, the prevention of peritoneal adhesions, still remained at the stage of a desideratum. (3) He knew he was treading on thin ice, but candor compelled him to state that personally he was opposed to the promiscuous, so-called prophylactic extirpation of the appendix, in the course of operations undertaken for other lesions. He based his conclusions upon the fact that he had seen much harm, and even death following this apparently trivial addition. (4) He confessed that up to the present he was not aware that subphrenic abscess was so fatal a complication in the hands of others; it certainly did not coincide with his experience. He was always under the impression that if the diagnosis was made sufficiently early, the prognosis of subphrenic abscess was not bad. (5) That the prognosis in any given case of appendicitis was always in doubt was amply proven by a case now under his care at the Har Moriah Hospital. He said he would not burden them with the detailed history, but in short it was that of a young man upon whom he had operated for an acute gangrenous appendicitis with localized abscess seventeen days ago. For one week the course was absolutely uneventful. On the eighth day he developed pulmonary symptoms and the physical examination led him to make the diagnosis of a septic infarct of the lower lobe of the right lung. This was later verified by the employment of the *x*-ray. He especially called attention to an interesting temperature chart since that time. Frequent chills with temperatures of 105° F. and over marked the second week. The patient was doing well at present. He did not wish to make any prognostication.

Dr. J. WIENER acknowledged that the use of pituitrin was of the greatest value and he agreed with what Dr. Gibson had stated regarding the use of this agent, which permitted the greater use of morphine in those cases in which it was called for. Since the introduction of pituitrin he had been able to use morphine in abdominal cases more liberally than ever before and repeated the doses whenever necessary. They now had none of those alarming symptoms they formerly encountered when morphine was used alone in abdominal work. In diagnosticating a true fecal fistula the use of methylene blue was of great aid; he was in the habit of giving a capsule of methylene blue and noting whether or not the color appeared in the stools. He agreed with all that Dr. Moschowitz had stated. They used salt water in the rectum because "their fathers used it." He always used water in the form of a stimulating enemata. The value of the Cargile membrane was very great in his hands and he said he would continue to use it until he was given something better. He emphasized the fact that better results were obtained when the membrane was chromicized; when non-chromicized the membrane disappeared too quickly. The mortality from subphrenic abscess was a great deal less than what had been mentioned. The sooner the diagnosis, the lower the mortality. Great help had been given them by the use of the *x*-ray; now they could, by its aid, make a positive diagnosis of subphrenic abscess.

Clinical Varieties and Therapy of Precordial Pains Due to Organic Cardiovascular Disease.—Dr. SELIAN NEUHOF presented this communication, in which he stated that the frequent and indiscriminate use of such terms as false angina pectoris, angina sine dolore, angina vasomotoria, etc., with no clear sense of their etiology or pathology had added to the difficulties of comprehending the fundamental cause of precordial pains due to cardiovascular disease. This confusion and the fact that precordial pains of similar distribution and character might be caused by both intra- and extra-cardiac disease had stimulated the reader to a careful study of those patients in whom these pains, from whatever cause, constituted a prominent symptom. In every case a careful history was obtained and, besides the routine, the examination often included phthalein and sodium chloride excretion tests, and electrocardiographic and orthodiascopic tracings. The type character, intensity, and distribution of the pain, the time of its appearance, and its correlation with exercise, with digestion or other disturbances, and the presence or absence of Head's zones were noted. After a study of all the data, an attempt was made to discover the probable fundamental etiological lesion in the cardiovascular system or in a distant organ and to gauge the extent and severity of the pathological damage to be therapeutically attacked. In this way, besides obtaining a rational view of the entire subject one could fairly definitely pick out and group patients in whom therapy would be of no avail, as well as those in whom it offered good chances for relief and even symptomatic cure. Some of the commoner and more important varieties of precordial pains due to organic cardiovascular disease might be discussed under the following headings: (1) Hypertensive Cardiovascular Disease with Myocardial Insufficiency. In this group of cases the usual cardiac

changes were ventricular hypertrophy, usually left, but sometimes right also; a patchy fibrous myocarditis; thickened aortal and mitral cusps; lime deposits on the first portion of the aorta and atheroma and thickening of both coronaries. These cases were characterized by a systolic blood pressure of about 190 mm.; rough systolic first and sharply accentuated second sound at the right base; heaving apical impulse; urine with or without albumin or casts; varying grades of edema and visceral congestion; dyspnea usually upon excretion. The pains were commonly dull, most marked in the precordium and radiated to the neck and arms. The long list of remedies that had been used in this condition was sufficient to prove their inadequacy. As to the cause of the pain it seemed that the underlying factor was nutritional cardiac disturbance from inadequate coronary circulation. The author in these cases had placed his main reliance on digitalis, preferably the tincture, given in 15 mm. doses three times a day and should not be stopped when pain and other symptoms disappeared, but should be continued for an indefinite period. Mental excitement and stress should be avoided. For the elimination of the edema, theobromin sodium salicylate in one-gram doses three times daily on alternate days in water or in wafers might be recommended. The Carrel diet was an excellent aid. In cases in which a luetic condition was proved or suspected the iodides were useful, otherwise the reader had found them of no value in the relief of the pain. (2) Hypertension and Myocardial Insufficiency with Unstable Vasomotor Mechanism. This was a smaller group of cases with the highest systolic blood pressure around 180 and with marked diurnal variations, precordial pains following exercise. Emphysema and myocarditis were the main pathological entities. Experimental subcutaneous injections of nitroglycerin in doses of one-fiftieth of a grain three times a day had a marked temporary effect upon the blood pressure and usually upon the symptoms. Nitroglycerin or other vasodilators given at the onset of pain were likely to be followed by great relief. Digitalis was not as beneficial as in Group 1. (3) Uremic Group. This group was characterized by headache, nausea, vomiting, varying grades of anemia, paroxysmal dyspnea, precordial distress, high systolic and diastolic pressure, nocturnal polyuria, and changes in the retina. The precordial pains were not relieved by nitroglycerin, digitalis, or diuretin. The pains were apparently caused by retained excrementitious products flowing in the general circulation. Dietetic measures, especially low protein and high carbohydrates, were of most value. (4) Acute Rheumatic Endocarditis and Rheumatic Endocarditic Exacerbations. These cases usually occurred in young persons with mild tachycardia, no dyspnea or decompensation, and with marked auscultatory evidence of valvular disease, usually mitral stenosis. The main complaint was that of sticking pains localized in the heart itself. There were usually no Head's zones. The rapid heart action and the precordial pain seemed to be due to the effect of the fresh exacerbations of endocarditis. The best medication was salicylates of soda in one-gram doses hourly until six doses had been taken or tinnitus occurred. Bromide in moderate doses were helpful and absolute rest was necessary. (5) General Circulatory Failure and Decompensation from Endomyocardial Disease. The fundamental cause of the precordial pain was apparently the nutritional disturbance in the heart itself, consequent upon the circulatory failure. Head's zones were often present. The treatment indicated for the first group was indicated in this one also. (6) Embolic Infarcts in the Main Coronaries and Their Branches. The reader stated that he had studied several cases with intermittent pains lasting days or weeks in whom the symptoms were possibly caused by embolic infarcts of the coronaries of the second or third order. The characteristics common to these cases were temperature, active endocarditis, progressive tendency of the disease, and the presence of local, tender, precordial areas. In this group autopsy findings would be necessary to clinch the diagnosis. (7) Cardiac Lues. This was a very frequent cause of precordial pain. In these cases the pain was usually substernal, dull, boring, and aching in character. It might, however, have the distribution of the types already described. Head's zones were rare. The main pathological changes were found in the aorta and myocardium. Salvarsan combined with the usual mixed treatment was of great value. (8) Premature Arteriosclerosis. This comprised a rare group of cases found in young adults. It was characterized by persistent precordial distress, present often for months. Gastric symptoms similar to those of hyperacidity might predominate the cinical picture. Physical examination gave no hint of the severity of the pathological process. The cause for such sclerosis was still undetermined, but it was possible that unknown infections and toxemias were the etiological factors. Except digitalis for temporary relief, treatment was of no avail. (9) Tabacism. It was a question whether the tobacco heart should be grouped under organic cardiovascular diseases. The experimental data were inconclusive. The pains might be dull and aching, or sharp and radiating. The first premonition might be very sharp lancinating precordial pains radiating to the left shoulder and forearm and accompanied by unconsciousness. Most of the tobacco pains and arrhythmias ceased when smoking was stopped. Occasionally such pains might recur for years; in such cases nitroglycerin given regularly or with the onset of pains was sometimes of benefit. The author considered this classification by no means complete.

Dr. E. LIBMAN said it was very important not to speak of angina pectoris but to speak of pains in the heart region and try to determine the cause of the pain. Apart from acute and chronic insufficiencies of the myocardium and apart from aneurysms, pericarditis, and syphilitic disease of the heart and aorta, the most common causes of cardiac pain were hypertension, atherosclerosis of the arch of the aorta, and thromboses of the coronary arteries. It had never been determined whether or not in hypertension cases, the pain was due solely to the fact that the heart could not well cope with the strain or whether there was not in such cases also disease of the arch of the aorta involving to a lesser or greater extent the orifices of the coronary arteries. Narrowing of the coronary arteries, either of both or one, was a more common cause for cardiac pain than had been generally believed. Although he was in a position a number of times to suggest such a diagnosis, he had since been informed by Dr. Rolleston of London that the latter's teacher, Dickinson, in his volume of essays, was the first to draw attention to the importance of narrowing or occlusion of the orifices of the coronary arteries by disease of the arch of the aorta. The cause in most instances of the classical picture of angina pectoris, by which they really meant the condition of which a patient was apt to die suddenly, was recent or old thrombosis of the coronary arteries. The diagnosis of a recent thrombosis could often be facilitated by the development of a slight temperature, moderate leucocytosis, and evidence of a patch of pericarditis, all coming on within a couple of days after the attack of severe pain. The diagnosis of old closure of the coronary arteries in patients who might live for years with an organized thrombosis of the coronary arteries, could at times be made from the color of the face. Apart from that it was important to ask whether the patient had any attack which was diagnosed as heart failure or an attack diagnosed as gastritis or ptomain poisoning, which attack was followed by difficulty in walking any distance without the development of cardiac pain. Many cases described as sudden deaths from acute gastritis were cases of thromboses of the coronary arteries. The important symptoms were pressure or pain in the chest, vomiting, and sometimes diarrhea. During the attack the pulse was generally bad, but at times it was remarkably little disturbed. The explanation of cases of so-called angina *sine dolore*, had never been given. Dr. Libman suspected that the absence of pain in such cases was due to the fact that the patients were probably not sensitive to pain. It was important in every case of cardiac pain to determine whether or not the patient was sensitive to pain, and this could be done fairly well by judging of the response which the patient made to strong pressure on the styloid process. Patients who were not sensitive to pain should be much more restricted than other patients as regards exercise, and should be given as little in the way of sedatives as possible, otherwise they were apt to overstep the balance of safety. It was just such patients who were apt to die suddenly without having previously had evidence of the disease. While digitalis was often useful in cases of cardiac pain due to hypertension, it must be used with caution in patients who were suspected of having organic disease of the coronary arteries and should always be tried first in small doses.

Dr. HARLOW BROOKS said he very much regretted that this noteworthy paper had been presented at so late an hour; it seemed an imposition to take up its dis-

cussion as he would have wished. He said he had planned to discuss particularly the phase of pain as a symptom in tobacco poisoning of the heart, since this was a subject in which he had been greatly interested of late, but his material had been taken from him by the statements of Dr. Neuhof, who precisely agreed with him in his ideas of the so-called tobacco angina; this was not a true organic lesion, but a disturbance of function, probably due to arterial spasm. Another section of the subject in which he was particularly interested was that concerning the occurrence of pain as an evidence of muscle disease in the infections and toxemias. Dr. Neuhof had pointed out that pain might occur in such instances, irrespective of whether there was hyperarterial tension or not. He emphasized the fact that when it occurred in these conditions without high tension, it was a particularly bad prognostic sign since it indicated either coronary thrombosis or dilatation even under low pressure which was manifestly a much more grave indication of severe muscle disease than when it occurred only with high blood pressure. It was quite possible that to the general medical public the most important fact brought out by the paper was simply that there was such a thing as cardiac pain. The textbooks said little of it, and up to rather recently this very important symptom was either ignored as unimportant except in angina pectoris or was considered as myalgic or even as imaginary. They now knew it to be one of the most important and oftentimes one of the early evidences of cardiac disease. Before actual pain developed it might be prefaced by a sense of weight or weariness in the region of the heart. They should learn to properly appreciate and analyze this symptom.

Dr. Louis Faugeres Bishop called attention to the great work of Mackenzie, whose book might be called "the bible of cardiology." Mackenzie's explanation of the causes of cardiac pain was very interesting and, if time permitted, would be well worth repeating in connection with this discussion. Dr. Bishop had adopted as his belief that cardiac pain was a protective reflex phenomenon and probably due to similar causes that produced stomachache after eating green apples. In other words, it was the evidence of a hollow muscular organ in trouble. It was a manifestation of disturbance of the function of contractility, either a failure of contractility or a spasm of the muscle. The pain was caused by irritation of the spinal cord and of the nerves passing through the irritated level. A list of the lesions found in patients who had suffered from cardiac pain was only a list of the lesions that would accompany disturbance of the heart muscle, and whatever counteracted the effect of these lesions on the heart muscle or improved the muscle itself would lead to a diminution of pain. Hence, rest to spare the heart muscle, and later exercise to strengthen it, were fundamental elements, as were also suitable nutrition to furnish fuel for the heart's activity and measures directed against any form of toxemia. Dr. Bishop considered digitalis useful in so far as it increased contractility without overstimulating tonicity of the muscle. The nitrites, of course, were useful to reduce the work of the heart temporarily. Mackenzie's functional view of cardiac pain afforded a much more hopeful basis for treatment than the view which attributed it to direct organic influences.

Dr. Neuhof said that patients differed in their susceptibility to pain. Indeed, many of the patients who suffered from precordial pains gave histories of having had painful gastric disease in previous years, a fact which might account for the susceptibility of the nervous system to pain arising from cardiovascular disease. The main object of the paper was to study the subject of precordial pains broadly, to gauge the amount of damage to the cardiac musculature, valves, or arteries, and to conserve and therapeutically attack what was still healthy. This seemed a logical method of study and therapy and enabled us at times, despite evident severe cardiac disease, to restore functionally the circulation for a number of years.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held December 2, 1915.

The President, Dr. Walter B. James, in the Chair.

This meeting was held under the auspices of the Section on Pediatrics.

A Discussion of Acidosis with Special Reference to That Occurring in the Diseases of Childhood. — Drs. John Howland and W. McKim Marriott of Baltimore presented this paper. They stated that the term acidosis was very loosely employed in clinical medicine. It was assumed that the acetone bodies were very abnormal and signified an unusual complication in the course of disease, whereas their presence might be likened to fever, for acetonuria occurred in most of the infectious diseases of childhood with much the regularity that fever did. As hyperpyrexia might in itself be dangerous or fatal so, too, a production of acetone bodies might in itself determine a fatal outcome. It was not the mere presence of acetone bodies that determined acidosis. To understand how acidosis might be brought about, it was necessary to consider the method by which the body maintained its equilibrium in which there was a preponderance of bases over acids. The essayists described in detail the efficient mechanism by which the body guarded against the deleterious influence of acids formed or introduced into the body. These defences were three in number, acted synchronously, and resided in the blood. They were the increased pulmonary ventilation by which excess of carbon dioxide was removed, leaving a neutral salt, sodium oxybutyrate, or chloride, or what not, to be removed by the second defense, the kidneys. The third method of defense was afforded by the proteins and it depended upon their amphoretic character. The body possessed a further means of defense in that it was able to neutralize acid by the production of alkali in the form of ammonia. It was evident from a consideration of all these facts that there might be all degrees of acid production or retention, as a result of which it was difficult to set a limit and say when acidosis was present. The mere presence of abnormal acids did not indicate that acidosis was present, since they might be entirely compensated for by the various means to which reference had been made. Severe and fatal acidosis might be present when no abnormal acids could be found. The means by which acidosis was recognized were, first, examination of the blood or urine for the presence of abnormal acids, and, secondly, by determining the amount of ammonia secreted in the urine and in its relation to the total nitrogen excretion. A high ammonia coefficient always aroused the suspicion of acidosis, but unless this could be confirmed in some other way it could not be taken as conclusive proof. The methods which they had used in the cases described in this paper were chiefly the determination of the carbon dioxide in the alveolar air, Sellard's test, the alkali tolerance, the determination for the hydrogen ion concentration of the serum and the oxygen combining power of the hemoglobin. The essayists described each of these methods and showed why it was useful as a measure of over-production or of retention of acids in the body. In childhood acidosis resulting from the production of abnormal acids was found chiefly in diabetes and in recurrent vomiting. A study of diabetes in children shows very well the enormous amount of acid that might be taken care of with no disturbance of the reaction of the blood and with no effect upon respiration. In recurrent vomiting the conditions were more obscure and less understood than in diabetes. He had made observations on two cases of recurrent vomiting, a mild and a fatal one, in one of which the acidosis was clearly due to acetone bodies in the blood. They had studied chiefly the acidosis occurring in the diarrhea diseases of infancy and had found that infants with the severe diarrhea of infancy might die with no evidence of acidosis whatever. This was true of the majority. On the other hand, a number of infants with severe diarrhea did develop evidence of acidosis, and the overwhelming majority of these died. The clinical evidence of the acidosis was hyperpnea. When there had been deep labored breathing without cyanosis they had always been able to obtain other proof of acidosis. They had found a low carbon dioxide tension of the alveolar air by the use of Phesch's method modified so that it was applicable for use in infants, and Dr. Howland said he believed that they were the first to be successful in measuring the carbon dioxide tension in infants. They had found that the tension of the air in normal infants varied between 35 and 42 mm. while in acidosis it was less than this, frequently between 15 and 25 mm. With infants showing such a low carbon dioxide tension the Sellard's test was positive. There was also a great tolerance for alkali in such infants so that relatively large amount had to be administered in order to change the reaction of the urine. In all the severe cases the reaction of the

blood by the indicator method had shown a distinct shifting of the reaction in the direction of acidity. This reaction might again become normal on giving alkalies in sufficient quantities. Finally, evidence had been obtained of an alteration in the reaction of the blood by determining a great lowering of the combining power of hemoglobin. With reference to the question as to what produced this acidosis, the essayists stated that uncompleted studies made in their laboratory seemed to indicate that potential alkali was not lost in the diarrheal stools. At the present time it could not be maintained that an excess of sodium or potassium in the stools showed acidosis. In seeking for further explanation for the production of acidosis they had observed that there was one striking symptom of the severe acidosis of infancy and that was the diminution of the output of aurine. Complete anuria was by no means unusual. In the present state of their knowledge this seemed to offer an explanation of the accumulation of acids and they were still studying this phase of the question. From a review of the cases presented it might be said that acidosis was not uncommon in infancy and childhood. It was especially frequent in the severe diarrhea of infancy, but it might appear in a variety of diseases, and sometimes alone. Its recognition in older children was not difficult; the character of the respiration was usually sufficient to arrest one's attention, and one or two relatively simple laboratory tests would quickly determine the question. Older children reacted promptly and sometimes permanently to alkali therapy. In infants it might be possible to stop the laboratory and clinical evidences of the condition, but they usually died. For this reason in the severe diarrhea of infancy one should not wait until acidosis had developed but should give bicarbonate of soda from the beginning in sufficient quantities to render the urine alkaline and to keep it so. The alkalies might be administered by mouth, by rectum, subcutaneously, or intravenously. The latter was the method of choice when rapidity of action was desired, and in acidosis rapidity of action was always desirable. If facilities for intravenous injection were not at hand, a subcutaneous injection might be given. For the intravenous injection a 4 per cent. solution was employed and for the subcutaneous a 2 per cent. solution, the amount being gauged to meet the individual indications. As much as 10 grams in 24 hours might be required.

Dr. Donald D. Van Slyke stated that their experience had been in complete agreement with that of Drs. Howland and Marriott. Some interest, however, might attach to a definition of acidosis from the standpoint of the chemist. Such a definition would be as follows: "Acidosis is a condition in which an accumulation of acids occurs in the body, and which results from the failure of elimination to keep pace with the production of acids." Acidosis might result, as in diabetes, from an overwhelmingly rapid production of acids, with which even a normal eliminating mechanism could not keep up, or it might, as in some cases of nephritis, result from failure of the eliminating mechanism to dispose of even the amount of acid formed in the ordinary metabolism. Whatever the cause the direct result was that the bicarbonate content of the body fluids was lowered. Because of this fact the determination of the bicarbonate content of the blood plasma was the most direct method for the determination of the presence and degree of an acidosis. The severity of acidosis was proportional to the fall below normal of the bicarbonate content of the plasma. The most reliable method for estimating the bicarbonate content of the blood was the direct determination of the plasma bicarbonate. This was done by acidifying a known volume, usually 1 c. c. of plasma, and measuring the amount of carbon dioxide gas which was set free. By this method they found that in the normal adult carbon dioxide gas equal to 55 to 75 volume per cent. of the plasma from which it was set free. When this fell to 30 per cent. acidosis became dangerous, when below 30 per cent., in an adult, acidosis was serious, and as low as 20 per cent. it seemed nearly certain to be fatal. The estimation of the alveolar carbon dioxide owed its value to the fact that it was an indirect measure of the carbon dioxide content of the plasma. In order to keep the hydrogen ion concentration of the plasma at its proper level the respiratory center maintained the ratio between the amount of carbon dioxide in the form of free carbonic acid and bicarbonate, respectively, at one to twenty. Thus a normal plasma contained 60 volume per cent. of bicarbonate carbon dioxide, and three volume per cent. of carbon dioxide dissolved as free carbonic acid. If acids accumulated sufficient to reduce the bicarbonate carbon dioxide to 30 per cent., respiration and circulation were so stimulated that the carbonic acid carbon dioxide was reduced to one and one-half per cent. If the bicarbonate carbon dioxide was reduced one-half, the respiratory mechanism reduced the carbonic acid carbon dioxide of the plasma also to one-half, and the physical laws of gas solubility also reduced the percentage of carbon dioxide in the alveolar air by half. As to the accuracy of this indirect measure their experience had been that in normal individuals the alveolar carbon dioxide indicated within a limit of error of about one part in five the level of the plasma bicarbonate. They had found that the same limit of error held for diabetics; so that this method was of use in diagnosing diabetic acidosis when it was not desirable to draw blood for the direct examination. In certain other pathological conditions this was no measure at all of the plasma bicarbonate since it was dependent upon the normal function of the entire respiratory and circulatory apparatus. The alkaline tolerance test as used by Sellards, Henderson, and Palmer might also be considered an indirect measure of the plasma bicarbonate. The amount of bicarbonate which must be administered in order to turn the urine alkaline was directly proportional to the extent to which the bicarbonate content of the body fluids had fallen below this point. As the alveolar carbon dioxide test depended upon the normal function of the respiratory mechanism, so the alkaline tolerance test depended upon normal kidney function. The determination of the hydrogen ion concentration of the blood by even the most accurate methods now available appeared to be of less value than any of the methods just referred to; it afforded only a tardy warning of the development of acidosis. In cases in which acidosis was caused by retarded elimination the urine gave especially fallacious indications of the condition of acidosis. A patient might be sinking in acidosis steadily toward coma, with only normal excretion of acids and ammonia, and he might begin to recover, when this excretion would become increased. They had had a case in which the urinary findings alone would have led to conclusions exactly opposite to the truth as to the direction in which the patient was progressing. The significance of urinary findings should not be minimized, but the fact remained that they did not show whether acids were accumulating within the organism or not.

Dr. Graham Lusk said there were two forms of organic acids produced from the metabolism of foodstuffs, the acetone bodies, represented by beta-hydroxybutyric acid and carbohydrates, and lactic acid. Dr. Howland had spoken of the possibility of there being other organic acids than beta-hydroxybutyric acid, and it might be interesting to suggest the possibility of the formation of lactic acid in the cases he had cited. Lactic acid had been found to be a constant constituent of the human blood after exercise and after ascending high mountains. In dogs it appeared in the blood after cramps produced by strychnine and after phosphorus poisoning. That the lactic acid which was produced under these and similar conditions was derived from glucose followed from the fact that if one gave strychnine to a depancreatized diabetic dog, violent convulsions ensued without and production of lactic acid, and if one produced phlorrhizin glycosuria in a dog poisoned with phosphorus, lactic acid disappeared from both blood and urine. Munzer and Loewy, in 1901, administered sodium bicarbonate to dogs poisoned with phosphorus and in consequence ammonia almost disappeared from the urine indicating that the urea forming function was normal. In many ways the children described by Dr. Howland recalled the behavior of the dogs poisoned with phosphorus. Possibly a search for lactic acid in this disease as well as in other pathological states involving acidosis when the acetone bodies were absent, might lead to some information on this subject.

Dr. L. Emmett Holt said he wished to emphasize what Dr. Howland had said with reference to the frequency of acetone in the urine of children, often without any clinical significance. One of the members of the house staff of the Babies' Hospital examined 200 consecutive urines in young children and found that acetone was present in 30 per cent. of the cases. It was present in 70 per cent. of those suffering from lobar pneumonia. Frequently when the urinary analysis showed the presence of acetone the physician concludes that his patient was in a serious condition because of this finding, while it was usually of no importance. Again, there might be a serious acidosis present with very slight or no

evidence so far as the acetone bodies in the urine were concerned. Three determinations were made in a series of cases at the Babies' Hospital, namely, the ammonia nitrogen content of the urine, the carbon dioxide combining power of the blood, and the acetone in the urine. The ammonia nitrogen in the urine ran quite parallel with the carbon dioxide combining power of the blood, but there was no constant relation between these two and the acetone in the urine. Dr. Holt called attention to the occurrence of acidosis in infants fed for a long period of time on very high percentages of fats. Such children might go on well for a time, when an acute upset occurred with symptoms of marked acidosis, due probably to loss of bases from the body in combination with the fats in the stools. Cases of severe diarrhea with marked acidosis were nearly always fatal, hence there was need of means by which the acidosis might be recognized early by the practicing physician. Dr. Van Slyke's test for the carbon dioxide combining power of the blood seemed the most practical for clinical use, since it could be made with 1 c. c. of blood, and with proper apparatus the test could be made in twenty minutes. Emphasis should be placed on the danger of acidosis in children kept for a long time on a one-sided diet, and upon the necessity of getting back (when because of serious disturbance of digestion an absurd diet has been used) as soon as possible to one in which all the elements of food were properly represented.

Dr. Oscar M. Schloss said that his experience with acidosis had been confined almost entirely to intestinal intoxication in young infants. In a small group of such cases he had determined the carbon dioxide content of the blood, the ammonia content of the urine, and the tolerance to sodium bicarbonate. The results of the tests were in accord with those of Dr. Howland and Dr. Marriott. The relatively slight importance of acetone and diacetic acid in the urine was well illustrated in a few cases in which, despite a great reduction of the carbon dioxide of the blood and increased tolerance to sodium bicarbonate, the urine contained no acetone or diacetic acid. The uncertainty of the urinary ammonia as a index to the presence or degree of acidosis to which Dr. Howland had referred had proven true in several of his cases, and was in accord with an experiment of Sherman and Gettler. They found that when a subject was fed on a diet productive of high acidity, only a relatively small proportion of the calculated acid appeared in the urine combined with ammonia, while the greater portion was excreted as acid or acid salts. In this connection it was perhaps of interest that the ash of cow's milk had relatively slight basic properties. The cases of intestinal intoxication with marked dyspnea which were admitted to the service of Dr. La Fetra at Bellevue Hospital during the past summer were treated by the administration of large doses of sodium bicarbonate given by subcutaneous or intravenous injection, by mouth, or by the Murphy drip method. There were 42 patients treated, of whom 31 died; four recovered completely; three left the hospital in an improved condition, and three were taken home unimproved. The fatal cases were of interest in that 16 of the 31 showed very marked improvement. The dyspnea ceased and the general condition of the patient was much improved, so that they all felt that recovery was probable. Death was usually due to a recurrence of the intoxication which appeared suddenly and was of short duration. It seemed to them that the alkali relieved the symptoms of intoxication but was without influence on the underlying nutritional disorder.

Dr. Herman Schwarz considered three types of acidosis. The first he said was secondary to a gastroenteric condition. The second one was commonly called recurrent or periodic vomiting, and the third type followed or occurred in conjunction with infectious diseases, especially grippe. The last form was secondary usually to an infection of the nasopharynx and had a tendency to recur with other attacks of nasopharyngitis, and was thus mistaken for the true form of periodic vomiting. An interesting differential point was the polymorphonuclear leucocytosis, which occurred in the infectious type and a lymphocytosis which was present in cases of true cyclic vomiting, either during the attack or in the interval. Dr. Schwarz said he had studied these three types from the standpoint of the blood sugar content and from the way the blood sugar reacted upon the administration of sugar to these children. The blood sugar content might either be normal, or, when sugar was present in the urine, there might be a hyperglycemia. In the normal child or adult, when glucose was given four to six hours after a meal an immediate increase in the blood sugar could be noted. This increase rose rapidly, usually well within the first hour, and before two and one-half hours had elapsed the blood sugar content had again reached what it was before the administration of the sugar. With these cases of acidosis, curiously enough, the same rapid rise was noted immediately after the administration of the glucose, but after three or four hours or more, the blood sugar might be much above what it was before the administration of the sugar. Impairment of the kidney function might explain this since it would prevent the elimination of the sugar by the urine or, as had been shown by Dr. Epstein, the ability of the liver and muscles to build up glycogen was either impaired or lost. It was also observed that these patients would retain the glucose when they vomited everything else, and again the acetone and diacetic acid in the urine immediately disappeared for some hours. Some of these patients were given casein and by this means the acidosis could be made to disappear. Vegetable protein was also tried with success, but this was not chemically pure.

Dr. Wilder Tileston of New Haven, Conn., said he would like to call attention to the contrast between the effects of the same degree of acidosis as measured by the carbon dioxide tension of the alveolar air under different circumstances. Thus the English observers Kennaway, Pembrey, and Poulton found in diabetes a day or two before the onset of coma a sudden drop to 18 or 14 mm.; they considered values below 25 mm. to indicate a grave condition in this disease, and those below 20 mm. to foreshadow imminent coma. On the other hand, Haldane, Henderson and Douglass, at the top of Pike's Peak (14,000 feet) found that the carbon dioxide tension dropped to 18 or 20 mm. as the result of the high altitude, without any serious effects. In starvation Benedict found a tension of 26 mm. It was evident that the gravity of the situation did not depend entirely on the degree of the acidosis, but partly on the underlying cause. With reference to the relation of dyspnea to acidosis Lewis and his coworkers recently described a type of dyspnea without cyanosis, occurring in elderly people with cardiorenal lesions, in which they found a high degree of acidosis. Nocturnal attacks of dyspnea and Cheyne-Stokes breathing were common. In young patients with uncomplicated cardiac insufficiency, although dyspnea was present, there was no acidosis. Evidently the state of the respiratory center was also of importance for Peabody found a high degree of acidosis in the terminal stages of uremia without dyspnea, and Benedict in a man undergoing a prolonged fast found marked acidosis without any increase in the total ventilation. Also Haldane and Henderson found on Pike's Peak that with acclimatization the dyspnea disappeared, although the low tension of the alveolar carbon dioxide persisted even after descending to a lower level.

Dr. Abraham Jacobi said they had been told by Dr. Howland that there was little likelihood of successfully treating these cases of severe diarrhea with acidosis, and they had just heard that a large number of these patients died, hence it seemed fitting to speak of prevention. What Dr. Howland had said in connection with the overfeeding of fats was correct. One cause of acidosis and diarrhea was excessive feeding of fats. There were some doctors who could not overcome this tendency to overfeed with fats. Another habit of which many men could not break themselves was that of feeding milk sugar. Babies should not be fed on milk sugar to the extent that they had been. Dr. Jacobi said he never used milk sugar, and it should not be used unless in very small quantities, because babies got enough milk sugar in their milk foods. A third point was that milk should not be given without carbohydrates (barley or oatmeal water). If they would be careful of fats, be careful of milk sugar, and remember what he had said about carbohydrates acidosis would be prevented and they would keep away from a number of death certificates.

Dr. W. McKim Marriott said that in the discussion of the paper the acetone bodies had received considerable attention and that chiefly to minimize their importance. It was to be clearly understood that the acetone bodies in themselves were not essentially toxic and that they could prove harmful to the body only by removing the bases. The appearance of the acetone bodies in the urine in large amounts was of course evidence that there had been a large production in the

body, but may have been completely compensated for by the defenses of the body. In examining the blood for acetone bodies one was enabled to determine how much acid had accumulated and an accumulation of acid indicated that the kidneys were not excreting the acid as fast as it was being formed, and that a considerable base of the blood had been claimed by the abnormal acid and that therefore a considerable amount of alkali must be administered to supply the deficit. The result of the administration of the alkali in such cases was usually to increase the excretion of acetone bodies in the urine and at the same time to diminish the concentration in the blood, this being coincident with the improvement in the clinical condition of the patient. Dr. Lusk had mentioned lactic acid as a possible cause of the acidosis in the nutritional disorders in children. Following his suggestion they had been looking for excessive lactic acid production in these children. With the methods available they had not as yet been able to state positively whether lactic acid entered in as a factor or not. Dr. Marriott said he wished to make it very clear that in the diarrheal diseases of children acidosis was not in itself necessarily the cause of death in most cases. In many cases the acidosis was in itself, however, sufficiently grave to determine a fatal outcome. By curing the acidosis they did not cure the primary disease, since death might, and usually did, occur from the primary condition. The indications, however, for treating the acidosis were perfectly definite. By curing the acidosis one factor which might be responsible for death was removed; and in the primary disease which they were considering the primary disease was essentially temporary and curable as compared with diabetes or nephritis. The detection of acidosis was not difficult. The most easily recognizable indication was an acyanotic dyspnea, or, more correctly, hyperpnea. Perhaps the simplest laboratory test that could be applied and one which gave valuable information by detecting the slightest degree of acidosis was the determination of the carbon dioxide tension of the alveolar air. This method had hitherto not been adapted to clinical use as a more or less elaborate gas analysis apparatus had been necessary. They had modified the method so that the gas analysis apparatus might be dispensed with and the determination might be carried out in a few minutes by a person without laboratory training. They had also recently modified the indicator method so that one could determine by it not only the actual hydrogen ion concentration which gave evidence of a severe grade of acidosis, but also the bicarbonate reserve of the blood and the carbon dioxide tension. This method further served to differentiate between an acidosis due to carbon dioxide and one due to volatile acids. No complicated apparatus was required. Finally, the experimental administration of an alkali served both as a diagnostic and a therapeutic measure. As an illustration of the value of these methods, during the past week one of the workers in the pediatric clinic had detected the presence of a severe grade of acidosis in two patients suffering from a condition in which, so far as they were aware, acidosis had not hitherto been suspected. In summing up it might be said that acidosis was a very grave pathological condition of frequent occurrence. It was readily detected. The therapy was specific, namely, alkalies.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

The Texas State Board of Medical Examiners.

June 22, 23, and 24, 1915

ANATOMY.

1. Give the location and shape of the frontal bone, and name the bones with which it articulates.
2. What structures are used in the formation of an articulation, and what three classes of articulations are there?
3. Name the triangles of the neck and their subdivisions, and give boundaries of each.
4. Describe the diaphragm and give origin and insertion.
5. Give location of the subclavian arteries and tell origin of.
6. Give origin and distribution of the pneumogastric nerve.
7. Where does the liver get its blood supply?
8. Give abdominal surface location of the gall-bladder and appendix.
9. What constitutes the sympathetic nervous system?
10. Describe and give location of the inguinal canal.

PHYSIOLOGY.

1. Define physiology.
2. Name the elementary tissues.
3. Name the kinds of muscular tissue.
4. Describe briefly the blood.
5. What is an "internal secretion"? Name five organs which have such.
6. If the pneumogastric nerves were severed, what would be the effect on the heart?
7. Where are the plexuses of Auerbach and Meissner located? Their function?
8. Where are the Malpighian bodies found? State their function.
9. Name the organs of excretion in order of their importance.
10. Where are the cardioinhibitory and cardioaccelerator centers located?

CHEMISTRY.

1. What is an element? A compound? An example of each.
2. Define a deliquescent salt; efflorescent salt.
3. In Marsh's test for arsenic, how do you differentiate arsenic from antimony spots?
4. (*a*) Give a process for making chlorine gas. (*b*) Give properties of chlorine gas. (*c*) Of what value is this gas?
5. What is an acid? What is a base? Complete the equation $2NACl + H_2SO_4$.
6. Define normal salt, basic salt, acid salt.
7. Describe iodine as found in the market. (*b*) Test for iodine.
8. How is chloral hydrate prepared? (*b*) Physiological properties of chloral hydrate.
9. From what source do we obtain pure genuine salicylic acid?
10. Give test for morphine sulphate.

HISTOLOGY.

1. Name and describe membranes of brain.
2. Give the structure of human skin.
3. Locate and give structures of Peyer's patches.
4. Give structure of the thyroid gland.
5. Give a histological difference between pyloric and cardiac ends of stomach.
6. Give the development of bone.
7. Draw cross section of spinal cord at tenth dorsal, and name findings.
8. Give histological difference between veins and arteries.
9. Give histological structure of lymphatic gland.

BACTERIOLOGY.

1. Describe the Wassermann reaction.
2. Define alexins, agglutinins, and precipitins.
3. Define diapedesis, phagocytosis; of what use is the process of phagocytosis in the human system?
4. State names of the stains used to demonstrate the presence of the following microorganisms: staphylococcus, streptococcus; the negri bodies of hydrophobia.
5. State methods of making a culture of the Klebs-Loeffler bacillus.
6. Define toxins, endotoxins, and autotoxins.
7. Give morphology of pneumococcus and the parasite of malaria (any variety).
8. Describe the Widal reaction and von Pirquet's method of cutaneous diagnosis of tuberculosis.
9. What pus-producing microorganism causes the greatest mortality, and give names of principal diseases in which it is a principal cause of destruction.
10. Define flagellated and name all the flagellated pathogenic organisms.

OBSTETRICS.

1. Give the symptoms and management of puerperal infection.
2. Give the blood supply of the uterus.
3. What are the changes that take place in the circulatory apparatus of the fetus after birth?
4. Give differential diagnosis between uterine fibroma and pregnancy.
5. Give indications for use of forceps and for cesarean section.
6. Give the hygiene of pregnancy.

7. Name three of the most frequent diseases to which pregnancy predisposes, select one and give symptoms of same.

8. Give three indications for induction of premature labor and describe one method of performing the same.

9. Give the proper treatment of ophthalmia neonatorum.

10. Give the definition of premature labor and abortion.

GYNECOLOGY.

1. Outline your scheme for taking a gynecological history.

2. (*a*) What are the advantages and disadvantages of Pfannensteil's incision? (*b*) Enumerate in order of importance the causes of metrorrhagia.

3. Describe a standard perineorrhaphy (secondary).

4. What precautions should be taken in making a vaginal examination of a virgin?

5. A married woman, aged 40 years, with one child, aged 14 years, and no subsequent pregnancies, is in good health until suddenly seized with violent pain in left lower abdomen and collapses; suggest two diagnoses.

6. Criticise ventrofixation and ventrosuspension uteri.

7. What conditions justify double ovariectomy?

8. What surgical procedure would you advise to correct procidentia with cystocele and rectocele in a woman 50 years of age?

9. Name the contraindications of uterine curettage.

10. Would you leave the appendix, in abdominal operations for other conditions? Reasons for your answer.

ANSWERS.

ANATOMY.

1. The *frontal bone* is located at the anterior part of the cranium; its shape is that of a cockle-shell; it articulates with the two parietal, the sphenoid, the ethmoid, two nasal, two superior maxillary, two lacrymal, and two malar bones.

2. *Structures entering into the formation of a joint*, are: Bone, cartilage, fibrocartilage, ligament, and synovial membrane.

The *three forms of articulations* are: (1) *Synarthrosis*, or immovable articulation, such as that between the two parietal bones. (2) *Amphiarthrosis*, or mixed articulation, such as that between the two pubic bones. (3) *Diarthrosis*, or freely movable articulation, such as that between the humerus and the ulna.

3. The ANTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by a line from the chin to the sternum; *behind* by the anterior margin of the sternomastoid; *base* is upward, and is formed by the lower border of the body of the lower jaw and a line from the angle of the jaw to the mastoid process. It is *divided* into three smaller triangles (inferior carotid, superior carotid, and submaxillary) by the digastric muscle and the anterior belly of the omohyoid. The *inferior carotid triangle* is bounded, *in front* by the median line of the neck; *behind*, by the anterior margin of the stermomastoid; and *above*, by the anterior belly of the omohyoid. The *superior carotid triangle* is bounded, *behind* by the stermomastoid; *below*, by the anterior belly of the omohyoid; and *above* by the posterior belly of the digastric. The *submaxillary triangle* is bounded, *above* by the lower border of the body of the mandible and a line drawn from its angle to the mastoid process; *below*, by the posterior belly of the digastric and the stylohyoid; and *in front*, by the anterior belly of the digastric.

THE POSTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by the sternomastoid; *behind*, by the anterior margin of the trapezius; and its *base* corresponds to the middle third of the clavicle. It is *divided* into two smaller triangles (the occipital and the subclavian) by the posterior belly of the omohyoid. The *occipital triangle* is bounded *in front*, by the sternomastoid; *behind*, by the trapezius; and *below*, by the omohyoid. The *subclavian triangle* is bounded *above*, by the posterior belly of the omohyoid; *below*, by the clavicle; and *in front*, by the sternomastoid.

4. The *diaphragm* is a musculofibrous septum which divides the thoracic from the abdominal cavity; it is fan-shaped; the broad elliptical portion is horizontal, and the crura are vertical. It is attached to the ensiform, to the internal surfaces of the lower six costal cartilages, to bodies and intervertebral substances of first, second, and third lumbar vertebræ. Its *openings* are: (1) The aortic, transmitting the aorta, vena azygos major, and the thoracic duct; (2) the esophageal, transmitting the esophagus, pneumogastric nerves, and some small esophageal arteries; (3) the opening for the vena cava, transmitting the inferior vena cava, and small branches of the right phrenic nerve; (4) the right crural, transmitting the right splanchnic nerves; (5) the left crural, transmitting the left splanchnic nerves and the vena azygos minor.—*Nerve Supply:* Phrenic, lower intercostals, and sympathetic.

5. *Subclavian artery* arises on the right side from the innominate artery, on the left from the arch of the aorta; and it passes outward, arching over the pleura, lying on the first rib, betwen the scalenus anticus and medius, and ends at the lower border of the first rib. It is divided into three parts by the scalenus anticus; the first part being from the origin of the artery to the inner border of the scalenus anticus; the second part, posterior to that muscle; and the third part from the outer edge of the muscle to the lower border of the first rib.

6. *Pneumogastric nerve. Superficial origin:* Groove between restiform and olivary bodies. *Deep origin:* Nuclei in floor of fourth ventricle. *Distribution* is shown by the names of the branches: Meningeal, auricular, pharyngeal, superior and inferior laryngeal, cardiac, pulmonary, esophageal, and gastric.

7. The *blood supply of the liver:* Hepatic artery and hepatic veins; the portal vein also conveys blood to the liver.

8. The *gall-bladder* is situated in a fossa on the under surface of the right lobe of the liver. It is in relation, in front, with the anterior abdominal wall, immediately below the ninth costal cartilage.

Relations of vermiform appendix. Owing to the variable position of the appendix, these are not definite. As a rule, the appendix is given off from the lower, posterior surface of the cecum, and points upward and to the left, but it may hang down into the pelvic cavity, or take almost any other position with reference to the lower end of the cecum. The point at which the appendix joins the cecum is generally indicated on the anterior abdominal wall by *McBurney's point.* (A line is drawn from the anterior superior spine of the ilium to the umbilicus, and a point is marked off on this line at a distance of two and a half inches from the spine of the ilium.)

9. "The *sympathetic nervous system consists of* (1) a series of ganglia connected together by a great ganglionic cord, the gangliated cord, extending from the base of the skull to the coccyx, one gangliated cord on each side of the middle line of the body, partly in front and partly on each side of the vertebral column; (2) of three great gangliated plexuses or aggregations of nerves and ganglia, situated in front of the spine in the thoracic, abdominal, and pelvic cavities respectively; (3) of smaller or terminal ganglia, situated in relation with the abdominal viscera; and (4) of numerous fibers."

10. The *inguinal canal* is an oblique canal situated a little above and running parallel with Poupart's ligament. It is from an inch and a half to two inches in length, runs downward and inward, and extends from the internal abdominal ring to the external abdominal ring.

Its *boundaries are: In front:* the skin, superficial fascia, aponeurosis of the external oblique, and (for its outer third) the internal oblique. *Behind:* the conjoined tendon, the triangular fascia, the transversalis fascia, subperitoneal fat, and peritoneum. *Above:* the fibers of the internal oblique and transversalis. *Below:* Poupart's ligament and the transversalis fascia.

Contents: the spermatic cord in the male, and the round ligament in the female.

PHYSIOLOGY.

1. *Physiology* is that branch of science which treats of the functions of living tissues and organisms in a state of health.

2. The *elementary tissues* are: Epithelial, connective, muscular, and nerve tissues.

3. *Varieties of muscle tissue:* (1) Voluntary striated muscle; (2) involuntary, non-striated muscle; (3) involuntary striated or cardiac muscle.

4. The *physical properties of blood:* Fluid, somewhat viscid, red; specific gravity, from 1055 to 1062; alkaline reaction; saltish taste; characteristic odor; variable temperature (average, about 100° F.).

The *constituents of the blood* are plasma and corpuscles. The *plasma* consists of water and solids (pro-

teids, extractives, and inorganic salts). The *red corpuscles* consist of water and solids (hemoglobin, proteids, fat, and inorganic salts). The *white corpuscles* consist of water and solids (proteid, leuconuclein, lecithin, histon, etc.)

The *red blood corpuscles* are biconcave discs, about 1-3200 of an inch in diameter; they are non-nucleated, and there are about 4,500,000 or 5,000,000 of them in each cubic millimeter of blood. They are elastic and soft, and their shape is changed by pressure, but is promptly regained on the removal of the pressure. Their color is yellowish. They contain hemoglobin.

Their *function* is to carry oxygen from the lungs to the tissues.

The white blood cells are spheroidal masses, varying in size, having no cell wall, and containing one or more nuclei; there are about 7,000 to 10,000 of them in each cubic millimeter of blood. They differ much in appearance, and are divided into (1) small mononuclear leucocytes, or lymphocytes, (2) large mononuclear, (3) transitional, (4) polynuclear, or polymorphonuclear, or neutrophile, and (5) eosinophile. They are all more or less granular, particularly the last two varieties named. They are probably formed in the spleen, lymphatic glands, and lymphoid tissues. Their fate is uncertain: it has been asserted that they are converted into red blood cells; they play a part in the formation of fibrin ferment; they are sometimes converted into pus cells. Their functions are (1) to serve as a protection to the body from the incursions of pathogenic microorganisms; (2) they take some part in the process of the coagulation of the blood; (3) they aid in the absorption of fats and peptones from the intestine, and (4) they help to maintain the proper proteid content of the blood plasma.

There are also *platelets*, which are very small, colorless, irregular shaped bodies; they are about one-fourth the diameter of a red corpuscle. Their function is not determined; it is possible that they take some part in the coagulation of the blood. In number they vary from about 200,000 to more than 500,000 in each cubic millimeter of blood.

Plasma conveys nutriment to the tissue: it holds in solution the carbon dioxide and water which it receives from the tissues, and takes them to be eliminated by the lungs, kidneys, and skin; it also holds in solution urea and other nitrogenous substances that are taken to and excreted by the liver or kidneys.

5. *Internal secretions:* It is generally held now that the glandular organs, chiefly the pancreas, liver, and the ductless glands, produce a secretion, peculiar in each case to the particular gland producing it, and which is supposed to be given off to the blood or lymph, and to have some peculiar value in the general metabolism of the body. Such secretions are called internal secretions, in contradistinction to the previously known secretions, which are carried off by a duct, and are known as external secretions. Very little is definitely known of these internal secretions, but much work is being done on the subject.

Internal secretions are produced by the liver, pancreas, ovaries, testes, thyroids, parathyroids, spleen, suprarenals, pituitary body, and by the fetus.

6. If the pneumogastric nerves were severed the heart would beat more rapidly, as the inhibitory impulses would no longer reach the heart.

7. *Auerbach's plexus* is situated in the walls of the intestine between the circular and longitudinal muscle fibers.

Meissner's plexus is situated in the submucous coat of the intestine.

Their *function* is to cause intestinal peristalsis.

8. The *Malpighian bodies* are found in the cortical portion of the kidneys; their function is to excrete the water, salts and urea which are eliminated in the urine.

Malpighian bodies are also found in the spleen; their function is the formation of lymphocytes.

9. The *organs of elimination* are: (1) The *skin*, which eliminates water and a slight quantity of carbon dioxide, urea, and salts; (2) the *lungs*, which eliminate water, carbon dioxide; (3) the *intestines*, which eliminate the indigestible and unabsorbed substances from the food, with secretions from liver and pancreas; (4) the *kidneys*, which eliminate water, urea, and other nitrogenous matter, and inorganic salts.

10. The *cardioinhibitory* and *cardioaccelerator centers* are situated in the floor of the fourth ventricle.

CHEMISTRY.

1. An *element* is a kind of substance which we cannot, by any known means, split up into any two or more other kinds of substance; as oxygen.

A *compound* is a substance made up of two or more elements, chemically united, in definite proportions; as sulphuric acid.

2. A *deliquescent salt* is one that has a tendency to unite with water which it absorbs from the air, becoming damp, and finally liquid.

An *efflorescent salt* is one which, on exposure to air, loses its water of crystallization and becomes a powder.

3. The *arsenical stain:* (1) Volatilizes readily in an atmosphere of hydrogen, and (2) the escaping gas has the odor of garlic; (3) when heated in a current of oxygen, octahedral crystals are formed; (4) it dissolves promptly in a solution of sodium hypochlorite.

The *antimonial stain:* (1) Requires a much higher temperature for its volatilization, and (2) the escaping gas has not the odor of garlic; (3) when heated in a current of oxygen, an amorphous powder is formed; (4) it is insoluble in a solution of sodium hypochlorite.

4. Chlorine gas may be made by heating together manganese dioxide and hydrochloric acid:

$$MnO_2 + 4\,HCl = MnCl_2 + 2\,H_2O + Cl_2$$

Chlorine gas is a greenish yellow gas, with a penetrating and very irritating odor; in the presence of moisture it is a bleaching agent; it combines readily with other elements, and frequently combines with the evolution of light and heat; it is a disinfectant. Its value lies in its bleaching and disinfecting properties.

5. An *acid* is a compound of an electronegative element or residue with hydrogen, part or all of which hydrogen it can part with in exchange for an electropositive element, without the formation of a base.

A *base* is a ternary compound which is capable of entering into double decomposition with an acid, to form a salt and water.

$$2\,NaCl + H_2SO_4 = Na_2SO_4 + 2\,HCl$$

6. A *normal salt* is one in which all the replaceable hydrogen of the acid has been replaced.

A *basic salt* is a compound made up of a normal salt and the hydroxide or oxide of a metal.

An *acid salt* is one in which only a part of the replaceable hydrogen of the acid has been replaced.

7. *Iodine* is a bluish-gray solid, in crystalline scales, with a metallic luster; it is volatile, and has a peculiar odor; it is very slightly soluble in water.

Free iodine colors starch paste a dark violet-blue.

8. *Chloral hydrate* is prepared by mixing together equivalent parts of chloral and water.

It is a colorless, transparent, crystalline solid, with a penetrating and aromatic odor, and a caustic taste; it slowly volatilizes when exposed to the air, and is freely soluble.

9. *Salicylic acid* is obtained synthetically from phenol; it exists naturally, in combination, in oil of wintergreen.

10. Solution of neutral ferric chloride gives a blue color with morphine.

HISTOLOGY.

1. *The Membranes of the Brain.*—"The *Dura* is a tough membrane composed of interlacing bundles of white fibrous and yellow elastic tissues that contain lymph spaces between them. Within the skull, it forms the inner periosteum of the cranium, which relation ceases at the foramen magnum, the entrance into the vertebral canal. This membrane is lined by endothelial cells, and forms the outer boundary of the subdural lymph space. It is quite vascular, and a few nerves, that pass to the blood spaces are found. The *Arachnoid* is a thin, delicate, weblike membrane composed of loosely interwoven bundles of white fibrous tissue. It lies closely applied to the dura, and is separated from the pia by the subarachnoidean lymph space. This is also lined by endothelial cells. It forms the Pacchionian bodies and villi, but contains neither blood vessels nor nerves. The *Pia* is the vascular membrane. Its outer portion contains the bulk of the vessels, while the inner enters into close relation with the nerve tissue. Its blood vessels lie in the fibro-elastic network, surrounded by perivascular lymphatics. Its arachnoidean surface is covered by endothelial cells. Only a few nerve fibers are present. The pia is the only one of these membranes that follows the fissures and depressions of the nerve system."—(Radasch's *Histology.*)

2. "The *skin* is composed of two parts, the epidermis and cutis vera. The *Epidermis* consists of stratified squamous epithelium, the cutis vera of fibrous tissue. Processes of these interdigitate. The deeper layers of the epidermis are soft, and constitute the rete mucosum.

or stratum Malpighii. The cells of the deepest layer are columnar in shape, and in dark races they contain pigment. In the layers above the cells become polygonal or rounded. Narrow clefts between the cells are bridged by fine protoplasmic processes (prickle cells). The superficial layers are horny. In the layers of cells (stratum granulosum) next the stratum Malpighii granules of a substance called "eleidin" accumulate. In the layers superficial to this (stratum lucidum) the cells contain large droplets of a similar substance (kerato-hyalin), which tend to run together and obscure the characters of the cells and render their outline indistinct, giving the layers a clear appearance. The surface layers take the form of long, thin, flat cells, whose nuclei have been obscured by kerato-hyalin. These constitute the stratum corneum. Cells of the surface layer are always being lost, and are replenished from the cells of the deeper layers. The young cells formed in the deep layers push the older cells toward the surface, and as they pass outward the cells begin to accumulate granules, and then become transformed to the type found in the stratum corneum. The *Cutis Vera* is composed of dense fibrous tissue, which rises up into papillæ, indenting the epithelium. In the deeper part the fibrous tissue becomes looser, and merges indefinitely into the reticular tissue of the subcutaneous layer. In the papillæ are loops of capillary vessels, and in the palm and sole there are tactile corpuscles. Bloodvessels form a capillary network near the surface of the true skin, and send up loops into the papillæ and supply branches to the hairs, sweat glands, etc.; but vessels do not pass into the epidermis. Nerves pass into the Malpighian layer, and some of the varicose branches form flattened menisci between the layer of cells. Medullated nerves end in touch-corpuscles in the fibrous papillæ."—(*Aids to Histology.*)

3. *Peyer's patches* are aggregations of solitary glands, measuring from about half an inch to three inches in length; they are found mainly in the ileum, but also occur in the duodenum, and jejunum; they are situated lengthwise in the intestine, and are located opposite to the mesenteric attachment. Each patch is surrounded by a group of the crypts of Lieberkühn. There are said to be from 30 to 50 of these patches in the human intestine. As a rule, they have no villi on their surface.

4. The thyroid gland "is surrounded by a capsule that sends in trabeculæ, which divide the gland into lobes and lobules. These divisions are irregular, and the lobules are composed of a number of short tubules, sometimes called follicles. Each tubule is lined by cuboidal epithelial cells that rest upon a basement membrane; outside of this is the intralobular, or intertubular, connective tissue that supports the blood-vessels. In the tubules is seen a peculiar, homogeneous substance, the colloid substance, that is supposedly the result of the activity of the cells. It has a yellowish color, and as blood cells are frequently seen in it, the color may be due to the hemoglobin from these."—(Radasch's *Compend of Histology.*)

5. "The chief difference between the pyloric and cardiac regions of the stomach is found in the mucosa. (1) The crypts in the cardiac end are shallow, while in the pyloric end the crypts frequently extend half way through the thickness of the mucosa. (2) The gastric glands are longer than the crypts in the cardiac end; toward the pyloric end the glands become shorter, tortuous, and pressed closely against the muscularis mucosa. Many of the pyloric glands are branched. (3) The parietal cells are numerous in the cardiac region and practically absent in the pyloric. The pyloric mucosa, in this way, comes to resemble that of the small intestine. In addition, an occasional villus or Brunner's gland may be found in the pyloric end."—(Hill's *Histology.*)

6. *Development of Bone.*—"The development of bone is either intramembranous or endochondral. In the latter a cartilage stage intervenes, otherwise the history in each case is the same. A synopsis of endochondral development is as follows: (1) A solid shaft of hyaline cartilage, non-vascular and without any marrow cavity. (2) In the center of this shaft the cartilage cells enlarge, their lacunæ enlarge and coalesce, particularly along lines extending toward the ends of the bone. The rosette produced by this excavation is called the primary areola of Sharpey. (3) Lime salts are deposited in the thin walls of these spaces, making calcified cartilage. (4) Osteogenetic cells and blood vessels from the periosteum enter the cartilage spaces. The cartilage cells disappear with this invasion and the excavation, begun by the cartilage cells, is further enlarged by the bone cells. The excavated areas are now called the secondary areolæ of Sharpey, the cavities having a rich blood supply quite in contrast with the primary areolæ. The marrow cavity is excavated and the shaft becomes longitudinally porous. Endochondral bone, therefore, develops *in* cartilage, not *from* cartilage. (5) Osteogenetic cells attach themselves to the wall of these enlarged Haversian canals and become enclosed in lime deposits, forming thus the outer lamellæ and outer row of bone cells of each Haversian system. Cells with lamellæ are added centripetally to this outer row and thus ultimately complete the Haversian system, leaving a small central canal containing vessels and a nerve. Ossification begins in the center of the cartilage shaft and proceeds gradually toward each end, so that all the above changes occur at one and the same time. After birth these changes go on at the ends of the bone, so long as it keeps growing. During this period the bone is made thicker by deposits from the periosteum forming the circumferential lamellæ of bony shafts. These lamellæ are added without the intervention of a cartilage stage and therefore represent intramembranous development."—(Hill's *Histology.*)

7. A cross section of the spinal cord at the tenth dorsal vertebra will show that the outline of the cord is almost circular, with the transverse diameter a little larger than the antero-posterior; the posterior median cleft extends beyond the center of the cord; the gray matter is in considerable quantity, both horns being somewhat thick and approaching the type of the lumbar cord; there is little or none of the formatio reticularis; there is no posterior paramedian groove or septum; and the central canal is nearer to the anterior than to the posterior surface of the cord.

8. Arteries and veins resemble each other, generally, in structure; they both have three coats, with the same general arrangement, but in the veins the walls are thinner in proportion to the size of the lumen of the vessel. Further, in the veins the internal coat has less elastic tissue and the endothelium cells are shorter; the middle coat has less muscle and elastic tissue and more fibrous tissue; many of the veins are provided with valves.

9. *Lymph glands* are small, bean-shaped organs, from a few millimeters to several centimeters in size. Each is surrounded by a capsule, and composed of cortex, medulla, and hilus. The capsule consists of white fibrous tissue and contains some yellow elastic and smooth muscle tissues; beneath is a lymph space exhibiting a network of reticulum and called the sinus. From the inner surface of the capsule, trabeculæ are sent into the cortex, and these divide the latter into a number of masses called secondary nodules. The lymph space continues along the trabeculæ. The cortex contains the secondary nodules and trabeculæ. The former consist of dense lymphoid tissue, and contain a germinal center. The cells are chiefly lymphocytes, which are arranged in concentric layers around the periphery. Other cells of the hyaline variety are found in the central portion. The nodules continue into the center of the node as the medullary cords. The trabeculæ separate the nodules from one another, and pass into the medulla surrounded by the lymph space. The medulla consists of the medullary cords and trabeculæ. The cords are the band-like continuations of the secondary follicles, and are separated from the trabeculæ by the lymph spaces that accompany the latter. They consist of dense lymphoid tissue, supported by reticulum. At the hilus, the medulla comes to the surface. The hilus is a scar-like depression at one side, where the vessels enter and leave. At this place, the secondary nodules are wanting, and the medulla comes to the surface."—(Radasch's *Histology.*)

BACTERIOLOGY.

1. "The *Wassermann reaction* for the diagnosis of syphilis.—If the inactivated serum from a suspected luetic is mixed with organ extract (luetic liver or guinea pig heart macerated, extracted with alcohol and inactivated) and complement (fresh guinea pig serum) added, the complement is bound if the antigen finds an homologous antibody in the serum, that is, if the serum is genuinely syphilitic. To determine whether this anchoring of the complement has taken place, the mixture, after standing for a time, is brought in contact with another mixture (of washed sheep's corpuscles and inactivated specific hemolytic serum obtained

by injecting a rabbit with sheep corpuscles), which consists of red corpuscles and their specific amboceptor. Should the complement in the first mixture not be anchored, the "hemolytic system" will be complete and hemolysis will occur. The reaction is a complicated one, and it is necessary to control it carefully. A common source of error has been the use of too large a quantity of organ extract, which has the effect of bringing about an anchoring of the complement even in the absence of the specific antibody in the serum. Noguchi has devised a modification of the Wassermann method which is simple and exceedingly delicate."—(Jordan's *Bacteriology.*)

2. *Alexins* are defensive bodies which exist normally in the blood serum.

Agglutinin is something in the blood serum of an animal affected with a bacterial disease which is capable of causing the clumping of the bacteria which cause the disease.

Precipitin is a substance in the immune blood serum which causes precipitation of an albuminous body which has been injected into the body.

3. *Diapedesis* is the passage of the blood or the red corpuscles through the unruptured walls of the blood vessels.

Phagocytsis is the faculty of certain cells (notably the mononuclear and polynuclear leucocytes) to take up and destroy bacteria. Hence it is a protective process, and has been claimed to be an essential process in immunity.

4. *Staphylococcus* is stained with aqueous solutions of the anilin dyes, and also by Gram's method.

Streptococcus is stained with aqueous solutions of the anilin dyes, and also by Gram's method.

Negri bodies are stained by methyelene blue and eosin, also by Giemsa's method.

5. The diphtheria bacillus grows readily upon all the ordinary media, and is very easy to obtain in pure culture, plates not being necessary. Material from the infected throat can be taken with a swab or platinum loop and spread upon the surface of several successive tubes of Loeffler's blood serum media (which consists of three parts of blood serum with one part of ordinary bouillon to which has been added one per cent. of glucose).

6. *Toxins* are poisonous products of bacteria or of ptomaines or leucomaines.

Endotoxins are toxins which are not secreted into the culture medium by the bacteria, but are rather attached to the bodies of the bacteria.

Autotoxins are toxins which originate within the body upon which they act.

7. The *pneumococcus* (cf Friedlander) is an encapsulated bacillus of variable length, non-motile, non-flagellated, aerobic and optionally anaerobic, non-liquefying, and pathogenic; it stains with the ordinary anilin dyes, but does not retain the color when stained by Gram's method. Its form is so variable that it has been described by different writers as a coccus or a bacterium.

The *parasite of tertian malarial fever* is about one and a half times the diameter of a red corpuscle, and is mulberry shaped; by the process of segmentation, from 12 to 24 young parasites are formed; the male gametocyte is smaller than the female gametocyte; there are no crescents.

8. The *Widal test for typhoid fever* "depends upon the fact that serum from the blood of one ill with typhoid fever, mixed with a recent culture, will cause the typhoid bacilli to lose their motility and gather in groups, the whole called 'clumping.' Three drops of blood are taken from the well-washed aseptic finger tip or lobe of the ear, and each lies by itself on a sterile slide, passed through a flame and cooled just before use; this slide may be wrapped in cotton and transported for examination at the laboratory. Here one drop is mixed with a large drop of sterile water to redissolve it. A drop from the summit of this is then mixed with six drops of fresh broth culture of the bacillus (not over twenty-four hours old) on a sterile slide. From this a small drop of mingled culture and blood is placed in the middle of a sterile coverglass, and this is inverted over a sterile hollow-ground slide and examined. . . .A positive reaction is obtained when all the bacilli present gather in one or two masses or clumps, and cease their rapid movement inside of twenty minutes." (From Thayer's *Pathology.*)

Von Pirquet's method of cutaneous diagnosis of tuberculosis.—"Two small drops of old tuberculin are placed on the skin of the front of the forearm, about 2 inches apart, and the skin is slightly scarified, first at a point midway between them, and then through each of the drops. A convenient scarifier is a piece of heavy platinum wire, the end of which is hammered to a chisel edge. This is held at right angles to the skin, and rotated six to twelve times with just sufficient pressure to remove the epidermis without drawing blood. In about ten minutes the excess of tuberculin is gently wiped away with cotton. No bandage is necessary. A positive reaction is shown by the appearance in twenty-four to forty-eight hours of a papule with red areola, which contrasts markedly with the small red spot left by the control scarification."—(Todd's *Clinical Diagnosis.*)

9. The *Staphylococcus pyogenes aureus* and the *Streptococcus pyogenes* are the pus-producing organisms which cause the greatest mortality. The *Staphylococcus pyogenes aureus* may be found in boils, carbuncles, abscesses, endocarditis, various skin lesions, diseases of lungs, spleen, and kidneys, osteomyelitis. The *Streptococcus pyogenes* may be found in erysipelas, endocarditis, meningitis, periostitis, otitis, emphysema, pneumonia, lymphangitis, sepsis, puerperal endometritis, scarlet fever.

10. *Flagellated bacteria* are bacteria which have flagella or long filaments or hair-like structures, which are undulating and may cause the motility of the bacteria to which they are attached. *Flagellated pathogenic organisms: Bacillus pyocyaneus, Bacillus tetani, Spirillum choleræ Asiaticæ, Bacillus typhosus, Bacillus coli communis, Bacillus enteritidis, Bacillus dysenteriæ, Bacillus icteroides, Bacillus œdematis maligni, Bacillus anthracis symptomatici.*

OBSTETRICS.

1. *Puerperal septicemia* is septic intoxication with the presence of living pyogenic bacteria in the blood occurring during the puerperium. *Symptoms:* Chill; rapid rise in temperature, to about 103° or 104°, higher in the evening than in the morning; sweats; rapid pulse; depression; dry tongue; anorexia; carphologia; scanty, high-colored, albuminous urine; restlessness; sometimes delirium or coma. The uterus is large, and tender; the lochia are diminished or suppressed; the milk secretion is often suppressed; pain in the abdomen; peritonitis may develop. *Treatment:* Prophylaxis is of the greatest importance. Purgatives; vaginal douches; some recommend curettage, others decry it; the introduction of antiseptics into the uterus; supportive and general treatment are indicated; specific sera and vaccines have been recommended by some.

2. The uterus is supplied by the uterine and ovarian arteries; the veins correspond to the arteries.

3. *Changes that take place in the circulatory apparatus at birth:* The hypogastric arteries dwindle and become impervious; the Eustachian valve atrophies; the foramen ovale closes; the ductus arteriosus and ductus venosus become obliterated; the umbilical vein becomes obliterated and is afterward known as the round ligament of the liver.

4. *Pregnancy:* The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroma: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

5. *Indications for the use of forceps* are: (1) *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. (2) *Passages at fault:* Moderate narrowing, 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. (3) *Passenger at fault:* A. Dystocia due to (*a*) occipito-posterior, (*b*) mento-anterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). (4) *Accidental complications:* Hemorrhage; prolapsed funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both (Jewett). *Conditions necessary for the use of forceps* are: (1) The rectum and bladder must be

empty; (2) the os uteri must be fully dilated; (3) the membranes must be ruptured; (4) the pelvis must be of sufficient size.

Cesarean section (conservative). "*Indications:* The cases in which it is performed are: (1) Extreme deformity of the pelvis, in which delivery by forceps and version is excluded, and in which craniotomy is either impossible or would be more dangerous to the mother than cutting into the abdomen and uterus; and in which there is not room for a successful symphyseotomy. Such cases present the '*positive*' indication for cesarean section; there is nothing else to be done. Flat pelves having a conjugata vera of 2¼ inches or less, and justo-minor pelves with a conjugata vera of 2½ inches or less, present this positive indication; (2) cases of more moderate pelvic contraction in which craniotomy is possible, but cesarean section is agreed upon to *save the life of the child;* (3) mechanical obstruction in the pelvis from fibroid, cancerous, bony, or other tumors which cannot be pushed up out of the way or be safely removed; (4) irreducible impaction of a *living* child in transverse presentations; (5) in women dying near the end of pregnancy the child, if alive, is rapidly delivered by *post-mortem* cesarean section; (6) various other obstructions from inflammatory adhesions, atresia, constrictions, etc., of the vagina, and uterine displacements, may rarely require the operation; (7) recently the operation has been done in eclampsia cases, where more conservative methods of rapid delivery were impracticable; and (8) in placenta prævia, chiefly with a view to lessen the infant mortality attending the usual treatment of this complication."—King's *Obstetrics.*)

6. By the *hygiene of pregnancy* is meant the care which should be observed by the pregnant woman for the preservation of health and strength both of herself and of the fetus. The pregnant woman should take moderate exercise in the open air; in the last month massage may take the place of exercise. Daily bathing in tepid water, care of the teeth, regularity of the bowels, ample sleep in a well-ventilated room, plenty (but not too much) of simple, nourishing and easily digested food, at regular hours, clothing not too tight, especially about the abdomen and breasts; attention to the nipples, regular examination of the urine, and the restriction of marital relations are the main points to which advice should be directed.

7. Three diseases to which pregnancy may predispose: Pernicious vomiting, eclampsia, varicose veins. *Symptoms of eclampsia:* Headache, nausea, and vomiting, epigastric pain, vertigo, ringing in the ears, flashes of light or darkness, double vision, blindness, deafness, mental disturbance, defective memory, somnolence; symptoms easily explained by the circulation of toxic blood through the nerve centers. These may be preceded by lassitude, and accompanied by constipation, or by diarrhea. Headache is perhaps the most significant and common warning symptom. In bad cases the urine is reduced in quantity (almost suppressed), very dark in color, its albumin greatly increased, so that it becomes solid on boiling. Next comes the final catastrophe of convulsions. The convulsive fit begins with twitching of the facial muscles, rolling and fixation of the eyeballs, puckering of the lips, fixation of the jaws, protrusion of the tongue, etc., soon followed by violent spasms of the muscles of the trunk and limbs, including those of respiration; hence lividity of the face and stertorous breathing, biting of the tongue, opisthotonus, etc. The fit lasts fifteen or twenty seconds, ending in partial or complete coma, possibly death; or consciousness may return, to be followed by other convulsions.—(King.)

8. Conditions that justify the induction of premature labor: (1) Certain pelvic deformities; (2) placenta prævia; (3) pernicious anemia; (4) toxemia of pregnancy; (5) habitual death of a fetus toward the end of pregnancy; (6) hydatiform mole; (7) habitually large fetal head.

Method of performing premature labor: "Catheterization of the uterus: The first step consists in separation of the membranes from the lower uterine segment by means of a uterine sound or with the finger. The operation must be aseptic. Detachment of the membranes with the sound may be done with the woman in either the left lateral or dorsal recumbent position. For the use of the hand the dorsal position is best. The second step consists in the insertion of one or more No. 12 English bougies, or a sterile rectal tube, between the membranes and the uterus. No anesthetic is required. Usually the bougie or rectal tube is most readily passed with the aid of the Sims position, the Sims speculum exposing the cervix, which is drawn forward and held with a volsella. The bougie is sterilized by boiling or steaming, the proximal end is cut off, and a stylet inserted. To facilitate introduction the bougie is bent to nearly a right angle at about three inches from the distal end, giving it a large curve. Great care must be used to avoid rupturing the membranes. The instrument is then pushed up gently and in the direction in which it passes most easily. After it has entered between the membranes and the uterine wall, the stylet is drawn down about one inch. The flexible tip of the bougie finds its way readily with little risk of perforating the membranes. The bougie fully in place, the stylet is withdrawn. A second bougie may be inserted if it can be pushed into place without too much difficulty. Bleeding is probable evidence that the instrument has passed behind the placenta. The hemorrhage may occasionally be excessive. It is then best to withdraw the instrument and pass it in another direction. A light tampon of gauze may be packed in the vagina, but it is not required to support the bougie. The instrument is left to be expelled with the child. Labor usually is established within twenty-four hours. This method is not suited to cases in which immediate delivery is called for."—(Polak's *Obstetrics.*)

9. Ophthalmia neonatorum. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth. *Treatment:* Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

10. *Abortion* is expulsion or delivery of the fetus before it is viable, that is up to about the twenty-eighth week. *Premature labor* is expulsion or delivery of the fetus between the twenty-eighth week and term.

GYNECOLOGY.

1. A complete gynecological examination would include (1) anamnesis, including family history; personal history, with special reference to menstruation, labors, and miscarriages, and present illness. (2) Examination of the abdomen (and breasts), including inspection, palpation, percussion, auscultation, and mensuration. (3) Inspection of the external genitals. (4) Vaginal examination, digital, bimanual, and with speculum. (5) Bimanual examination of uterus and appendages. (6) Sometimes the sound, or curette, may be required. (7) Chemical and microscopical examination of the urine. (8) Microscopical examination of discharges or uterine scrapings. (9) Rectal examination. (10) Cystoscopic examination and perhaps ureteral catheterization. (11) In case of phantom tumor or pseudocyesis, anesthetization would be required.

2. *Pfannenstiel's incision* avoids a median incision, the transverse scar is partly hidden by the pubic hair, hernia is said to be less liable to follow. The disadvantage is that it is only available for *limited* operations on the tubes, ovaries, uterus, bladder, and pelvic cavity.

Metrorrhagia: *Causes:* Salpingitis, ovaritis, ovarian tumors, endometritis, endocervicitis, metritis; fibroids, sarcoma, carcinoma or polyps of uterus; prolapsed, retroflexed, or retroverted uterus; subinvolution; and general diseases (such as scorbutus, purpura, hemophilia, acute fevers, nephritis, hepatic cirrhosis).

3. *Perineorrhapy:* "The labia are seized with Allis' forceps at the level of the lowest carunculæ myrtiformes. A guide stitch is placed in the posterior vaginal wall directly under the external urinary meatus. By pulling one Allis forceps and the guide stitch in opposite directions outward and downward, the posterior sulcus is exposed; denudation is required, even in a recent tear, for a part of it is always submucous. The other sulcus is exposed and denuded. Then by holding the guide stitch upward in the middle line and pulling the forceps apart the mucous membrane between the sulci is denuded or freshly torn surfaces covered with granulation-tissue are scraped with the edge of a knife. The ruptured levator ani muscle in the posterior sulci is united with a double tier suture of chromic gut, two half hitches being taken in the stitch as it turns upward after coming down from the

apex of the wound, in its deeper portion to the base. One knot at the apex of the sulcal denudation secures the stitch. The retracted ends of the transversus perinei and bulbocavernosus muscles are brought together by silk-worm sutures. Finally, a single stitch at the top of the perineal wound unites the posterior commissure of the vulva, restoring the fossa navicularis. The perineal stitches are knotted; they are removed on the twelfth day."—(Hirst's *Obstetrics.*)

4. *Vaginal examination of a virgin* should not be undertaken unless absolutely necessary, an anesthetic should be employed if possible, and only one finger should be used.

5. Ectopic gestation, and ovarian cyst, with twisted pedicle.

6. *Ventrofixation and ventrosuspension:* Hermann (*Students' Handbook of Gynecology*) states objections to this operation as follows: "(1) Its risk. Oversights will occur in the practice even of the most careful; but the risk is very small. (2) Adhesions within the peritoneum are sometimes absorbed. They are absorbed often enough to make stitching of peritoneum to peritoneum unsatisfactory. After abdominal section ventral hernia may first develop after the scar has held firm for twelve years; and possibly the new attachment of the uterus may also, after many years, give way. (3) The operation lifts up the uterus. If the vulval orifice is very large there may still be a protrusion of the vaginal mucous membrane. It is well, therefore, to precede ventral fixation in women past child bearing by posterior colporrhapy. (4) It is said to cause difficulty in labor, should the patient become pregnant. It does not always do so; and in many cases reported as illustrating such difficulty, the ventral fixation was not the cause of the difficulty. Ventral fixation after colporrhaphy, if the result be permanent, relieves the patient of any necessity for the continual readjustment of a pessary, and lifts the uterus up effectually. Ventral fixation is not advised in cases in which the womb can be comfortably kept up by a pessary."

7. "The *indications for oophorectomy* are chiefly infections of the ovaries; inflammations and their consequences; certain rare and otherwise incurable cases of dysmenorrhea; certain otherwise incurable cases of ovarian pain, independent of the periods, and making the patient an incurable invalid; clear cases of menstrual epilepsy; menstrual insanity, when the attacks occur only during the menstrual week, the patient being free from them during the interval; osteomalacia; and bleeding uterine fibromata, of small size, where the patient declines hysterectomy and other means fail."—(Reed's *Gynecology.*)

8. The perineum should be repaired; and colporrhapy (anterior and posterior) be done for the cystocele and rectocele; ventrosuspension or ventrofixation may be done for the procidentia, though this last procedure is not as imperative in the case of a woman of 50 years of age as it would be in a much younger woman.

9. *Contraindications to uterine curettage:* The least suspicion of even the possibility of pregnancy; menstruation; acute endometritis; malignant disease of the uterus or vagina; acute pelvic inflammation.

10. If there is nothing the matter with the appendix, there can be no necessity for its removal; but some surgeons believe that in case of any abdominal operation it is well to remove the appendix *in order that it may not cause trouble later on.* It may be well, before an abdominal operation, to consult the wishes of the patient as to the removal of a healthy organ.

(*To be concluded.*)

On the Occurrence of Tubercle Bacilli in the Blood of Patients with Pulmonary Tuberculosis. — Lawrason Brown, F. H. Heise, and S. A. Petroff investigated this subject in 84 patients. The blood of the latter was inoculated into guinea pigs and positive results were obtained only in three cases (3.5 per cent.). Two of these cases were far advanced and one was moderately advanced but not active and had not reacted to large doses of tuberculin. Of 63 cases that had not received any tuberculin two (3.17 per cent.) gave a positive result. Of 21 cases that had received one milligram or more of tuberculin, one (4.8 per cent.) gave a positive result. The conclusion is drawn that tubercle bacilli are not often found in the blood of patients with pulmonary tuberculosis. Tuberculin even in large doses has no influence in causing the passage of tubercle bacilli into the blood stream. *Zeitschrift für Tuberkulose.*

Miscellany.

Diphtheria Morbidity.—The Weekly Bulletin of the New York City Department of Health recently announced the results of a conference held at the department to discuss more effective control of the infectious diseases of childhood. It was generally agreed that the prevalence of diphtheria was now as great, as, or even greater than, it was years ago, although the mortality from the disease has been greatly reduced; that is, although the efforts of the health authorities in providing facilities for early diagnosis and making antitoxin treatment available, have produced a marked decrease in the number of deaths, they have had no influence on the number of cases occurring. This is due to the large number of "carriers" of diphtheria bacilli. The work thus far done in active immunization with toxin-antitoxin mixtures has been very encouraging, and the suggestion was made that this be introduced as a regular procedure in the control of diphtheria. Passive immunization will, of course, be continued as a preventive of the direct infection of susceptible individuals in a family where a case of diphtheria has occurred, but this form of immunization is of short duration, and where a more lasting protection is desired active immunization should be employed. Investigations at the Willard Parker Hospital have shown that the department's present procedure of permitting the termination of a case of diphtheria after two negative cultures have been obtained is open to criticism, since a third culture after two negative ones has shown bacilli in about 20 per cent. of the cases. It was suggested, therefore, that all cases of diphtheria be held for at least ten days and then discharged only after two negative cultures have been obtained, and that unless repeated cultures are made from the throats of other members of the family they should be quarantined for from ten to twelve days. The establishment of such a period will in itself offer some security as to the absence of diphtheria in a fair proportion of cases.

An Efficient Disinfectant.—Albert F. Stevenson, sanitary chemist, hygienic laboratory, U. S. Public Health Service, recommends the following as an efficient disinfectant for household or public use: Pine oil 1,000 (35.3 ounces by weight); rosin, 400 (14.2 ounces); 25 per cent. solution of sodium hydroxide, 200 (7.1 ounces). This will make approximately 1,500 c.c. or 1.6 quarts of disinfectant. The pine oil and rosin are heated together in a covered enameled ware pail until the rosin is all dissolved. The mixture is cooled to 80° C., the sodium hydroxide solution added, and the liquid violently stirred or beaten for at least 10 minutes with a rotary egg beater. Sufficient water is added to make mixture to the original weight. The preparation is then cooled quickly by placing the pail in cold water. It is stored in glass or metal containers till used. This disinfectant may be used wherever the ordinary coal-tar compounds are used. It has a much more pleasing odor than the coal-tar compounds, and can be used where these products, on account of their odor, are not practical. It will not attack fabrics or metals and is recommended for the disinfection of all articles used in the care of contagious diseases. It has not a displeasing taste, and has been used with success as an antiseptic throat spray and tooth and mouth wash. It can be used in any dilution up to 1:500. It has a hygienic laboratory phenol coefficient of between 4 and 6.—*Public Health Reports.*

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RADIUM.

ITS PHYSIOCHEMICAL PROPERTIES CONSIDERED WITH RELATION TO HIGH BLOOD PRESSURE.*

BY C. EVERETT FIELD, M.D.,

NEW YORK.

THE onward march of arteriosclerosis has never been offset to any material extent by the few flank dietetic attacks made against it. High blood pressure to-day, more than ever bfore, is engaging the attention of the medical profession, with no small degree of anxiety. After the early prime of life, say forty-five years, cardiovascular degeneration directly or indirectly causes, by long odds, the largest quota of deaths. Furthermore, each decade during the past fifty years shows this condition enormously increasing. These morbid processes are, to a greater and greater degree, becoming prevalent among men and women of position and influence, until we are face to face with a most vital problem. The far-reaching results of hypertension, as witnessed by the diagnostician and clinician, are now being coped with by our great life insurance bodies and even the general public is recognizing in no small way the seriousness of this evil that makes its appearance so insidiously. We all too frequently meet a well-advanced degenerative change in the cardiovascular system of men who have never known a day of illness, and to the eye are as pictures of health.

Hypertension[1] in periods long or short, precedes degenerative processes and at times gives little warning, owing to the promptness with which some form of compensation takes place. We may also conclude that hypertension from any cause cannot persist for any considerable period, without developing organic changes in the heart, kidney, and general vascular system. The importance of recognizing more clearly the underlying features of etiology upon which to build rational treatment is magnified as we review the great and increasing army of the subjects of arteriosclerosis, myocardial degeneration, and nephritis that are ever passing. That we can, by diet and hygiene, relieve or delay the inevitable does not suffice, for it remains that daily in the United States alone, we have a death rate of some 2500 traceable to cardiovascular degenerative processes, kidney lesions, etc. All too commonly do we see in evidence, as stated by Dr. Fisk[2] of the Life Extension Institute, "The human clock breaking down instead of running down."

In a paper of this type we cannot devote much space to general etiology, except to refer to those predisposing and direct causes, such as overwork, loss of sleep, nerve strain, faulty digestion, and toxic principles. Romberg is quoted as saying, "Everyone acquires his arteriosclerosis within the circuit which he has taxed most." Metabolism is the copestone of hypertension. Finding all channels leading to the exhibition of toxic influence, we naturally cast our hope for a lifting of the veil to the biochemist. We have gained considerable knowledge as relates to the body chemistry of this subject by our study of diet.[3] We are familiar with the toxins developed by the ingestion of certain foods; yet Klemperer tells us "Although an excess of animal protein in the diet is believed to be one cause of high blood pressure there is really no proof that a meat diet can cause arteriosclerosis." Fundamentally, all such data revert to the fact that the metabolic processes causing hypertensions are solely disturbed fermentation and due to toxic principles.

Our present understanding of high blood pressure is being met in treatment methods of the dingy past. Measures of prophylactic, symptomatic, and curative treatment are practised. Under prophylaxis we arrange a non-nitrogenous diet of limited amount, provide baths, massage, administer the high-frequency current, change the habits of the patient, etc. Our symptomatic treatment, usually, in the dangerous case consists of bleeding. We advise calomel or oil, as a brisk purge by direct removal of the fluids reduces tension; also toxemia is lessened. When there is decomposition of food products *Bacillus bulgaricus* produces results. In like manner we have the nitrites and digitalis broadly used; but of these Le Fevre has cautioned: "In the treatment of cardiac and renal diseases the greatest danger next to the abuse of digitalis is the unjustifiable administration of the nitrites." This warning is given because of the fact that the latter is transient in effect and at times increases the irritability of the cardiovascular system. With curative treatment largely limited to a few cases of gout, syphilis, and alcoholism, we must seek further if we hope to evolve curative measures for the greater group, probably 90 per cent., where the underlying causes are metabolic. In other words, we must still depend upon suitable diet or find some other means that shall serve to *normalize* those body ferments to the point where a more liberal diet can be encouraged. As history records to-day, the great majority of high blood pressure cases run their course—sooner or later compensation is called in,[4] the hypertrophied heart will become insufficient and we have a train of symptoms such as dyspnea, precordial distress, edema, and death if cerebral rupture does not more hastily break in on the program.

Recognizing, then, fully the status of the body ferments, and the fact that each acts in harmony with constituents of its own substance, we can

*Read by invitation before the Washington Heights Medical Society, at New York, November 23, 1915.

readily see how complex must be a study of the multitude of ferments which in the body combine to build up all that is vital and consume that which is waste. Administering drugs with the hope of influencing metabolism, we can appreciate, utterly fails because of the fact that what might activate one ferment would at the same time throw out of balance another. The biochemist is bringing to us great truths that are resulting in revolutionary advances in medicine, and the application of physical chemistry is the theme of the moment. Dr. Sailer[5] of Philadelphia, a few days since, said: "The fundamental element in physics, in chemistry, possibly in the universe, was the atom, and until a clear idea of the structure of the atom was had, much progress in the solution of the problems under consideration could not be made." The close interrelation of ionization and collodial states is vital in our study of every phase of the high blood pressure subject. The phenomena of ionization as evidenced in many of the normal ferment processes may be illustrated in its importance by a definition: "The modification of a substance by which it acquires electrical charges is termed ionization; for instance, common salt and sugar in water, designated formerly as a solution. We now know that the activity of the salt is materially increased while the sugar suffers no change—the sodium atoms acquiring a positive electrical charge and the chlorine atoms a negative charge." The above thought by Leffman[6] is here introduced with the hope of paralleling the action of radioactivity in activating chemical processes, and at the same time to give appreciation of his work.

According to von Noorden,[7] radioactive elements exert forces which, in accord with the definite laws of physics, markedly influence biologic processes. Furthermore, the chemicophysical properties of radium may be traced in the human body even in the minutest doses. Metabolism, while classed as a body chemistry, is in itself dependent to no small extent on physics. In the laboratory radium readily activates and intensifies fermentative and digestive processes; within the body, it stimulates even more actively the numerous ferments. The efficiency of radium in catalysis and autolysis[8] will be better understood if in a moment we review a few of the commonly well-known facts as regards this element.

Radioactive substances present three distinct products of disintegration which we term rays. Alpha rays are positively charged helium atoms and constitute 90 per cent. of the energy of radium. Beta rays, also electrons, in turn are negatively charged particles. Gamma rays are not material in nature, being classified as exceedingly short-length waves of ultra violet light. In the process of decay or transmutation, something happens within the tiny atom of radium, and much as the meteor flies from the planet, the alpha ray is spontaneously thrown off into space with a speed of over 12,000 miles per second. From this another and still another particle is born until the entire series in evolution is complete. In common with the liberation of the alpha particle, we have the formation of a gaseous substance known as emanation, which contains in itself all of the power and energy of radium. The radiations of emanation acting as carriers of enormous energy within the body develop heat and electricity and foster chemical transformation. By its use we permeate the body with a stream of electrons through the channel of the blood stream. It carries a *normalizing* activity to the tissues, fluids, protoplasma, cells, and nuclei. Therapy with radioactive substances may be designated as the administration of *fluid electricity*. This is probably the most clear description we could give of its physical force and purpose.

Abundant literature detailing the exhaustive biological and physiological research of worthy observers is at hand and can be accepted, especially that which pertains to metabolism. The careful and accurate findings of such workers as von Noorden, Gudzent, His, Deutelmoser, Klemperer, Falta, and von Neusser tend to substantiate much of the true physiological effects of emanation. The physiological manifestations of radium naturally center around its effect on metabolism and the blood. There are evidences of a selective influence as regards radium, such as the affinity that attracts it to the bone marrow, where it serves to increase markedly the red blood count. There is temporary leucocytosis. It is said to aid in keeping uric acid in a soluble form and to promote the elimination of that already deposited. Dilatation of the blood vessels follows an excitation of the vasomotor nerves; the viscosity of the blood is diminished. Digestive processes are greatly improved by activating the ferments. Diuresis is produced. Emanation exerts stimulant, tonic, and sedative influences. Following its use respiration is improved.

As we come to a deeper study of the biochemical processes we will secure knowledge which, I am constrained to believe, will be as revolutionary to some of our therapeusis as was the exploding of the time-honored atomic theory. The researches of Gudzent and Löwenthal in purin metabolism found it activated by the smallest doses of radioactive waters. Carbohydrates are mobilized and oxidized in increased quantities. Bickell and Bergell have proven the activation by emanation of peptic ferments in the stomach. Braunstein, Richet, and Deutelmoser also have reported as to the activities of glycolytic, urolytic, pancreatic, and lactic-acid ferments. Neuberg has given valuable data on autolytic fermentation. That radium increases protein metabolism indicates its use in gout and old age conditions. There remains a mass of work already reported as to metabolic activation with radium which we cannot even here mention; we, however, must let these brief references be left as indicative, and hasten on to the more recent work with radium therapy that bears directly on our subject.

To have the radium situation clearly before our minds, we must acknowledge that much of the early experimental research with radium had many of the hindrances common to the study of so rare and new an element. The theories relating to the causative features of high blood pressure are many; but for our immediate need we care not to debate now whether it is due to a hyperplasia of the suprarenal capsule or, according to the old theories of Cohnheim and Traube, to mechanical interference in the flow of the blood stream, for we may content ourselves in the belief as clinicians that faulty ferments of toxic origin are the basic factors.

From the earliest experiments to the present, lowering of high blood pressure during radium treatments has been the common report. Physiochemical processes are exact and the physiological and biological manifestations that follow must to a similar degree, be definite. Therefore it is that,

in almost 95 per cent. of the high blood pressure cases treated, certain improvements are promptly noted, precordial distress, headache, vertigo, disappear at times even with small dosage. The general energy of the heart is markedly improved, and peripheral resistance is reduced. A factor that by some has been discounted is the viscosity of the blood; yet a change in type exerts an enormous influence of the arterial system—under emanation it is rendered less viscid. The elasticity of the muscular wall of the artery relieves the heart of much unnecessary load. When the tonicity is low, increased tension results. Radium emanation improves the general muscle tone of the entire system. All these processes naturally are the outcome of the influence of radium on the various ferments that may be disordered.

I am frequently asked the question, "Just what can we hope for clinically?" Recognized early, metabolic processes may be promptly improved, with the hope of a permanent cure. We have a right to assume that the process of hypertension can be checked so as to prevent the development of a nephritis. Indeed, I feel that there is a reason to believe that Bright's disease as a symptom may be wiped out. When nephritis and cardiac lesions are advanced, the pathological processes can surely be held in check and life in a measure conserved; while at the last stake with a broken compensation we may sustain the patient by lowering tension, building up resistance, increasing somewhat the elasticity of the blood vessels, thereby lessening the danger of their rupture and materially adding to the comfort of the patient.

Administration.—Radium may be administered by means of emanation inhalation, radioactive waters for drinking, solutions of radium salts for drinking, by means of emanation baths, or by intravenous or subcutaneous administration of radium bromide or radium chloride. Wherever dosage in micrograms of radium salts is quoted it refers to *radium element.* Radium has absolutely no toxic effects, it being accepted as harmoniously by the human system as is sunlight by the plant. The classification of clinical and dosage data reported by Rowntree and Baetjer[9] is of considerable worth. Dosage in radioactive or emanation water is being used in variation of from 1000 to 1,000,000 Mache units, and the pure radium element in the form of radium chloride has been administered intravenously in dosage as high as 1000 micrograms or the equivalent of 2,700,000 Mache units in one dose without any untoward effects. With radioactive waters, von Noorden found but little results until his dosage of water approximated 20,000 Mache units daily. The usual dose of radioactive or emanation water used by the London Radium Institute[10] gives a minimum of 250,000 Mache units daily and a mamixum of 1,000,000 Mache units. Proescher[11] and Cameron have made over 2000 intravenous injections of radium chloride in doses averaging 50 micrograms, and my personal observations cover the administration of over 800 similar treatments, and I find no report of any unpleasant effects. That radium is not permanently deposited, and that it is finally eliminated from the system is well covered in a research by Seil, Viol, and Gordon,[12] who showed the character of complete elimination and its duration in the human. Most interesting research is now being done in measuring the radioactive content of the blood for weeks following treatment. The activity of radioactive waters is of short duration and consequently they are limited in their applicatiton. It is probable that no emanation can be traced two hours after taking, whereas radium solution by mouth can be traced and measured up to the sixth day. Following an intravenous injection of radium chloride it can be traced in the blood at least twelve weeks thereafter. Subcutaneous application of the radium by injection reduces its dosage effect about one-half. Some of the earliest of injections of radium element were made by Brill, Falta, Freund, Zehner, and von Noorden. The latter reported no disturbing effects and urged larger doses and deeper study.

So far as dosage is concerned in high blood pressure we are largely governed by the chronicity of the case and the involvement. Personally, I feel my best results have been shown in what we would term low dosage. Delano[13] of Boston has checked up some exceedingly important findings derived with low dosage. He has found his average does to be 4 micrograms daily. It is my usual plan to give an injection of one 25-microgram (radium chloride) ampulle (2 c.c. normal saline solution), and following with a solution of distilled water, 2 oz., containing 2 micrograms of radium chloride given by mouth as one dose three times a week. After four weeks this drinking solution is cut to two doses per week. While the results are prompt, I never accept a case for less than twelve to sixteen weeks' treatment and observation. Careful histories of the laboratory findings are always to be made. The patient may or may not be placed on diet and other rules of hygiene as may seem indicated. In private cases I would of course observe the above, in others I have preferred to watch the results without special or rigid diet. Under such a treatment we have a right to expect by far the large majority of cases of systolic pressures (running from 160 mm. to 200 mm.) to be influenced to drop from 15 mm. to 40 mm. As a rule, active symptoms such as precordial distress, vertigo, and headache disappear in many cases within a few days.

Where radium solutions per os alone are given, my dosage starts at 6 micrograms per day in three doses; this to continue for four weeks as a rule, then to follow at 6 micrograms per week for the balance of the course. This plan of treatment does not give as uniformly good results as a course inaugurated with an intravenous injection. The plan of insisting on the long time treatment was arrived at, owing to the fact that after the initial drop in pressure, or within five days, the patients generally felt so much improved that there was a tendency to discontinue treatment. It was necessary to make it clear that the early relief had nothing to do with the permanency of the effect most to be desired. In dealing with a disordered metabolism of long standing it would be unwise even to assume that radium would accomplish the impossible. Patience and real radium with or without a portion of psychology are necessary factors to the successful administration of those cases. In your mind will naturally arise the question, what of the permanency of such treatment. To this I can reply that fully three-fourths of the cases have held without further treatment for from six to twelve months. There are many of the early cases treated nearly two years ago that have suffered no material rise. Others where pressure has gone up sufficient to produce symptoms have been quickly touched up

with a two or three weeks' treatment. Some of these returned with their trouble on account of growing bold with their diet. An interesting feature in a large number of my cases has been an activation of sexual powers. Insomnia and nervous symptoms are improved and the patients invariably take on a feeling of well being.

Compensatory functions can be sustained and greatly improved at times with extremely low dosage of radium. In such cases we may observe both systolic and diastolic pressures slowly coming down in a fairly even proportion. Although I can find no record of any unfavorable action following the administration of the soluble salts of radium, I would naturally urge caution in attempting sudden reductions in compensatory high pressures. Here must come a full understanding as to the type of compensation. For the purpose of this paper I have intentionally refrained from dealing with compensatory cases and my selection has been in a measure confined to those types showing relatively a high systolic and a low diastolic pressure. In a series of 135 cases classified, the average systolic pressure was 190 and the average reduction showed at 40 mm.

The following case histories, selected from the group, although reported with limited detail, I trust will serve to illustrate everyday types with results that should be indicative. Almost all of these cases had received general treatment for a greater or lesser period and were classed as well advanced. In the entire series there were but eight cases that failed to respond and three of these were single-treatment patients. Several of the cases herein reported are one-treatment types. Such a method, without follow-up dosage, is not advised, but the final results are none the less interesting.

There is an opportunity of vast importance here waiting for the real research worker to pick up the thread and trace the terminal activities and results as they may relate to the physiochemical properties of radium in catalysis and autolysis. Beyond giving treatment to the active case, we are now called upon to give attention to those measures of prevention which will enable those advancing to the fifth and sixth decade to grow old gracefully.

Case I.—Mrs. R. H., aet. 67. Previous history one of health. Called for treatment following prolonged spell of vertigo--thought by family to be a slight stroke —pressure 220 mm. Had complained of distress around heart. No compensatory influences. Brisk cathartic followed by 50 mcgm. radium intravenously. Twenty-four hours later pressure 180 mm. Four days later back to 200 mm. A second injection of 50 mcgm. given on tenth day reduced pressure to 175 mm. Under the influence of 6 mcgm. per week in divided doses for eight weeks pressure fluctuated between 160 mm. and 170 mm. It is interesting to note that the patient's waist measurement after ten weeks had reduced seven inches.

Case II.—Mr. P. R., broker, aet. 58. Suffered from trifacial neuralgia for eighteen months. Had received all treatments including injections of alcohol in the nerve sheath. Pressure 175 mm. Limited arteriosclerosis, nervous, loss of memory, exceedingly poor digestion, excessive intestinal fermentation. Two injections five days apart of 50 mcgm. each were given. Final pressure taken four weeks after first injection showed 140 mm. Pain subsided to the point of almost entire freedom. However, during the eighteen months that have passed at times there is a slight tinge of pain that reminds him that there is still some small influence at work.

Case III.—Mrs. L. M., aet. 50. History of chronic nephritis of ten years' standing. Cardiac hypertrophy. Blood pressure 200 mm. Marked edema of lower extremities, shortness of breath. Had been on rigid diet for five years. Headaches constant. Rheumatoid pains and some arteriosclerosis. This patient was treated with radium solutions, for drinking only, on a dosage of 2 mcgm. t.i.d. for ten days, then 2 mcgm. per day for two weeks. But little influence was shown on the pressure for nearly three weeks, although the patient's breathing was much improved and the edema was less. Increased her exercise. Treatment was carried on for ten weeks longer on a dosage of 6 mcgm. weekly and then discontinued. Gradual decrease in pressure to 170 mm. Six months have elapsed and patient has had no disturbing symptoms.

Case IV.—Mrs. M., aet. 60. Pressure 180 mm. Consulted for arteriosclerosis in early stage. Characteristic symptoms. Had had operation for gall-bladder trouble. Years of gastrointestinal fermentation. Radium solution only advised. In five weeks took 102 mcgm. of radium chloride. Discontinued on account of marked general improvement in vitality. Digestive processes improved.

Case V.—Mr. T. S., literary man, aet. 67. Pressure 165 mm. Evidence of early arteriosclerosis, insomnia, precordial distress, with evidences of cardiac load; exhaustion on slight effort. On request was placed on radioactive waters in dosage of about 15,000 Mache units daily. After three weeks reported with great improvement. Complexion clear, eyes bright, ready for exercise and remarked that he did not know he had a heart. Pressure reduction about 15 mm.

Case VI.—Mrs. E. B., aet. 61.—Had suffered from neurasthenia more or less for eight years. Had been treated for "nervous heart." Commonly complained of much gas formation after eating. Pressure 170 mm. Pulse 90. Heart slightly hypertrophied. Complained of smothering sensation over heart. Rheumatic tendency with a borderline on gout. Intravenous treatment could not be given. Under administration of 28 mcgm. per week in form of drinking solution most of the troublesome symptoms disappeared, but up to the fifth week, when all treatment was discontinued, there was practically no change in the blood pressure.

Case VII.—Mrs. E., aet. 67. Rheumatoid arthritis. Case of advanced stage. Pressure of 175 mm. Arteriosclerosis advanced with all active symptoms, most trouble asthmatic tendency, on rigid diet. Had received treatment at all the noted spas with only temporary relief. Compensation poorly officiating. Radium solutions in low dosage by mouth relieved respiratory symptoms and improved precordial distress to some degree. On advancing the dose to 6 mcgm. daily, after ten days' reaction in the rheumatoid processes presented. This pain seemed to activate her other troubles. All treatment discontinued for ten days. Treatment renewed on small dosage of 2 mcgm. daily and again relief was obtained. No action whatever on the blood pressure could be observed.

Case VIII.—Mr. J. M., broker, aet. 62. Systolic pressure 180 mm. under observation and treatment fifteen months previously. Case presents symptoms of vertigo, precordial distress, insomnia, etc. Gastrointestinal fermentation prominent. Recently developed nephritis. Administered by intravenous method 50 mcgm. radium chloride July 12. Pressure July 14, 150 mm. Improved respiration noted. July 18, 25 mcgm. radium chloride intravenously, followed three times weekly with 2 mcgm. radium chloride in distilled water per os. September 2, systolic 140 mm. All physical symptoms relieved. Urine showed no albumin or casts. October 10, patient discharged, pressure 150 mm.

Case IX.—Mrs. D., aet 57. Pressure 210 mm. General arteriosclerosis with all symptoms. Had been a very active woman; had to cease all occupation for the last eight months. General treatment influenced the hypertension only temporarily and gave little improvement in symptoms. One injection of 50 mcgm. given intravenously; pressure came down 30 mm. during the next twenty-four hours. At the end of three weeks, pressure had settled at 188 mm. and all symptoms had disappeared. General health very good and could do all work she used to do ten years ago. Reports a year after the injection that she is in fine shape. Pressure 185 mm.

Case X.—Professor, aet. 50. Violent headaches for the last six years. Had to stop his lectures frequently. All functions disturbed, specially digestion. Wassermann negative. Arteriosclerosis with blood pressure of 230 mm. General intestinal fermentation. No other known cause. One injection of 50 mcgm. radium element given at 12 noon. Pressure down to 200 mm. at 6 P. M. Four weeks after injection patient has pressure of 176 mm. and says that he never felt better; has the sensation of having much smaller weight of body.

Attends to daily work regularly and a year after the injection is in very good health.

CASE XI.—R., butcher. Consulted for general malaise, headache, vertigo, etc. Blood pressure 200 mm. One injection of 50 cmgm. reduced the pressure to 180 mm. in seven hours. Had 165 mm. at the end of three weeks. Varies from 160 mm. to 165 mm. at the end of eighteen months. Patient in very good health.

CASE XII.—Mr. W., aet. 72. Suffering from trifacial neuralgia for the last eleven years. General health fairly good. Blood pressure 220 mm. One 50 mcgm. ampulle injected at 3 P.M. Next morning pressure was 180 mm.; three weeks after the injection shows 175 mm. to 180 mm. and stayed at this mark since that time (a year and a half). Most surprisingly, the neuralgia disappeared almost completely soon after the injection and has not reappeared since.

CASE XIII.—Butcher, aet. 60. General rheumatic condition for the last twenty years. Blood pressure 190 mm. One 50 mcgm. radium injection reduced the pressure to 160 mm. in four days and it settled at 150 mm. at the end of a month. Patient in absolutely good health at the end of a year.

CASE XIV.—Mrs. C., aet. 50. Subacute rheumatism. History of either neuritis or rheumatism for the last two months. Pressure 200 mm., following the administration of 50 mcgms. radium element intravenously, reduced in five days to 160 mm. and 150 mm. after three weeks. All rheumatic symptoms disappeared completely in about ten days. Reports in very fine health after a year; pressure 160 mm.

CASE XV.—Mrs. R. P., aet 50. Suffering from neuritis for the last six years. Could not sleep more than an hour in the night. Pain in the left arm, and from base of skull down to the lumbar region almost constantly. Blood pressure 205 mm. No form of treatment produced any noticeable change either of the neuritis or blood pressure. Injected 50 mcgm. radium element intravenously. Pressure 180 mm. the next day —170 mm. at the end of three weeks. Pain almost gone except in a small spot at the base of the skull. Second injection caused the pain to disappear completely in twelve days. Patient reports every month. At the end of a year no pain had recurred—patient can sleep from ten to twelve hours every night and take a nap in the afternoon; has gained thirty pounds and says she feels twenty years younger.

CASE XVI.—Mr. W., coal dealer, aet. 65. Blood pressure 230 mm. Violent headaches, dizziness, advanced arteriosclerosis. No improvement under any form of treatment for the last ten years. One 50 mcgm. injection of radium element lowered the pressure 50 mm. in a period of four weeks. A year from the injection patient has pressure of 175 mm. and has had no recurrence of his former symptoms.

CASE XVII.—Mr. S., aet 72. General arteriosclerosis. Complained of feeling heavy together with a general sensation of malaise and anxiety. Rheumatic pains for the last twenty years, subacute attacks more frequent and compel him to stay in bed about once every two months for a period of one to two weeks. Blood pressure 240 mm. One injection (50 mcgm. radium element) brught the pressure down to 190 in five days. All rheumatic symptoms had disappeared in four weeks. Patient reports every month and is very grateful to radium treatment. After the period of a year no symptoms have reappeared and the general condition is very good—blood pressure 190 mm.

CASE XVIII.—B., aet. 45. General condition bad; no other symptoms except increasing weakness, loss of weight and anxiety; almost constant headache. Blood pressure 260 mm. reduced to 210 mm. in four days with an injection of 50 mcgm. radium element; 200 mm. in seven days. Patient reports often and at the end of six months has gained thirty pounds, feels fine and pressure is 180 mm.

CASE XIX.—Failure. Patient with pressure of 230 mm. General malaise, but not sufficient to prevent him working. Visited the best clinics for the last two years. Failed to reduce the pressure with diet, treatment, etc. 50 mcgm. radium element in the form of an intravenous injection reduced pressure 11 mm. in six hours. Next day pressure went back to 230 mm. There is no trouble with the kidneys or with the circulatory system. Opportunity for further treatment with radium was not possible. Simply a case of idiopathic hypertension and possibly would not have been influenced.

CASE XX.—Mrs. L. S., housewife, aet. 59. Marked depression with melancholia. Three members of her family died of apoplexy. Severe vertigo, insomnia, asthmatic tendency, abdominal distention, fairly advanced arteriosclerosis with nephritis, anemic; hemoglobin 70 per cent. Pressure 180 mm. In this case 50 mcgm. radium chloride was given intravenously. Ten days later pressure 160 mm.—symptoms somewhat relieved. A second injection, 25 mcgm., was given resulting four days later in a pressure of 145 mm. Two weeks later pressure was found to be at 160 mm. Radium solution in doses of 2 mcgm. ordered every day. Pressure taken twice weekly for six weeks of this treatment showed an average of 155 mm. Nephritis cleared up. Asthma disappeared, deep respiration, patient less nervous and rested well, took up her housework with renewed interest.

In conclusion may I leave just one thought with you; I would have you agree with me that we are dealing with a most potent force, remarkable in its powers to activate biochemical processes. It is commended to you only as an adjunct, to be used in conjunction with all remedies recognized as effective in influencing metabolism. But few of my friends here to-night have ever listened to a paper on the theme of your president's choice—to my knowledge, it is the first time in this country that the subject has been presented. Radium in this field, received even as its introduction a startling statement, for in a very recent issue of the MEDICAL RECORD an authority unhesitatingly proclaims as follows: "The greatest enemy of the cardiovascular-renal patient is the supposed specific, whether it be electricity, radium, etc." How science must hold its head low and weep, or shall I say smile? In my early days of practice I remember my antagonism to diphtheria antitoxin. Quinine was almost lost in a veil of ridicule. Chloroform had its hard fight for recognition, and even to-day you will hear of the unbelief in salvarsan, so we can be both charitable and patient. If you assume that I have erred in conservative expression let the excuse be that the worker in radium therapy grows enthusiastic as he manipulates that agent of greatest known energy, the product of the Almighty's laboratory, "Mother Earth."

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30 EAST FORTY-FIRST STREET.

Pulmonary Syphilis.—H. R. M. Landis and P. A. Lewis believe that pulmonary syphilis of a latent type occurs far more frequently than is usually supposed. The form to which they call attention is that in which the localization occurs in the apices of the lungs. This type of the disease may in certain cases simulate early pulmonary tuberculosis with such fidelity as to deceive us entirely.—*American Journal of the Medical Sciences.*

HEALTH INSURANCE.

By E. H. LEWINSKI-CORWIN, Ph.D.,

NEW YORK.

EXECUTIVE SECRETARY, PUBLIC HEALTH COMMITTEE, N. Y. ACADEMY OF MEDICINE.

Sooner or later, and the sooner the better, we shall have in this country social insurance against the contingencies caused by sickness. The direct relation sickness bears to poverty and to other social evils and how those in turn react in producing sickness are matters too well known to be dealt with in this short paper, designed to bring before the medical profession of New York some of the problems involved in a health insurance plan of such great import as that proposed by the committee on social insurance of the American Association for Labor Legislation.

The social insurance committee proposes that every person gainfully employed and earning less than $1,200 be compulsorily insured against sickness, two-fifths of the cost of the insurance to be borne by the worker, two-fifths by his employer, and one-fifth by the State. I take it that the medical profession as such is not keenly interested in the details of the general administrative organization of such a scheme or in the social philosophy underlying the measure. As to the first it may, however, be stated that it is proposed to make the mutual local funds, either in one trade or in several trades, the carriers of insurance, to be governed jointly by employers and employees under State supervision. As to the social justice of the plan, it may suffice to say that it tends to put on a higher social scale the hundreds of thousands of persons from among our working population who, under present conditions, must resort to charity in cases of prolonged illness. Health insurance does away with much, if not all, of the present-day medical charity and costs but little, if any more. We do not let our sick poor die for want of medical care, or their families starve. Health insurance aims at nothing else than making systematic provisions for them. But instead of employing the present haphazard methods, which are often ineffective and reduce self-respecting people to the level of recipients of charity, it proposes to handle the matter rationally and without offending the sensibilities of our industrial workers.

The number of persons of both sexes, over fifteen years of age, who are gainfully employed is over thirty-five millions in this country. Compilations based on German figures of the average duration of disability and on the estimate that about 40 per cent. of the persons gainfully employed suffer more or less incapacity during the year, place the number of days lost through sickness at two hundred and ninety-seven millions per annum, and the number of persons afflicted at fourteen millions per annum. Only a part of these fourteen millions of people receive private medical treatment. A great number of them, suffering from minor and less acute ailments, seek relief in dispensaries. The number of dispensary visits in this city alone amount to more than four million a year. The treatment given in most of the dispensaries is unsatisfactory. A health insurance law, enabling persons with moderate incomes to command the paid services of physicians is, *per se*, a great advance in health work. It affords, moreover, a great many additional opportunities for effective preventive measures. Prevention of disease should be one of the primary objects of a measure of this kind, just as prevention of accidents is a primary motive of workmen's compensation laws, and nobody is better qualified than the medical profession to point out how best these ends of preventive medicine could be served by an insurance law.

Health insurance, if it is to succeed, must have the whole hearted support of the medical profession. It seems, therefore, of paramount importance that before a measure of this kind becomes a law it should have the benefit of the well-considered advice of the medical profession and should be drawn in such a way as to meet the just demands of the profession, so that it may produce no hardship to those on whom the success of the measure chiefly depends. With a view of stimulating discussion and of pointing out some of the medico-administrative problems involved, I have prepared this paper. It does not intend to suggest any solution, but merely to raise questions and to promote discussion, as a result of which the wishes and views of the medical profession could be made generally known.

A. General and Historical.—The serious social consequences entailed by sickness have very early led the industrial workers of the Continent and of Great Britain to devise some means of affording relief through the establishment of mutual aid associations. These societies have, throughout the nineteenth century played an important part in the economic life of the European countries and their activities covered a great number of various forms of mutual assistance. But with the growth of the modern fabric of industrial life, the extensive application of machinery and the concentration of large masses of population in limited areas, the old methods became inadequate and workmen's insurance was put on a broader social basis. Accident insurance has been universally made a part of the cost of production and provisions for insurance against sickness have become a matter of governmental concern and regulation in almost every country of Europe.

Generally speaking, there are two types of workmen's insurance against sickness: the system of voluntary insurance, usually subsidized by States or municipalities, and that of compulsory insurance. In the first system the individual is left to make provisions for himself through the medium of State-regulated mutual aid societies which in the great majority of instances receive donations from the State or municipality to help sustain them. The subsidies are designed to stimulate thrift and self-help by adding certain amounts, graded in accordance with the individual's endeavors, to the benefits granted by the societies which are entirely dependent on the premiums of their members. Under the compulsory system, all persons of a certain description are compelled to insure themselves in specified institutions and the premiums are paid in part by the insured, by their employers, and by the State or municipality.

France, Belgium, Italy, Spain, Sweden, Denmark, Finland, and Switzerland have voluntary insurance systems subject to various degrees of governmental supervision and working with various degrees of success. Denmark has achieved remarkable success under its plan of operation. In other countries voluntary insurance has been more or less of a failure. Even in Belgium, noted for the thrift of its population, "it is the élite of the working class alone that can stand the cost of sick insurance."

The plan of compulsory insurance inaugurated in Germany in 1883 and copied, with such changes as best fit their administrative and political conditions, by Austria in 1888, Hungary in 1891, Luxemburg in 1901, Norway in 1909, and more recently by Great Britain, Russia, Roumania, and Serbia, is being recognized as the more satisfactory and effective method of solving the problem, and is being recommended for adoption in the several States of this country by the American Association for Labor Legislation.

In the United States there is a great variety of unrelated private endeavors to meet the problem of insurance against sickness. We have workmen's circles, lodges, trade union funds, fraternal orders, establishment funds operated by corporations for the benefit of their employees, commercial casualty, and health insurance companies, etc. All these individual endeavors should be woven into one coherent entity.

B. Problems Involved.—Health insurance, although one of the earliest forms of industrial insurance, is at the same time the most difficult to administer. For no other form of insurance is it so difficult to secure an adequate actuarial basis; no other form of insurance deals with so large a number of conditions, contingencies, and circumstances, and no other branch of insurance is so liable to abuse. Feigning sickness, malingering, and valetudinarianism are grave obstacles to the successful administration of sickness insurance. The attainment of a uniform efficiency of medical service and of an adequate control over the administration of the medical benefits, and the establishment of a satisfactory basis for the relations between the insurance carriers, the medical practitioners, and the insurance beneficiaries are problems for which no standards have as yet been devised.

When the British national health insurance law was enacted the medical profession found many of its provisions inacceptable, and then laid down the following six cardinal principles:

1. An income limit of £2 a week for those entitled to medical benefits.
2. Free choice of doctor by patient subject to consent of doctor to act.
3. Medical benefits to be administered by insurance committee and not by friendly societies.
4. The method of remuneration of medical practitioners adopted by each insurance committee to be according to the preference of the majority of the medical profession of the district of that committee.
5. Medical remuneration to be what the profession considers adequate, having due regard to the duties to be performed and other conditions of service; and
6. Adequate medical representation among the insurance commissioners on the central advisory committee and on the local insurance committees, and statutory recognition of a local medical committee representative of the profession in the district of each insurance committee.

C. Specific Questions to Be Considered by the Medical Profession.—Is it desirable to formulate similar principles before a health insurance law is passed in this State? If so, what should they be?

The following is a series of questions, upon the answer to which will depend the success or failure of health insurance insofar as the medical aspect of it is concerned:

1. Should the patient be free to choose his physician?
2. Should the physician be free to reject patients who have selected him or who were assigned to him?
3. Shall there be a medical "panel" as in England, and, if so, who shall be responsible for it: (*a*) county medical societies? (*b*) special *ad hoc* organized medical corporations?
4. Shall the diagnosis of the attending physician be the final basis for the granting of benefits or shall it be subject to revision and, if so, by whom: (*a*) by the insurance carriers? (*b*) the medical society responsible for the "panel?" (*c*) by observation in a hospital?
5. Should there be uniformity of standard in adjudging the extent of invalidity or disability? If so, is it possible to enforce such a standard without employing a special expert staff of medical men whose sole duty it will be to look after the invalidity cases?
6. Under whose direction should such a staff be: (*a*) the State Insurance Board? (*b*) the insurance carriers? (*c*) the medical organizations?
7. Should the patient have a right to appeal from the judgment of the physician passing on the extent of his invalidity?
8. If so, would not this practice be very costly and entail constant litigation? Then, who should sit in authority over the judgment of the special medical expert: (*a*) the State Insurance Board? (*b*) the insurance carriers? (*c*) the medical organizations?
9. What shall be the basis of compensation of physicians: (*a*) the number of visits made and the services rendered? (*b*) a monthly or annual salary? (*c*) an average monthly or annual per capita fee?
10. Who shall appraise the value of services rendered and the number of visits needed, in case the first method of compensation be adopted?
11. Would not the other methods of compensation result in indifferent and slipshod work?
12. Who shall decide how many patients should be allotted to a physician?
13. Should not the fees for treatment of workers in well paid trades be higher than in the case of workmen in low paid occupations?
14. Should the insurance carrier deal with the individual physician or with the county medical societies or special medical organizations created for the purpose?
15. Should such medical bodies be charged with preparing the "panels" and be responsible for the physicians recommended?
16. Should not the patient be made to pay a part of the physician's fee (over and above the insurance premium) in order to reduce the possible number of unnecessary calls made by hypochondriacal patients?
17. How shall malingering best be controlled?
18. Who shall exercise control over the physicians in their treatment of insured persons: (*a*) the insurance carrier? (*b*) the medical society?
19. Outside of acute surgical conditions and contagious disease cases, who shall decide whether a patient should be sent to a hospital?
20. Will the health insurance law act as a deterrent to hospital practice?
21. Could not the existing dispensaries be made an important branch of the service by increasing their staffs of paid visiting physicians and nurses, a procedure which may be made possible by adequate financial arrangements with the insurance carriers?

22. Could the services of specialists be obtained in any other way, except through the dispensaries?

23. Could not the health insurance law be made a potent factor in raising the dispensaries to a high level of usefulness and efficiency?

24. Could not the health insurance law provide for periodical physical examination of all of the insured and in this way act as an important stimulus to the preservation of health?

25. Should the dependent wives and children of the insured men be made beneficiaries under the act?

26. Would not the inclusion of women and children in the health insurance law (*a*) afford needed protection to maternity, and (*b*) make possible an improved control of contagious diseases?

27. Should the State Commissioner of Health and the local health officers be made members of the State Insurance Board and of the local insurance committees, respectively?

28. Would not the economic status of the great body of physicians improve and be put on a safer basis than at present if the stipulated remuneration for services under the health insurance act were made reasonably satisfactory?

D. Literature on Health Insurance.—Experience alone can supply the best answer to many of the questions raised. No law can be made perfect when first framed. Many adjustments and changes become necessary when its shortcomings, due to unforeseen conditions, become visible after a period of actual operation. No foreign practice can be an absolutely trustworthy guide, because of the pronounced differences of the economic and social environment, the character of the population, and its national traditions. Many fundamental principles and standards apply, however, to all civilized communities. A study of the methods employed in other countries and the results achieved may, therefore, be of great service in forming one's opinion on the subject and in arriving at conclusions with reference to some of the questions entering into the problem.

The literature concerning health insurance, is vast, particularly in foreign languages. Of the English and American publications outside of official and non-official reports, as most helpful to busy readers, the following few may be mentioned:

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REDUCTION OF OBESITY.*

By ALBERT WARREN FERRIS, A.M., M.D.,

SARATOGA SPRINGS, N. Y.

It is elementary to say that during digestion, assimilation, respiration, and excretion the food taken into the body breaks down into simpler compounds or is transformed into new compounds. Every act, whether it be muscular and voluntary, or nervous and involuntary, consumes energy. If we would prevent wasting, we must produce in the body an equivalent amount of energy obtained from food to replace the energy that is being consumed. The force that holds the food elements together is called potential energy, and the name kinetic energy has been given to the force into which potential energy is transformed during the breaking down of food into simpler compounds. The process is not clearly understood, but there is a close parallel to the combustion of fuel, since it is probably a complex oxidation.

Fat is to be regarded as mere fuel, accumulated for future use. It should furnish most of the heat energy, oxidizing rapidly and thus sparing the protein elements that would otherwise be wasted. It should constitute about 20 per cent. of the body weight. A considerable variation above this proportion constitutes obesity.

We encounter two classes of corpulent persons: first, those who are very stout, yet are active and otherwise healthy; second, those who are moderately or excessively obese and are diseased. Those constituting the first class rarely desire reduction, and its employment must be decided upon their personal appearance and their state of health. If they are not gaining weight, they rarely care to submit to the process, though some will adopt a diet which will prevent further accumulation of fat. The persons constituting the second class generally require reduction, for they suffer from difficulties due to impeded circulation, such as dyspnea, early fatigue upon exertion, and cold extremities, as well as from atony of the intestines and myocardial degeneration. A removal of even a moderate amount of fat will quickly improve the functional powers of the lungs, the liver, and the muscles, if the person be not aged.

Efforts at reduction at home are usually futile, because of the want of sympathy offered by the family, the difficulty in securing proper individual diet, the temptation provided by the daily sight of all kinds of food, and the urging of members of the family to be less strict than the physician has directed. Besides, the regularity and proper total of exercise demanded are difficult to secure during the performance of usual duties in the home or at the place of business. Reduction treatment is easiest and vastly more successful in an institution or at a health resort, where definite diet can be prescribed and furnished, and where, in an atmosphere of routine and obedience, there is less temptation to transgress and every encouragement to persevere, through the community of interest felt by every one and the force of numerous good examples of obedience daily before one's eyes. Unless a settled determination and a conscientious effort exist in the mind, there is no use of attempting reduction of corpulence. Indulgence in alcoholic beverages, course dinners, extra suppers after theater, etc.,

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defeat all measures that may be taken. These difficulties are oftenest encountered in people between the ages of 30 and 40 years, the very ones who offer the best chances for entirely successful results.

Special caution is necessary on the part of the physician in undertaking the reduction of persons over 60 years of age (as well as in somewhat younger people) if signs of senescence appear. If senile decay is approaching, reduction of obesity will accelerate it, and the patient, even if relieved of the burden and danger of excessive fat, will be much weaker at the close of the treatment. Yet the danger to very fat people of any age from infectious diseases, heart lesions, lung diseases, and arthritis, or even from simple overstrain of the heart, must be seriously considered before deciding to advise against reduction.

The most important class of disorders which coexist with obesity embraces diseases of the circulatory system, including valvular lesions of the heart, myocarditis, weak cardiac muscle, and arteriosclerosis, as well as emphysema and extensive adhesive pleuritis. In the three last mentioned conditions the heart is called upon to perform increased work, and is often hypertrophied, if not also dilated. The mere relief from excessive labor experienced by the heart with the removal of the heavy fat, allows, in many cases, restoration of normal action and diminution of the signs of decompensation. This accomplished, measures such as a course of Nauheim baths together with resisted movements should be instituted, and in a very large number of cases many years of life in comparative comfort may be added to the span of existence of these patients. The best results, of course, are reached if the entire treatment is instituted before any signs of failing compensation appear, and alarm is taken at the first signal of disorder of the circulatory apparatus. In very serious cardiac cases, Groedel of Nauheim advises treatment of the heart condition first for a considerable period before beginning the reduction of fat, and von Noorden agrees with him. Frequently an intermittent reduction is best; that is, securing a loss of four or five pounds during a week and then proceeding more slowly, removing a similar amount in a month, the patient meanwhile being allowed a diet liberal enough to preserve the weight at a fixed amount. Hydrotherapy to stimulate the peripheral circulation is administered during the interval, and then the reduction should be resumed.

Obese patients suffering from chronic interstitial nephritis should be treated exactly as carefully as those with grave heart disorders. In these cases it has been found necessary to support the heart, but it is very undesirable to give the patient such a diet as will cause a decided increase of body weight beyond that carried by the patient when he was apparently in good health. That is, a thin patient who was discovered to have contracted kidney disorder should not be so over-fed as to take on a considerable quantity of fat, lest he suffer attacks of dyspnea and even precordial pain. A few cases of nephritis with these symptoms can be relieved promptly by reducing their weight.

Many obese people suffer constantly from exhausting bronchitis. In these cases relief from the accumulation of intrathoracic fat permits the lungs to make larger excursions, and thus encourages free circulation of the blood stream through the pulmonary capillaries, and gives grateful relief. Often these patients have been improperly treated by subjecting them to a course of alkaline cathartic waters, at some spa, without any result except a decided diminution of their strength. The proper diet, exercise, and massage will afford relief in a large percentage of these cases.

How rapidly may the obese patient be reduced? The answer is, Generally, by 5 lb. a week; often so rapidly as to average 7 lb. a week for a few weeks.

The diet is a very important part of the treatment. Many attempt reduction, but demand that successful measures be instituted which will not interfere with the usual routine of their lives including liberal indulgence in food and beverages, and avoidance of all regular exercise. Such patients demand internal medicines that will cause "melting away of the fat," and often become the victims of advertising quacks; or they dose themselves with pickles or vinegar and starve themselves indiscriminately. The constant use of acids disorders the digestion, and starvation, of course, does decided damage since acidosis is easily set up. In my opinion, all the drugs used to cause rapid reduction, including thyroid extract, are very dangerous to the patient, if they diminish the weight.

At the Glen Springs, Watkins, three standard diets are employed in cases of obesity, varied according to the condition of the individual patient. I will quote these diets entire, since the illustrative case, the record of which I will append to this paper, was treated successfully at this institution.

Diet in Uncomplicated Obesity.

Breakfast: Two soft boiled eggs or broiled steak, 40 grams; zwieback or graham bread, 75 grams; coffee, 200 c.c., with milk, 20 c.c.

Luncheon: Consommé, 100 c.c.; broiled steak or chops, cold roast beef, cold roast mutton, or cold roast chicken, 200 grams; portion of salad with French dressing (made with lemon juice); zwieback or graham bread, 25 grams; fresh fruit, 150 grams; water, 250 c.c.

Dinner: Beef, mutton, lamb, or poultry, 200 grams; portion of salad with French dressing (made with lemon juice); zwieback or graham bread, 25 grams; cheese, 5 grams; water, 250 c.c.

Note. Between each two meals 100 c.c. of water may be taken if desired. Total calories in 24 hours, 2,065. Total fluids in 24 hours, 1,100 c.c.

Diet in Obesity with Chronic Joint Disease.

Breakfast: Small serving of broiled white fish, mutton chops, beef steak, or lean ham; one slice of well-toasted bread without butter; one cup of tea or coffee (8 ounces) with skimmed milk and no sugar (saccharine or glycerin may be used to sweeten).

Luncheon: Small serving of cold chicken, game, beef tongue, lean ham, or one poached egg; small serving of any two of the following vegetable: Spinach, lettuce, water cress, string beans, celery, turnips, parsnips, beet tops, cauliflower, artichokes. Small serving of salad with lemon juice (no oil or vinegar). Stewed or baked apple or pear without sugar or milk. No fluids.

Dinner: Beef consommé or bouillon (8 ounces). Small serving of broiled or boiled fish without sauce, broiled or boiled mutton, game or fowl (with little fat). Same choice of vegetables as at luncheon. Two gluten or almond biscuits. Stewed fruit without sugar or milk. Tea or coffee (8 ounces) with skimmed milk and no sugar.

Diet in Obesity with High Systolic Blood Pressure.

Breakfast: Coffee, 6 ounces, no cream or sugar. One soft boiled or poached egg, 60 c. Two thin slices of white, rye, or graham toast with no butter, 150 c. One orange, one-half grapefruit, ordinary serving of strawberries, one peach or one apple, 50 c. Total calories. 260. Total fluids, 6 ounces.

Luncheon: Any two of the following: Egg plant, asparagus, turnips, beets, spinach, cauliflower, string beans, Brussels sprouts, 100 c. Salad of any one or two of the following: Lettuce, cucumbers, tomatoes, cabbage with vinegar or lemon (no oil) 50 c. One portion of the following fruits: Cantaloupe, watermelon,

strawberries, apple, orange, grapefruit, 50 c. Two ordinary slices of bread, 150 c. Four grams of butter, 30 c. Total calories, 380. Total fluids, none.

Dinner: Choice of chicken, broiled or roasted, or broiled fish, 75 c. Mixed pickles and celery, 25 c. Any two of the following: Beets, turnips, cabbage, cauliflower, asparagus, egg plant, string beans, squash, green peas, onions, 100 c. Salad of any two of the following, with lemon or vinegar (no oil): Cucumbers, tomatoes, cabbage, 50 c. Choice of same fruits as at luncheon, 50 c. Two slices of bread with no butter, 150 c. Black coffee, 4 ounces, without cream or sugar. Total calories, 450. Total fluids, 4 ounces.

NOTE.—Midway between each two meals 100 c.c. of water may be taken, if desired.

In many cases, it is undesirable to give meat in any form, and a protein of corresponding value may be substituted where meat or fish has been suggested in the diet lists quoted.

Hydrotherapeutic measures are of great value in many of these cases, in fact, are well nigh indispensable. A convenient method for the patient, if living in a health resort where the proper facilities are available, is to be subjected to a hot bath in a fairly strong brine, the temperature being increased while the patient is in the bath up to the limit decided by the physician. After the bath, the patient receives a cool spray, is wrapped in a blanket, after being dried, and rests for twenty minutes, and then goes out into the air. This bath should be given three times a week. On alternate days, an electric light cabinet bath is given to the point of full sweating, as prescribed by the physician, and immediately afterward the patient is placed in a hot pack for an hour. At the end of the hour a cool spray is administered and the patient is rubbed thoroughly dry. On at least one day in the week no treatment should be given and the patient should be urged to rest for most of that day.

The exercise, which is important, should be carefully chosen by the physician according to the patient's strength and such complicating diseases as may exist. Massage, passive motion, Swedish exercises, and out-of-door walking, together with calisthenics directed to groups of muscles in the entire body, and forming a regular part of the treatment, are essential in restoring tone to muscles that have been inactive from being so heavily overlaid with fat as to have suffered from impeded circulation.

A method of reduction which may be pursued in the case of the weakest patient is known as the Kellogg-Bergonie Method, in which the sinusoidal current of electricity is used. As should be better known, this current was discovered by Dr. John H. Kellogg of Battle Creek, Mich., and was described and used by him about six years before d'Arsonval also discovered it. By this method of reduction the patient is placed upon a table and the sinusoidal current is administered to several groups of muscles at once, causing rapid contractions in them and thus securing an output of energy and a rapid consumption of fatty tissue in their neighborhood without calling upon the patient for any voluntary activity. The amount of work done by the groups of muscles may be increased by loading upon them sand bags of varying weights, until the patient is bathed in profuse perspiration, which naturally results. By this method the irksomeness of pursuing regular and repeated exercise is avoided and the brain and spinal cord remain at rest, except that the heat centers of the spinal cord are stimulated to rapid and repeated activity.

Both these methods, that by hydrotherapeutic procedure and exercise and the other by the use of the sinusoidal current, owe their efficacy to the combustion of fat and the production of water which is lost as perspiration. We know that if the internal temperature be raised, an excessive amount of sweat is poured out in the effort of the body to cool itself. Von Noorden says that 100 grams of fat yield 107 grams of water during the process of combustion. Atwater and Benedict, in their experiments of a few years ago, ascertained that during the copious sweating incident upon hard work, the amount of water lost from the skin was eight times the amount of normal perspiration and represented the loss of 1 gram of nitrogenous excreta in five hours. Thus, the sweat glands can in some degree be made to assist a function of the kidneys, and a further safeguard is thus offered to the heart or kidney patient by the process of reduction of fat.

The single case, the records of which I will quote, was treated by me at the Glen Springs, Watkins, N. Y., during a period of eighteen weeks, actual treatment covering only fourteen and a half weeks, since the patient went home for a period of three weeks in the midst of the treatment, returning to finish it after this brief absence.

The patient was an unmarried woman, aged 63, living in comfort, devoting a large part of her time to philanthropic and benevolent enterprises, very conscientious, and expending much energy upon the philanthropic work undertaken. She had been gaining flesh progressively for twenty-three years. During the past ten years, she had gained with great rapidity. At the age of 27, she had had an attack of "nervous prostration," due to anxiety and the work of preparation connected with the marriage of a sister, and the dread of separation from her. She reported that she felt the effects of this attack for many years. While motoring in the country recently, she felt as if she had "a rush of blood to the head," and believed she had experienced a sunstroke. Ice had been applied to her head for several hours and she felt very weak for two days. For a considerable period of time she suffered from vertigo, and frequently her sight seemed blurred, and her vision distorted. Owing to the vertigo, she had fallen and bruised herself two days before admission. She further reported that during the previous winter, after walking slowly up a moderate grade for two blocks in a street near her home, she had a feeling of oppression and distress in her chest with dyspnea which lasted for thirty hours.

Her mother had died at 66 of "heart disease or apoplexy"; her paternal grandfather had died of "paralysis" at the age of 70; and four brothers and sisters of her father had died of "kidney trouble." No other significant facts were elicited concerning her family history. Her mother was extremely stout and one brother was quite stout.

As to her personal habits, she walked very little out of doors, but took long drives in her automobile daily; she ate no meat and aimed to take less food than previously; she was drinking five glasses of water a dav; she never had used any alcoholic beverages. She complained occasionally of headache, dyspnea, vertigo, blurring vision, palpitation upon exertion, gas in the stomach, almost daily, and edema about the ankles.

Physical examination revealed a condition which is summarized in the following notes:

General Appearance: Very obese, florid, white, female adult.

Hair: Silver, abundant. Apparent age 65 years.

Height: Five feet 4½ inches with heels.

Pupils: Widely dilated, equal, regular, react quickly to light and normally for distance.

Scleræ: Yellow and injected. *Conjunctivæ* very red.

Tongue: Protrudes straight, dry, red, coated. Mucous membrane red.

Tonsils: Very small. *Pharynx* red.

Chest: Right breast tender from injury.

Lungs: Hyperresonance on left side. Expiration prolonged and of high pitch, left posteriorally. No râles.

Heart: P. M. I. not obtainable. Dullness: Upper border of third rib to fifth interspace, 1 inch to the right, 5½ inches to the left. Oblique diameter, 6½ inches. Soft systolic murmur at apex transmitted 1

inch to the left, heard over whole heart, faintly at ensiform. Systolic murmur at base, loudest over right third interspace. Muscular quality fair. Aortic diastolic sound accentuated and greater than pulmonary diastolic sound.

Abdomen: Wall 2½ inches thick, fairly firm. Mass (?) central line, above umbilicus. Slightly tender. Questionable fluctuation.

Lymphnodes: ?

Liver: Not palpable or tender. Dullness fifth rib to 1 inch about costal margin. Vertical diameter 2¾ inches.

Spleen: Not palpable. Dullness eighth rib to eighth interspace.

Kidneys: Not palpable.

Stomach: Lesser curvature at eighth rib; greater curvature 2⅝ inches above umbilicus. Vertical diameter 3¾ inches.

Blood pressure (Stanton instrument, patient recumbent, auscultatory method): Systolic, 185; diastolic, 84; mean, 135; pulse pressure, 101. *Pulse:* Recumbent 104, regular, good strength and volume. High tension. Pulse on standing 108, regular, good strength and volume. *Arteries:* Radial, palpable. Brachial, not obtainable; temporal, not palpable.

There was decided pretibial edema.

Summary: Coated, dry tongue, emphysema, systolic murmurs, high blood pressure, tachycardia, palpable radials, edema of ankles.

The *Urine Examination* provided the following data: Total quantity, 1,100 c.c.; specific gravity, 1.012; reaction, acid; no albumin; no glucose; appreciable trace of indican; triple phosphates, few leucocytes, considerable epithelium.

The patient's *weight*, stripped, was 221¾ pounds.

She was put upon the following treatment: Three electric light baths a week, at 110°, until full sweat, followed by blanket pack and spray; deep massage three times a week on alternate days; Swedish and Zander machine exercises daily; diet list for "obesity with high blood pressure," already quoted modified for her individually; voluntary exercise to consist of one mile walk on the level in the morning, repeated in the afternoon daily. After six days, the temperature of the electric light bath was increased to 115°, and after a month it was increased to 120°. Ten days after admission, the Nauheim course of baths was begun, the patient taking three a week on alternate days. Each bath was preceded by the application of two or three hot cloths to the hips and stomach to produce a good sweat before entering the bath tub. The patient voluntarily increased her walking exercise until four weeks after admission she was walking five miles daily without fatigue. This amount was reduced to four miles at once. At this time, her weight had decreased to 195¾ pounds, showing a loss of 26 pounds, in as many days.

A few days later, she showed her first symptoms of nervousness and annoyance at small matters, and so her exercise was reduced at once to two miles a day, and she was urged to rest on the bed two or three hours during each day.

Her treatment continued uneventfully with slight changes in its application, her systolic blood pressure decreasing to 169, later to 134, and rising again to 145. A little over three months after admission, she made her first attempt at hill climbing accompanied by the physician, walking up a moderate slope easily, with no dyspnea or tachycardia, and with enjoyment. A week later she repeated the effort, walking up the hill in the face of a cold wind without distress.

On discharge, she felt well and increasingly strong, and rejoiced in the loss of 53½ pounds, departing with a weight of 168⅜ pounds. A résumé of her examination report at departure reveals the following data:

Heart: P. M. I. not obtainable. Dullness lower border third rib to fifth interspace, ⅞ inch to the right, 5 inches to the left. Oblique diameter 6¼ inches. Soft systolic impurity at apex not conducted. Pulmonary diastolic sound greater than aortic diastolic sound, both slightly accentuated. Muscular quality good.

Stomach: Lesser curvature at seventh rib; greater curvature 2 inches above umbilicus. Vertical diameter 3½ inches.

Blood pressure phases (Stanton instrument, auscultatory method, patient recumbent): 145 (systolic), 143, 138, absent, 78 (diastolic); mean, 102; pulse pressure, 67.

Pulse: Recumbent 72, regulator, good strength and volume.

Arteries: Radial, brachial and temporal slightly palpable.

No edema.

During the month succeeding her return home, she felt at times "lightness in the head" and a slight uncertainty, and the resumption of household cares and her philanthropic duties for a few weeks seemed somewhat difficult. These symptoms immediately disappeared and she remained in excellent condition, mental and physical, during the winter and spring, and in the following summer carried out a trip to a foreign country taking with her a companion unaccustomed to travel for whom as well as for herself she made all arrangements of every sort concerning hotels and railroad travel without fatigue or difficulty, but with an increasing activity and a return of the ability she had experienced ten years before.

She gradually resumed largely her former diet, until with very few restrictions she was eating the food that she had preferred to eat before her treatment began, and she did not gain in weight during the following year, but decreased 5 pounds further, shortly after her return home, thus reaching a total loss of 59 pounds. The reduction was effected in 1912, and since that time the patient has on two occasions gained small amounts of flesh, which she was able promptly to lose again by cutting starchy and sweet foods out of her diet for a couple of weeks on each occasion.

THE DANGERS OF HASTY DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By MAURICE FISHBERG, M.D.,

NEW YORK.

CLINICAL PROFESSOR OF TUBERCULOSIS, NEW YORK UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE; ATTENDING PHYSICIAN, MONTEFIORE HOME AND HOSPITAL FOR CHRONIC DISEASES.

For over thirty years the profession has been agitating that to prevent and to cure tuberculosis the disease must be recognized early; some have even been able, or they at least desired, to discover it in the socalled pretuberculous stage, which I take to mean before the patient is sick with tuberculosis. Indeed, recent medical literature abounds in articles full of statistical data showing that a large proportion of patients are sent to institutions for the treatment of phthisis in the advanced stages of the disease and the general practitioner has been made the goat—he is rather late in recognizing tuberculosis and as a result his patients suffer from prolonged disease, misery, and perhaps death. Other articles bring figures showing beyond any doubt that the general practitioner is blameless; that the patient is at fault in most cases because he applies to his physician for diagnosis and treatment when the disease has made deep inroads into his lung.

However it may be, the aim has been "to get them early"—in the incipient stage. And all efforts have been made in this direction so that at present it seems to me that in some clinics everybody who submits to an examination of the chest for any cause is at once put down as a suspect; in fact, often considered tuberculous, just as a man who as accused and indicted for a crime is considered guilty in some parts of the world till he proves to the satisfaction of those properly fit or authorized to judge, that he is innocent, or not tuberculous as the case may be. And this is not an easy matter for many innocent or non-tuberculous persons.

In some countries where careful records are kept and published of the results attained in this line of medical work, it was found that the consequences of the policy of considering every "suspect" as sick with

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tuberculosis have been disastrous. Thus, in Germany it was found some years ago that many of the "incipients," made eligible for admission to sanatoriums, were fit for military service with all its hardships. What is more, they were enrolled into the army and they served for three or four years, returning home hale and healthy. At present, since the outbreak of the great European war they have found in Germany that many of the patients with "incipient tuberculosis" kept in the sanatoriums at the expense of the public could be sent to the trenches and that they make good fighters. Indeed, Blömel, one of the authoritative writers on tuberculosis, has made a study of the problem recently and has arrived at the conclusion that about 80 per cent. of the incipient cases in the German sanatoriums are not at all sick or they suffer from some other diseases, mainly nontuberculous apical lesions, and he urges the military authorities to draft them into the army at this critical period when their country is in danger. Dr. Fahr (*Deutsche medizinische Wochenschrift*, 1915, XLI, 1082) reports two cases of suicide of persons who were frightened by a diagnosis of pulmonary tuberculosis. One was even an inmate of a sanatorium for some time. At the autopsy not the least trace of active or healed tuberculosis could be found.

There is little or no harm done in some cases of idlers who present indefinite symptoms and signs of tuberculosis and, in fact, suffer from some nontuberculous apical affection, or neurasthenia, psychasthenia, etc., when they are told that they have incipient tuberculosis and are sent to the country, or to some sanatorium for a few months and perhaps "cured." The vacation does them good and they can well afford it. But this class of patients is in the minority. The vast majority of active people in the world cannot afford vacations and great harm often results from an erroneous diagnosis of tuberculosis.

Here is a case which came under my observation: A hard working artisan with a large family depending on him coughed for a few weeks and presented signs of a non-tuberculous apical induration, known as collapse induration and due to mouth-breathing during childhood; he was told at one of the clinics that he suffered from tuberculosis. He heard of the importance of early treatment and immediately gave up his job, sold his furniture, applied for the commitment of his children to an orphan asylum so that his wife could go out to work. I found it a hard job to convince him that he was not sick with tuberculosis, considering his state of mind after being told that he suffered from a deadly malady; he found it harder yet to raise funds for the purpose of purchasing furniture and rebuilding his home.

Another case shows that even those who have no dependents may be harmed by an erroneous diagnosis made hastily: A young college student, with but one year to finish his education, owing to overwork while preparing for examinations, combined with the symptoms of a common cold, was told that he must drop his studies and retire to a sanatorium. Two months later it was discovered that, excepting for some symptoms of neurasthenia and psychasthenia, which were aggravated by the diagnosis of tuberculosis, he was quite healthy; at any rate, he was not tuberculous. But he lost a year in college; and this may be irretrievable.

Take the case of a business man who is well-to-do and the money necessary to expend for treatment does not count. But his affairs are in such a condition that they require his constant personal attention if they are to be kept intact. He is told that there is just "a touch" of tuberculosis in his lung and that several months in a sanatorium will cure him. His business may be ruined during his absence and he may never be able to catch up again, as I have seen in several cases.

From the social and economic standpoint a diagnosis of tuberculosis is a serious affair and we should not hurry in making it unless we are sure of our ground.

But it is argued that tuberculosis, to be cured, must be taken hold of in time and that there is comparatively little harm done if a few persons are inconvenienced, provided the vast majority of tuberculous persons are thus discovered in time. Indeed, some writer has stated that the one who will discover a sure sign of tuberculosis in the very early stage will be as great a benefactor of humanity as the one who will discover a cure, because early treatment assures a cure.

This would be important if it were true. But it is not. That all tuberculous patients could be cured if discovered in the incipiency of the disease is one of the numerous traditional errors which abound in practical medicine, and the sooner we are rid of this error the better for the patients and for the physicians.

It is not true that every tuberculous patient, even if the most approved method of treatment is instituted the very first weeks that the disease makes its appearance by symptoms and signs, can be cured. There are cases which are malignant from the beginning and climatic, institutional, specific, dietetic, medicinal, and other forms of treatment are each and all of no avail. The fact that we call them acute, galloping, hasty forms of the disease does not alter matters. It is not a question of naming the disease; it is a problem of curing the patient. And this we cannot do at the present stage of our knowledge. This class of patients, whether taken in time or neglected, will pursue along the course of a deadly disease to a fatal termination. In fact, institutions which claim without many reservations that they can cure all cases of tuberculosis if sent to them in time, fight shy of progressive, febrile, and acute cases. And when perchance one of them gains admission, even if the patient has been only a few weeks sick, he is at once bundled up and sent back home under the plea that the climate is not suitable for his case, that he will not be benefited by the institutional treatment, etc., and the mortality is thus kept lower than that in the United States army at the Mexican border.

On the other hand, there is rather undue haste in cases of chronic phthisis. We will not save them all by taking hold of them during the first week of their illness, nor will all those who are not treated during the first six months of their illness perish. This is a fact which we all know, but it somehow escapes our memory when examining a patient. In cases with tendencies to cure, owing to inherent resistance of the organism, the disease pursues a slow, sluggish course; periods of health alternating with periods of illness, and there is always time to make a final diagnosis of tuberculosis. In other words, the patient is not at all harmed by waiting. Indeed, under present methods of management of tuberculous cases nearly all dependent consumptives, and they are in the majority, have to wait for proper treatment, irrespective of

whether the diagnosis has been clearly made or not. We are all aware of the fact that the facilities for institutional treatment, which is the only effective method for dependent consumptives, are wholly inadequate; if all incipient cases were recognized in time, it would be found that hardly 10 per cent. could be accommodated in existing state, municipal, and philanthropic sanatoriums.

As a result of undue haste in diagnosticating incipient tuberculosis a considerable proportion of nontuberculous cases are admitted to sanatoriums taking the places of patients with active disease who might be benefited by the facilities these institutions offer. I know of one institution in which there were at one time 50 per cent. of patients with negative sputum, and we are all aware that the majority of these "closed" incipient cases are nontuberculous.

Another thing we must bear in mind: Remaining in a sanatorium is not a simple, harmless vacation for the average patient. The stigma of tuberculosis may stick to him throughout his life. And with the rampant phthisiophobia which has been engendered during recent years in this country the tuberculous stigma is to be dreaded by the average individual. I have known of several cases in which individuals on discovering that the persons courting them had been in sanatoriums refused to marry for fear of the disease. Recently a young woman was sent me for examination to determine whether she was likely to prove a menace while acting as a governess in a private home. Her history was the following: Three years ago she coughed for a few weeks and was sent to a sanatorium admitting only incipient cases, where she remained for two months and was discharged "cured." No tubercle bacilli were ever found in her sputum. Now, on getting a good position she was recognized by another woman who knew her at the sanatorium. She implored her friend to keep the fact that they were both in a sanatorium to herself, but the latter "gave her away." Physical examination showed that she had healthy lungs, and no trace of present or past tuberculous changes could be discovered. But no pleading helped—she lost her position.

That people dread to be known as former patients of sanatoriums is evident from the fact that it is difficult, if not impossible, to form an organization of "alumni" of sanatorium graduates. Some with whom I spoke on this subject told me candidly that they feel grateful for all that has been done for them in the institution, but they want to forget it. They point out that the fact that one has been a patient and cured of tuberculosis in a sanatorium is not a recommendation under present conditions. It does not help in getting a job or in retaining it; it is not of material assistance in contracting matrimony, especially for women.

Several years ago I was consulted by a workman who some three weeks prior to his visit to my office, while at work, expectorated some blood. He at once consulted the physicians in one of our tuberculosis clinics and they, evidently guided by the principle that all hemoptysis is to be cosidered of tuberculous origin, unless due to some other cause which is ascertained at the time of the examination, pronounced him tuberculous. On the day he consulted me there was a recurrence of hemoptysis. A careful physical exploration of the chest failed to reveal any signs of a tuberculous lesion, but inspection of the throat showed distinctly that the bleeding came from varices in the pharynx. Reassured, the patient returned to work, but found that his employer refused to have a consumptive in his factory. But when he brought him a letter from me to the effect that he was not a dangerous consumptive the employer permitted my patient to resume work. And then only his troubles began. The workmen in the factory who witnessed the first attack of hemoptysis, and had read about the great dangers of transmission of tuberculosis, refused to work wih a consumptive and threatened to strike if the menacing individual was not removed. Arguments on the part of the employer were of no avail—only a certificate from the health department, the workmen stated, would convince them. This my patient could not obtain because the physicians at the clinic had not finished their observations, which consisted in all conceivable examinations frequently repeated, but they evidently omitted to look into his throat on the day he was bleeding, in all probability because this was the province of the laryngologist of the clinic, and this specialist came only on some stated day. Perhaps on the day the laryngologist examined this patient the source of the hemorrhage was not visible. At any rate, my patient had to look for another job.

What is to be done in doubtful cases? While I do not claim that my method is the best, yet it seems to me that under present conditions it is the least harmful. In doubtful cases the patient is placed under observation after he is informed that while he presents no definite symptoms or signs of tuberculosis yet there is a lurking suspicion, and he must be carefully watched for several weeks. Some are told that while they are not tuberculous, they are threatened with the disease and unless they take extreme care of themselves they are likely to develop the disease. If there is no fever, tachycardia, emaciation, debility, etc., it is advisable to permit the patient to continue at his avocation while he is under observation, because some cases of incipient tuberculosis temporarily improve during the first few weeks of rest and thus a false sense of security may be gained, as after the administration of opium in cases of appendicitis. If observation shows that the temperature rises to some degree during the afternoon, perhaps a subnormal temperature during the early morning hours on rising, that the cough persists, that there is loss in weight, etc., physical signs will surely make their appearance in the chest, permitting the localization of the lesion in the lung.

In active and progressive cases it will not be very long before these phenomena will clear up the diagnosis. If these symptoms persist but no definite physical signs can be elicited in the chest, the prognosis is gloomy indeed and there is very little to lose by waiting. With but exceedingly few exceptions the more active, progressive or acute the process the sooner the diagnosis will be made, although we are able to save the patient only on exceedingly rare occasions in these acute cases. The more sluggish cases may not reveal themselves by definite physical signs for quite some time. But you lose nothing because the disease does not progress quickly in these cases and the resistance of the patient is good.

It is a fact which is but rarely considered that in the chronic cases, which are the majority of those we have to deal with, the period of active disease was nearly always preceded by several attacks of tuberculosis which were aborted, the patient

making a complete, though often not a lasting recovery within a few weeks or months with or without knowing the true nature of his malady. This is proven by the large proportion of patients in the incipient stage who give a history of cough, fever, nightsweats, emaciation, etc., several months or years before the onset of the present illness, but the symptoms disappeared after some or no treatment. There is no doubt that in most of these cases the previous attacks were of a tuberculous character. The patients who have been "subject to colds" are, as a rule, of this class. The fact that they were not recognized at the time has evidently not harmed them much, because they recovered and felt well for several months or years. We could not have obtained better results had we recognized the true nature of the disease, because if by applying institutional, specific or any other mode of treatment the patient improved to an extent as to be able to pursue his vocation for several months or years, we would consider it a success.

To be sure they are liable to a relapse of the disease, and the relapse may be more acute, more serious than the previous attack. But so are those who have been treated by any method. Phthisis, as we know, consists in a series of acute or subacute exacerbations which are interrupted by shorter or longer periods of quiescence. All we aim at is to obtain long periods of quiesence. Sanatoriums have now recognized this fact and have dropped the term "cured" from their vocabulary. They merely discharge their patients with the disease "apparently arrested." Just contemplate the number of patients in sanatoriums who have taken a liking to institutional treatment to such an extent that they take it periodically, as often as they can gain admission.

To my mind public sanatoriums will fulfill their purpose only after they decide to admit none but really active cases of tuberculosis with fever, nightsweats, emaciation, anorexia, etc.; cases in which the open air and rest, a careful diet, and strict regulation of the life of the patient may prove actually life saving. As long as they aim at admitting only so-called incipient cases in the sense of the official definition, such as have but slight or no constitutional symptoms, particularly gastric and intestinal disturbances or rapid loss of weight, small amount of expectoration or none, and even not containing tubercle bacilli, they will cater to cases of tuberculosis which are spontaneously curable in the vast majority of cases.

A hasty diagnosis of tuberculosis may prove just as dangerous as neglect to recognize active and progressive disease. It may just as well produce misery, break up families, lead to financial and moral disaster as negligence in cases which need careful treatment. Not only the individual affected pays dearly for our frequent haste in pronouncing a person tuberculous, but also the community at large. These nontuberculous patients, as well as those suffering from mild abortive varieties of the disease, take up places in the public institutions which rightly belong to those who suffer from active and progressive disease and who are shut out because the institutions are filled with individuals who suffer from disease which are either spontaneously curable, or could get well while remaining at home. They may also be spared of the stigma which tuberculosis is at present considered, the idea of which, during the enthusiasm in battling against the disease, we have engendered in most of the enlightened communities. In the average case of tuberculosis a prompt diagnosis is undoubtedly desirable, but this does not mean that undue haste is to be exercised. More harm can be done by haste than by reasonable delay.

57 EAST NINETY-THIRD STREET

PEPTIC ULCER FROM THE POINT OF VIEW OF MEDICAL SELECTION.*

BY HENRY WIREMAN COOK, M.D.,
MINNEAPOLIS, MINN.
MEDICAL DIRECTOR, NORTHWESTERN NATIONAL LIFE INSURANCE COMPANY.

IN a search of the literature for reliable statistics bearing upon the mortality from peptic ulcer, we could find nothing. Individual clinicians or clinics have given the immediate mortality from operation or other treatment, and have estimated the percentage of cures, but in most part the history of the cases is not followed over a long enough period to justify the conclusion, or else the number of cases is too small to permit accurate deductions, and in no instance could we find that the cases had been

*Read at the 26th Annual Meeting of the Association of Life Insurance Medical Directors of America, Oct. 14, 1915.

Sheet No. . .

GASTRIC ULCER

IF MORE THAN ONE ADMISSION, USE SEPARATE LINE FOR EACH.

CASE NO.	DATE OF DIAGNOSIS			DATE OF BIRTH (If date of birth is not known, give age at time of diagnosis)			SEX	Height and Weight at Diagnosis			Average Normal Weight prior to symptoms	SYMPTOMS. See note above.							HISTORY SUB-					
												Symptoms prior to diagnosis present within						Symptoms at time of Diagnosis	Medical Treatment					
																			Duration of Treatment					
												1 yr.	1 to 2 yrs.	2 to 3 yrs.	3 to 4 yrs.	4 to 5 yrs.	Prior to 5 yrs.		From			To		
	Mo.	Da.	Yr.	Mo.	Da.	Yr.		Ft.	In.	Lbs.									Mo.	Da.	Yr.	Mo.	Da.	Yr.

studied in comparison with a table of approximately normal mortality.

There is very little of value in estimating the actual mortality from any disease or condition to say that 70 or 80 per cent. were well in five years, or that 30 per cent. were improved, etc., without regard to the normal expectancy for each age group and without regard to other modifying factors. We therefore felt the necessity of obtaining statistical material of a different sort than is at this time available.

The accompanying chart was used to collect the data, which in every case were taken from the original history sheet.

It is with particular gratitude that I acknowledge the courtesy of the Mayo Clinic in putting their wonderful wealth of material at my disposal, of the Johns Hopkins Hospital, the Charity Hospital in New Orleans, and of Professor Hewlett in furnishing the records from Ann Arbor.

Our data were all transcribed by specially recommended medical students, and in Rochester by trained clerks from our Actuarial Department, working under my personal direction and in association with one of the clerks from the Mayo Clinic History Filing Department. It was then rewritten on cards at our office.

In our wider search for reliable data, particularly for subsequent history of the cases, we were surprised to find how incomplete are the histories of many private and hospital clinics, "cures" being freely reported as the result of treatment, with no further report from the patient, after two or three weeks' observation. Such histories are, of course, worthless from our point of view.

The number of individual cases reviewed was 1,599, with record of observation in the majority of cases of from three to ten years.

So much advance in the symptomatology, diagnosis, and treatment of peptic ulcer has been made during the past decade and a half that we can think of the present clinical conception as practically a development of that period. Prior to 1900, when Dr. Robert F. Weir's paper on Perforating Ulcer of the Duodenum first called serious attention to the duodenum as the seat of ulcer, the clinical recognition of peptic ulcer was ordinarily confined to those cases of gastric ulcer which gave the classical symptoms of epigastric pain referred to left shoulder, vomiting, localized epigastric tenderness, and hematemesis.

We now know that only a relatively small percentage of peptic ulcers give all these symptoms, and recognize that in many cases the hyperchlorhydria, the pyloric spasm, the indigestion, etc., that were formerly confidently treated under the staggering nomenclature of the gastric neuroses, are in reality cases of organic disease of the appendix, gall bladder, pancreas, and of the stomach or duodenum.

That we are still constantly overlooking organic disease of the stomach and duodenum, is strikingly illustrated by two cases mentioned by Dr. Louis B. Wilson, of the Mayo Clinic, in both of which eminent clinicians reported negative findings, and a competent surgeon had performed a laparotomy with negative findings, and in one case in Rochester a perforated duodenal ulcer was found three inches below the pylorus, and in the other, carcinoma of the cardia.

The group of cases of "indigestion," "dyspepsia," "gastric neurosis," "hyperchlorhydria," "pyloric spasm," is steadily declining in carefully worked clinics, as the cases are listed under more accurate diagnoses.

Vander Hoof gives the following percentages for the seven leading classes into which 1000 consecutive cases of chronic or recurring indigestion were separated by careful diagnostic work, confirmed in many cases by laparotomy: Appendicitis, 24.6; cholecystitis, 11.7; neurosis, 10.1; peptic ulcer, 9.4; gastritis, 3.6; visceroptosis, 3.4; cancer, 2.3.

In a paper in which the primary interest is insurance selection, we cannot profitably spend too much time on a discussion of the clinical signs and symptoms which cannot be obtained in an ordinary insurance examination. I take it that in a study of any clinical manifestation such as peptic ulcer, we want assistance in analyzing such signs and symptoms as an insurance examination will reveal, with the idea of being able to properly group the individual case and then to have as definite an idea as possible of the mortality which may be expected from the group or groups.

The proper classification of the individual case is strictly medical diagnosis and is a medical problem, and in our case is always limited by the necessary

NOTE:—In giving symptoms use following symbols
"a" for indigestion.
"b" for indigestion and pain.
"c" for indigestion and vomiting
"d" for indigestion and blood
"e" for indigestion, pain, vomiting and blood

For example, a case giving a history of indigestion four and a half years prior to diagnosis with pain a year later, with vomiting between one and two years prior and with indigestion, pain, vomiting, and blood within one year would appear under Symptoms prior to diagnosis, as "4 to 5 yrs. a," "3 to 4 yrs. b," "1 to 2 yrs. c," "1 yr. e."

SEQUENT TO DIAGNOSIS			SUBSEQUENT SYMPTOMS See note above						LATEST INFORMATION					
If Operation			Give symptoms noted within given period following operation; if no operat on g ve symptoms following termination of treatment.						If Dead				If Living	
Date of									Date of Death			Cause of Death	Date of latest Information			Condition—State particularly what, if any gastric symptoms persist. (If additional record on any individual appears under other numbers, give
Mo.	Da	Yr	Character of	1 yr	1 to 2 yrs	2 to 3 yrs	3 to 4 yrs.	4 to 5 yrs	After 5 yrs	Mo.	Da.	Yr.		Mo.	Da.	Yr.	

restrictions of a practical insurance examination; the rating of the group is "prognosis," and given data on a sufficient number of cases over a long enough exposure from which a reliable calculation can be made—it becomes primarily an actuarial problem.

In a study such as this, we must keep these two elements—medical diagnosis and actuarial prognosis—clearly in mind.

I have had the advantage, in preparing this paper, of the collaboration of my colleague, Mr. H. W. Allstrom, associate member of the Actuarial Society. Our records were taken purposely from different clinics, from different sections of the country, so as to attempt a fair average of cases which receive the best clinical and surgical advice and treatment.

The group of cases represented by these clinics has had the benefit of the best advice and the best treatment, if any treatment was permitted, so that in one sense they are a select group, but on the other hand, they are in great part the more serious and more chronic cases. Undoubtedly many cases of peptic ulcer recover without special treatment, or under the care of the regular family physician, the majority never being differentiated from "indigestion" or "gastralgia." Our groups are, however, probably fairly representative of cases which are definitely diagnosed as ulcer.

As stated, our records obtained from clinical cases undoubtedly represent a more serious group of peptic ulcers—that is, those requiring radical treatment. Records of policy-holders with a history of peptic ulcer would, on the other hand, show a very select group, and if a group of ulcer cases had been shown in the Medico-Actuarial investigation, an approximately fair rating would lie somewhat between this percentage and ours.

We shall show the actual tables resulting from our investigation, and then venture to modify their indications into what appears to us to be the most reasonable interpretation possible with the available data.

We cannot here give more than passing notice to the etiology, pathology, or treatment of peptic ulcer, except as the latter may influence the prognosis.

Rosenow's recent work demonstrating the streptococcus as the characteristic bacterial finding in old ulcer, is most suggestive of the condition being an infective process, and that in the treatment of these cases it is highly important to locate and eradicate the original site of infection, inspecting the tonsils, teeth, appendix, gall bladder, etc., just as to-day we would not simply treat rheumatic fever as an arthritis.

Such a very large proportion of ulcer cases give a long history of dyspepsia and indigestion antedating the more presumptive symptoms of ulcer, that it is at least possible that the infection ordinarily takes place in conditions leading to chronic gastric stasis and irritation of the mucous membrane. Here, however, we must also bear in mind that true ulcer may only give symptoms of indigestion, gas, discomfort, etc., over long periods, or may even be entirely latent.

A number of cases are associated with chronic appendicitis and chronic cholecystitis which may act as a causative factor both by furnishing a spot of infection and also by causing more or less chronic gastric disturbance and stasis. Any other condition associated with lowered resistance, such as anemia, neurosis, etc., may furnish the predisposing factor, and when any source of infection exists the peptic ulcer may result. Once established, the constant bath of acid gastric secretion tends to prevent healing.

Treatment concerns us here only as affecting a subsequent ruling, and yet the present status of treatment of peptic ulcer is so strikingly divided among the highest authorities that perhaps in no other condition is there such direct conflict between medical and surgical treatment. Sippy in this country, and Boas abroad, represent the extreme of confidence in medical treatment. Sippy confidently believes that a very large majority of cases, even with considerable chronic obstruction, can be cured by neutralizing the gastric acidity, and proper diet, and Boas goes so far as to state that all symptoms are relieved in fourteen to eighteen days under suitable treatment, and that he never has occasion to use operative measures for uncomplicated chronic ulcer except in rarest cases.

The surgical point of view is voiced by Mayo when he says he can see little difference between the medical cures and the usual abatement of active symptoms, which is one of the periodic and characteristic symptoms of peptic ulcer.

There is no question that some cases of peptic ulcer recover without operative interference, but I have seen no evidence based on the subsequnt history of a sufficient number of medical cases over a period of five to ten years which would justify the optimism in regard to a permanent cure by medical and dietetic treatment in so large a proportion of cases as claimed by some. On the other hand, our cases do show conclusively that surgical treatment does cure for five years and more a considerable proportion of serious cases of peptic ulcer when dietetic and medical treatment over a long period of years has failed. Our cases show cured and improved, 77 per cent. Graham's figures for the Mayo Clinic experience are 67 per cent. cured, 19 per cent. much improved. As Dr. Barker of Johns Hopkins Hospital says: "The question of therapy is still open; medical men and surgeons must continue to work together on this problem until the interchange of opinion and experience bring us at length a conclusion."

This conclusion will no doubt be a compromise between the two views, developing a more definite demarcation between cases suitable for medical and surgical treatment, unless some specific treatment or operation should be devised which will offer more positive results than are obtained at present. Dr. Mayo voices the best course open to-day when he says that those patients who can recover under medical treatment should be given a chance to do so. . . . "but that if permanent cure does not take place within a reasonable period, the patient should have surgical treatment."

The results of treatment in our cases are indicated by the following tables:

TABLE I. RESULTS OF LATEST INFORMATION

	Excisions and Pyloroplasties		Gastro-enterostomies		Other Operations		Medical Treatment		No Treatment	
	No.	%	No.	%	No.	%	No.	%	No.	%
Recovered	144	53	349	62	6	32	27	33	10	45
Improved	47	18	92	16	6	32	23	28	7	32
Unimproved	52	19	78	14	4	21	19	24	1	5
Dead	28	10	44	8	3	16	12	15	4	18
Total	271		563		19		81		22	

The foregoing table includes all those cases upon which subsequent information was secured. It does not include those which died within three weeks of operation or those of which nothing was learned after operation or treatment.

The following table gives a similar comparison, but only on those cases upon which the latest information was received more than three years after operation or termination of hospital treatment:

Table II.

	Excisions and Pyloroplasties		Gastroenterostomies		Other Operations		Medical Treatment		No Treatment	
	No.	%	No.	%	No.	%	No.	%	No.	%
Recovered....	81	62	146	67	2	33	12	44	5	83
Improved	20	15	37	17	3	50	8	30		
Unimproved..	24	18	25	11	1	17	5	19	1	17
Dead	6	5	11	5			2	7		
Total	131		219				27			

In deciding whether a given applicant should be classed under peptic ulcer, we have, first, the frank admission of "ulcer" in the examination, which was formerly rare, but with better general diagnostic methods is becoming more frequent; second, the cases from which ulcer may be suspected from the given history or examination; third, the cases in which it may be suspected from supplementary information obtained from the examiner.

A history of recurrent or persistent dyspepsia accompanied by epigastric pain, is highly suggestive of gall-bladder disease or peptic ulcer, particularly the latter, if the pain is related to the taking of food. The more characteristic pain of stomach ulcer is soon after taking food; of duodenal ulcer, before meals, at the height of digestion and of acidity, or when stomach is emptying.

Few blanks that I have seen inquire specifically for a history of peptic ulcer. It would seem from the seriousness of the condition and the increasing frequency with which it is recognized and treated, that the time has come to include this question in the blank, if different specific diseases are asked for. In those blanks which cover all diseases under the general terms of cardiovascular, nervous, gastrointestinal, etc., sufficient confidence is placed in the local examiner to expect him to elaborate these questions to the applicant, and the general question of gastrointestinal disease would have to suffice.

In view of the comparatively recent recognition of the frequency of gastric ulcer, the suggestion that companies should give their examiners some advice on looking more closely for organic disease of the stomach is timely. "Indigestion" corresponds in the general practitioner's nomenclature in relation to gastric ulcer, about as chronic bronchitis did in relation to phthisis twenty years ago. Where examiners report indigestion, dyspepsia, abdominal pain—we are, of course, accustomed to write back for more definite advice with particular reference to appendicitis, renal or hepatic colic. We should unquestionably add inquiries aimed at eliciting evidence of peptic ulcer; that is, location of pain and radiation, evidence of localized tenderness, relation of pain to meals, if vomiting, if hematemesis.

There is considerable value to a definite question in the blank naming the specific disease. It certainly calls the examiner's attention to its possibility, and he is more likely to elicit pertinent information by his questioning and his examination.

It is most important in obtaining a history of "indigestion" to ascertain whether the condition has recurred, the intervals of recurrence, and the months or years the condition has persisted. In considering a case of recurrent indigestion with pain, we must face the mortality of chronic appendicitis, cholecystitis, and peptic ulcer, where our investigation has eliminated a toxic cause such as tuberculosis, uremia, etc.

As would be expected, our figures show that first symptoms antedate treatment for a much shorter period in the medical cases than in the surgical cases; in other words, surgical intervention is usually delayed, and in a very large proportion of cases is preceded by more or less medical treatment. Surgical "cures," therefore, are in many cases enjoyed after the failure of medical treatment.

Of the 1599 cases, 58 per cent. had symptoms for more than five years; 23 per cent., under one year; 19 per cent., between one and five years.

Divided into medical and surgical:

Surgical: 65 per cent. had symptoms for more than five years.
11 per cent., one year or less.
24 per cent., between one and five years.

Medical: 34 per cent. had symptoms more than five years.
33 per cent., within one year.
33 per cent., between one and five years.

The practically universal symptom is indigestion, or indigestion and pain; 26 per cent. had indigestion, or indigestion and pain, without vomiting or blood; 41 per cent. had vomiting; 23 per cent. had vomiting of blood.

Of those cases giving first symptoms more than five years prior to the treatment under consideration, 20 per cent. had indigestion only, previous to the five-year period; 48 per cent. had pain; 27 per cent., vomiting; 5 per cent., blood.

Indigestion and pain is most frequently the earliest symptom, the vomiting and hematemesis tending to develop at a late date, and vomiting of blood in a large majority of cases coming within one year of the time when radical treatment is sought. See following table:

Table III. Percentage of Total Cases.

	Vomiting Without Blood	With Blood
1 year prior....	16%	15%
1-2 years prior..	6	2
2-3 years prior..	3	1½
3-4 years prior..	2	1
4-5 years prior..	2	½
5+ years prior. ...	14	3

For the purpose of computing expected mortality we eliminated those cases upon which no information had been obtained following treatment, and those which died within three weeks of treatment. The cases thus eliminated are shown in the following table:

Table IV

Character of Treatment	Excision and Pyloroplasty	Gastroenterostomy	Other Surgical	Medical Treatment	No Hospital Treatment	Total
Total number of cases	130	763	20	345	72	1599
Died within three weeks of operation or treatment	6	39	1	26	1	73
Not heard from after operation or treatment	3	161	...	238	49	551
Balance from which latest information was secured	121	563	19	81	22	955

From these figures it will be noted that of a total of 1,599 cases, 86 died within three weeks following treatment—a ratio of 5.4 per cent.—surgical 5 per cent., medical 6.6 per cent. This immediate high mortality is undoubtedly due to the serious cases admitted to certain clinics, *i.e.* cases with perforation, acute hemorrhage, etc.

The favorable operative mortality of the Mayo Clinic, 1.5 per cent., would probably be more representative of the best surgical treatment of interval cases. Dr. Mayo's estimate of general operative mortality for duodenal cases is 2 per cent., with 3 per cent. to 4 per cent. for gastric cases. An immediate mortality of 2 per cent. covering all cases, medical and surgical, would probably cover an average experience on a group representative of the ordinary insurance applicant.

TABLE V.—NUMBER OF CASES ON WHICH SUBSEQUENT INFORMATION WAS RECEIVED LISTED BY YEAR OF LATEST INFORMATION

Years After Operation or Termination of Treatment	Excisions and Pyloroplasties	Gastroenterostomies	Other Surgical	Medical Treatment	No Hospital Treatment	Total
1	52	72	8	30	7	169
1- 2	45	160	3	13	1	222
2- 3	43	112	2	11	8	176
3- 4	53	72	3	7	2	137
4- 5	39	67	2	4	2	114
5- 6	22	50	1	4		77
6- 7	10	19		7	2	38
7- 8	4	9		1		14
8- 9		1		2		3
9-10		1				1
10 and later	3			2		5
Total	271	563	19	81	22	956

We have divided the mortality by years of exposure following treatment and by method of treatment, as shown in Table VI.

We did not feel that the number of our cases justified further subdivisions by age. After the first year following operation on the cases under observation, the ratio of actual to expected mortality is not definitely affected by age—if anything, the tendency being to an increase in percentage with increase in age. On most of those cases dying within three weeks of operation, which cases are not included in our Table VI, but are shown in Table IV, the death rate, particularly at ages under 50, is not greatly affected by age, and the deaths can more properly be considered as a percentage of total operated on rather than a percentage of expected mortality. The same condition holds true to a large extent on the deaths during the first year but subsequent to three weeks after operation.

Including all surgical cases, the ratio during the first year following operation is 570 per cent., of expected on ages 39 and under, 427 per cent from ages 40 to 59, and 257 per cent. on ages 60 and over. Where we have attempted definite insurance ratings, we have to eliminate the cases of "other operations," for the reason that they represent a poorer type of risk than will usually be found in insurance risks,

TABLE VI.—MORTALITY AFTER OPERATION OR TERMINATION OF HOSPITAL TREATMENT OR AFTER DIAGNOSIS AT HOSPITAL IF NO TREATMENT, MEASURED BY THE MEDICO-ACTUARIAL ULTIMATE TABLE OF MORTALITY

Year	Excisions and Pyloroplasties				Gastroenterostomies				Other Surgical				Medical Treatment at Hospital				No Treatment at Hospital			
	Exposed to Risk	Expected Deaths	Actual Deaths	Ratio %	Exposed to Risk	Expected Deaths	Actual Deaths	Ratio %	Exposed to Risk	Expected Deaths	Actual Deaths	Ratio %	Exposed to Risk	Expected Deaths	Actual Deaths	Ratio %	Exposed to Risk	Expected Deaths	Actual Deaths	Ratio %
1	246	2.50	13	520.	530	6 43	20	311.	16	0.26	3	1154.	66	0 66	5	758	18	0 22	1	455.
2	202	2.10	7	333.	412	5.46	7	128.	10	0.12	0		48	0.59	2	339.	15	0.20	1	500.
3	149	1 64	2	122.	269	3.72	6	161.	7	0.10	0		36	0 50	3	600.	10	0.13	2	1538.
4	101	1.17	1	85.	178	2.53	5	198.	5	0 09	0		26	0 32	0		5	0 06	0	
5	57	0 71	2	282.	111	1.67	4	240	2	0 05	0		20	0 26	0		3	0 03	0	
6	29	0 29	1	345.	53	0 82	0		.8				15	0 23	0		2	0 02	0	
7	11	0.14	2	1429	16	0 24	1	417.					8	0.14	1	714.	.7	0.01	0	
8	4	0 03	0		3	0 05	1	2000.					4	0 10	0					
9	3	0 02	0		1	0 01	0	0					3	0 09	1	1111.				
10	3	0 02	0		6		0						2	0 06	0					
11	1	0.01	0										2	0 06	0					
12	.2	00	0										.8	0.05	0					
1	246	2 50	13	520	530	6 42	20	311.	16	0.26	3	1154.	66	0 66	5	758.	18	0.22	1	455.
2-5	511	5 62	12	214	970	13 38	22	164	25	0 36	0	0	130	1 67	5	299	33	0 42	3	714.
6 and later	51	0.51	3	588	74	1 12	2	179					35	0 73	2	274.	3	0 03	0	

SUMMARY

Year	All Surgical Cases				Medical Treatment and No Treatment at Hospital			
	Exposures	Expected	Actual		Exposures	Expected	Actual	
1	702	9 19	36	392	84	0 88	6	682
2 and later	1631	20 99	39	186	201	2 85	10	351

In estimating the mortality on successive periods following treatment, we must bear in mind that those cases which report subsequent history in reply to inquiry, will probably be the more unfavorable cases, and this tendency will increase directly with the length of the interval after treatment. That is, the well patients tire of answering the routine questions and tend to gradually drop out of sight. This tendency must be taken into account as modifying the high mortality shown, with its tendency to steady increase, and is illustrated by the following table. We have allowed for this tendency in our appended suggested rulings.

Including all surgical cases, the ratio during the first year following operation is 570 per cent., of expected on ages 39 and under, 427 per cent from ages 40 to 59, and 257 per cent. on ages 60 and over. Where we have attempted definite insurance ratings, we have to eliminate the cases of "other operations," for the reason that they represent a poorer type of risk than will usually be found in insurance risks, being mostly exploration for perforations, many patients being moribund on admission. Considering, therefore, strictly the gastroenterostomy, the excision and the pyloroplasties, the mortality in the first year was 582 per cent. on ages 39 and under, 413 per cent. on ages 40 to 59, and 203 per cent. on ages 60 and above.

Analyzing our figures with reference to severity of prior symptoms, we find that the mortality on cases without vomiting or hematemesis prior to the treatment under consideration, proved much more favorable than those which had either simple vomiting or vomiting of blood. This would be naturally expected on ages 39 and under, 427 per cent. from resent the later cases, after obstruction and statis had developed. For example, gastroenterostomies on cases without vomiting or hematemesis gave practically a normal mortality after the lapse of one

TABLE VII.—MORTALITY BY AGE GROUPS

	Excisions and Pyloroplasties				Gastro-enterostomies				Other Surgical				Medical Treatment				No Treatment at Hospital			
	Exposures	Expected	Actual	Ratio %	Exposures	Expected	Actual	Ratio %	Exposures	Expected	Actual	Ratio %	Exposures	Expected	Actual	Ratio %	Exposures	Expected	Actual	Ratio
1st year:																				
Ages 39 and under..	108	0 49	3	609	173	0 88	5	586	6	0.03	0	0	32	0.15	1	665	7	0 04	0	0
Ages 40-59 ..	125	1.42	9	634	295	3.18	10	314	7	0 08	1	1250	29	0 30	4	1333	7	0.06	1	1667
Ages 60 and over ..	13	0 59	1	169	62	2.37	5	211	3	0.15	2	1330	5	0.21	0		4	0.12	0	0
Total .. .	246	2.50	13	520	530	6.43	20	311	16	0 26	3	1154	66	0.66	5	758	18	0.22	1	455
2d and subsequent years:																				
Ages 39 and under..	248	1.31	1	76	348	1 82	4	220	6	0.03	0		67	0 34	2	588	13	0 07	1	1429
Ages 40-59	290	3.33	10	300	579	7.47	15	201	15	0.18	0		83	1.32	3	227	16	0 16	1	625
Ages 60 and over...	24	1.49	4	269	117	5 21	5	96	4	0.15	0		15	0.74	2	270	7	0.22	1	455
Total	562	6.13	15	245	1044	14 50	24	166	25	0 36	0		165	2.40	7	22	36	0 45	3	667

SUMMARY

	All Surgical Cases								Medical Treatment and No Treatment at Hospital							
	1st year				2d and later years				1st year				2d and later years			
Ages	Exposures	Expected	Actual	Ratio	Exposures	Expected	Actual	Ratio	Exposures	Expected	Actual	Ratio	Exposures	Expected	Actual	Ratio
39 and under.....	287	1 40	8	571.	602	3 16	5	158	39	0 19	1	526.	80	0 41	3	732
40-59 . .	427	4 68	20	427.	884	10 98	25	228	36	0 36	5	1389.	99	1.48	4	270
60 and over.....	78	3 11	8	257.	145	6 85	9	131	9	0 33	0		22	0 96	3	313
Totals	792	9.19	36	392	1631	20 99	39	186	84	0 88	6	682	201	2 85	10	351

year—a ratio of three deaths to 3.21 expected. Excisions and pyloraplasties showed two deaths to 1.06 expected; medical treatment, three deaths to 1.01 expected.

Although the number of cases is too small for positive conclusion, the relation between the three divisions of treatment is similar to results in Table VI, and the ratio of actual to expected deaths is less than the total group shown in Table VI.

In order to give our work a more concrete value, we have ventured to suggest some rulings for different groups, which might be broadly deduced from our figures and from a free interpretation of them, —attempting to co-ordinate the percentages found with the results of general clinical observation. We appreciate that these rulings must be purely tentative, and we submit them with the idea that they may induce free discussion, and with the knowledge that they will be modified by subsequent data and by the individual judgment of anyone who may care to use them as a guide to action.

We think it advisable, in cases with surgical treatment, to limit consideration for any form of policy to cases that had been without serious active symptoms for one year, such as hematemesis, vomiting, severe pain, etc.

We have then divided other surgical cases as follows:

First: After gastroenterostomy where there has been o previous vomiting or hematemesis—accept standard after three years, providing there were no subsequent symptoms—between one and three years, rate 135 per cent. to 150 per cent.

Second: After gastroenterostomy, where vomiting or hematemesis had appeared in prior history—refuse for standard for at least five years,—acceptable on rating for excess mortality of 150 per cent. to 175 per cent.

Third: After excision and pyloroplasty, proving more unfavorable than after gastroenterostomy—we would suggest rating of 140 per cent. plus when no previous vomiting or hematemesis—increasing to 200 per cent. plus when there has been vomiting or hematemesis.

Since the original draft of this paper was completed, a paper by Drs. Finney and Friedenwald has appeared (*American Journal of the Medical Sciences*, October, 1915) in which decided preference is expressed for pyloroplasty over gastroenterostomy, so that this point must still be held *sub judice*. When it is a choice between two methods of operation, the results will always be markedly influenced by the skill and familiarity of the operator in the particular operation of his choice. For example, when the difference in results is not great, a surgeon who performs pyloroplasty and has a large experience with a certain technique would get better results than with gastroenterostomy; whereas a surgeon who preferred gastroenterostomy might obtain the opposite results. The personal equation can never be left sight of in considering any medical question.

Such is the character of operative procedure required for the radical cure of peptic ulcer that in this condition, particularly, the experience and skill of the surgeon will be an important factor in determining end results. Our figures and deductions would hold only where skilled operative procedure has been employed.

After medical treatment: In attempting to rate a case of peptic ulcer which has had any active symptoms within two years, particularly if vomiting or hematemesis—we feel that the possibility of operative interference with its immediate mortality must be allowed for, and that it could perhaps be more properly covered by an extra charge than by rating up in age.

The direct operative mortality we have estimated

at 2 per cent., and 3 per cent. for the first year following operation, or a total of 5 per cent. This, including a good loading for possible fluctuation, would make the extra charge at least double that which we have been accustomed to add for recent attack of appendicitis without operation.

For the purpose of covering this immediate excess mortality, it would be most desirable to collect the entire extra premium the first year, but from a practical standpoint of being able to place the policy on a basis satisfactory to the applicant, it is necessary to distribute the charge for a few years.

In the appendix cases we have been charging $10 extra the first year, this extra decreasing 20 per cent. for the next five years. In the ulcer cases, the extra would, of course vary with the severity of symptoms and interval since the last active symptoms.

In considering cases that have been free from symptoms after medical treatment or without special treatment for more than two years, we feel that they may be rated from 175 per cent. to 250 per cent. dependent upon severity of symptoms, particularly upon history of vomiting or hematemesis. Of course the two-year period allowed for possible operative mortality in these cases is largely arbitrary, and the choice of a flat extra or a rating up in age will be determined by individual judgment or special features of the case. From fifth to tenth year after active symptoms, these cases may be rated at 150 per cent. plus minus, and after ten years, may be acepted as standard.

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CHANGING A FALSETTO VOICE TO A BARITONE.

BY FRANK [illegible] HALLOCK, M.D.

NEW YORK.

JOHN E., 35, telegrapher, came to consult me for some slight illness. In speaking he used the falsetto voice and never had spoken in the normal register. Before dismissing him, in connection with the illness for which he came, I advised him to go to some elocution or singing teacher to learn to speak in his normal voice. The patient said he had not supposed that anything could be done to change his voice, but he would be glad to go to such a teacher and would take my advice.

It occurred to me later that I would like to try the experiment myself, so I sent for him, and he came in due time. I took him to the piano. All I know about the piano is thumb exercises, but I found that he knew less, for he could not carry a tune correctly, nor even a single note. He was consistently sharp or flat. His musical ear was decidedly defective. As I sounded various notes in the scale, he sang them in the falsetto, although this was difficult because of his defective ear. I brought him down in the descending scale as far as his voice would go, and then I sounded the next lower note. He promptly sang some note in the upper scale, any note, all in the falsetto. I tried the experiment several times, always with the same result. I sat quite puzzled and beaten. I had not the least idea, in these circumstances, how I was to proceed with a case like this, and doubted if it would be possible to make any progress at all with him.

Suddenly an idea came to me, and I asked him to clear his throat and made him repeat this several times while I listened carefully. In that noise of clearing his throat, I heard the man's natural voice, or thought I did, the suggestion of it, enough to begin on. I requested him to cough and clear his throat again and again. The natural voice was evident to me at the very end of the coughing noise. I asked him to notice that as he cleared his throat, the sound naturally separated into something like two parts, the cough and a noise which followed it. (It might be represented, though not correctly, by the word "a-hem.") I perceived that I might use this reaction to the cough, as it might be called, the second part, the sort of rebound, if I could get hold of it. All I had to do then was to get him to prolong the second sound. I made him repeat the exercise and, little by little, got him to accentuate this second part of the cough. Then I asked him to divide this cough-clearing process, consciously, into two parts, much as if he were to say "a-hem." He learned to do this, though it was difficult for him, as he often broke into the falsetto. In this way he finally produced out of this second sound a good full tone in the normal register. All this took me about an hour, and I was satisfied that I had struck a method by which to bring out his natural voice.

In speaking he still lapsed into the falsetto, of course; up to this time in his life he had never used the slightest suggestion of the normal voice, it was fixed in the falsetto. I saw him again on the following day, and although he was able to produce the normal register tone, when carefully guided to it, the voice would still break often, and whenever he spoke it was in the falsetto. I practised with him, going from one note to another until he got a range of an octave in the normal register. That was all I needed for practical purposes. His voice became more and more free. He said that the voice sounded strange to him and was quite in doubt as to whether it was not an artificial voice that I had produced. I continued to work with him, developing this tone and got him to speak by first singing a simple word, then speaking it in a singing tone. From one word, I easily got a few more out of him. The voice still broke occasionally, but it was a simple matter now to keep it fairly steady in the normal. I gave him some simple exercises with simple phrases, such as "good morning," "hello, Charley,"

"wake up," "how's the parrot today?" and such nonsense, spoken on a full breath and in a "bold, bad man" sort of way. I told him to practise a little at the piano at home the exercises I had done with him and also the exercises in speaking, to blurt the phrases out to anyone who happened to be near him. And he did it.

On the fourth day I picked up a volume of Longfellow and asked him to read three or four verses. He did it without a break, and so well that I fetched in a lady who happened to be in the house at the time and who was well acquainted with the patient. I seated her comfortably in an armchair and put him through his little stunt. She was utterly astonished! I saw him every day for about a week, and then less and less often. His normal voice was thoroughly established, a good manly baritone. He telephoned to everyone he knew within a hundred miles so that they might hear his new voice. He was not sure for a considerable time that it would last. One day, however, a couple of months from the time I began with him, I asked him to speak again in the old way. He was unable to utter a sound in the falsetto; he had forgotten how. This seemed to me fairly stupid, but he could not do it.

This happened some years ago. I never reported the case because I imagined such cases must be well enough known to the specialists, and it did not seem to me that it would be of particular interest. Recently, however, I had occasion to speak of the case in the presence of several physicians, one of whom was afflicted in the same way. I related the case for his benefit. As he seemed interested, I told him I would like to try and straighten him out if he cared to have me to do so. A reputable older physician, connected with one of New York's leading hospitals, who was present, expressed the opinion that such cases are structurally defective and incurable. I never saw the young doctor again, and he may or may not have taken this man's word for it, but this case was enough like that of "J. E." to warrant me in supposing that his voice could also have been restored in a similar way.

The incident made me think the case of "J. E." worth reporting.

150 West Eightieth Street

Miscellany.

Duration of Smallpox Immunity After Successful Vaccination.—Dr. William H. Park of the Research Laboratory of the Department of Health has recently reported the results of investigations into the duration of smallpox immunity conferred by successful vaccination. This may be determined in two ways: (1) by observation of those who after being successfully vaccinated are exposed to smallpox, and (2) observing the duration of immunity to vaccination with vaccine virus. Although the inspectors of the Department of Health occasionally meet with persons who can be revaccinated successfully at the end of six months, investigations have shown that 14 to 28 per cent. of persons are susceptible to revaccination at the end of one year, 50 per cent. at the end of five years, and 85 to 89 per cent. at the end of ten years. When vaccine of high potency is used 99.9 per cent. of persons who have never been vaccinated previously will "take." Vaccinated persons are susceptible to revaccination before they lose their immunity to smallpox, as the rubbing in of vaccine virus is a much more direct inoculation than the breathing in of the infected air. The experience in this country during three years, as to the time after vaccination that smallpox has developed in those previously successfully vaccinated may be taken as a reliable indication of the length of the immunity. Statistics issued by the United States Public Health Service, for three years ending last June, show that in 6,312 cases of smallpox which were carefully investigated, only 79 patients had been vaccinated within seven years preceding the attack, while 3,386 had had their last vaccination more than seven years previously, and 2,839 had never been vaccinated. In 18,953 cases reported to the public health authorities, but not investigated, 798 were said to have been vaccinated within seven years, and 1,632 more than seven years preceding the attack, while 16,523 had never been successfully vaccinated.

The shortest period of immunity which has been conferred by vaccination in the experience of the Department of Health is nine months, but in the literature three cases have been reported of even shorter duration, one of one and a half months, one of four months, and one of six months. Dr. Park states that while it is well known that an occasional individual responds only slightly to immunizing agents, this lack of response is, fortunately, in the case of smallpox vaccination, never absolute, although the degree of immunity established varies with the individual. The mass of statistics now available on this subject indicates that it is wise for anyone exposed to smallpox to be vaccinated, if a successful vaccination has not been obtained within nine months. The general population should be vaccinated about every five years when smallpox is at all prevalent, and even when the disease is absent it is necessary that all persons be vaccinated in infancy and again in childhood so as to keep the population moderately immune.

Available Radium Sources.—A subject of extreme interest is the possibility that the reserves of radium in Nature are very limited in amount. Recently several investigations have been made with this end in view. Naturally only paying ores are considered. Deposits of this sort are to be found at Joachimsthal, Cornwall in England, Portugal, Australia, and especially in Colorado and Utah. At a session last summer of the Niederrheinische Gesellschaft f. Natur- und Heilkunde of Bonn Steinmann stated that this "visible" supply of radium was about 400 grams, of which only one-fifth or 80 grams was fully available. We have actually in use 12 grams, while the annual production at the present time is between 4 and 5 grams. To supply properly all the leading medical centers we need 60 grams.

Anthropological Studies.—We referred recently to the anthropological researches made by Buschan of the German medical staff on the prisoners of many races in German hands and also many of the young soldiers. Austria has now followed suit and Dr. Pöch, professor of anthropology and ethnography at the University of Vienna, has been ordered by his Government to conduct anthropological measurements among the prisoners of war under Austrian control. Measurements will be taken of the length and breadth of skulls, chests, and cheeks; the shades of color of hair and eyes will be tabulated, and in the case of prisoners of little known nations vocabularies will be collected.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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ANNUAL REPORT OF THE UNITED STATES PUBLIC HEALTH SERVICE.

THE report of the Surgeon-General of the Public Health Service has just been published and is from all points of view a most satisfactory document. It provides a record of the largest amount of work performed by that very capable body and supplies yet another proof of the extreme value of the service rendered to the public by its individual members. Since the passage of the law of 1912 the functions of the Public Health Service have been materially broadened, thus greatly increasing its powers for good and its usefulness to the American people. Administrative supervision of the work of the Service is conducted through seven divisions, and operations for the fiscal year are reported under the titles of the divisions as follows: 1, Scientific research; 2, Foreign and insular quarantine and immigration; 3, Interstate quarantine; 4, Sanitary reports and statistics; 5, Marine hospitals and relief; 6, Personnel and accounts; 7, Miscellaneous.

Among the most important studies carried on during the year under review have been those dealing with pellagra. These all seem to point to the view that pellagra is a diet disease, a "mal de misère." In order to determine whether it is a deficiency disease, extracts of certain foods rich in so-called vitamines were prepared in large qualities at the Hygienic Laboratory in Washington. These extracts were then administered to patients and their therapeutic action was noted. The results obtained will be reported in the near future. The metabolism of pellagrins was also subjected to an intensive study. A new method for the quantitative estimation of gastric pepsin has proved of great value in the study of gastric functions in cases of pellagra. It was found that in almost all severe cases digestion was greatly reduced and pepsin and free hydrochloric acid were usually absent. The study of urinary indican revealed the fact that this product of intestinal putrefaction may be entirely absent in marked cases of pellagra, provided that the patient consumes a mainly vegetable diet. On the other hand, a diet rich in animal protein leads to a marked increase in the excretion of indican. It seems, therefore, that no relation exists between intestinal putrefaction and the intensity of the disease, so far as can be ascertained by the study of indican excretion. The absorption of food from the intestines seems to be normal in pellagra, except in cases with excessive diarrhea. The study of the protein metabolism in pellagra has thus far not revealed any abnormality. The other phases of metabolism are under investigation. It may then be stated that the final experiments which have only just been published have led to the conclusion that pellagra is a deprivation disease resulting from a faulty diet containing an excess of carbohydrates. This conclusion has been reached as the culmination of investigations extending over a period of seven years.

The crusade against malaria has been continued with much success. Surveys of breeding places of Anopheles, together with a study of the geographical and climatic, social, hygienic, and economic conditions, and the prophylactic measures best applicable for the control of malaria, were made in 34 selected localities. These surveys have been of great value in the study of the life and habits of anopheline mosquitos, and the measures recommended for the abatement of mosquito breeding places, when carried out, have resulted in a great reduction in the incidence of malaria.

The antitrachoma campaign during the past year has been actively conducted by Surgeon John McMullen. The experience gained thereby has further demonstrated that the method adopted by the service of establishing small ophthalmological and public health hospitals in the communities where the disease is known to exist presents the best solution of the trachoma problem. It serves the several purposes of curing the existing cases and of furnishing bases for the district work and a means of furthering education. The very gratifying results accomplished in both eradication and prevention through these hospitals has justified the enlargement of the fields of operation and the extension of the work to other States.

When plague broke out in New Orleans the State and local health authorities requested the Public Health Service to take charge of the situation. Extensive rat-proofing and other antiplague measures were put into effect with the result that the disease was eradicated from among human beings and the rodent infection was practically exterminated. Studies of occupational diseases and industrial hygiene have occupied the attention of the service at many places during the year. A survey of the industries of Cincinnati was made to determine the cause of the prevalence of tuberculosis among industrial workers. The investigations relating to the migration of persons suffering from tuberculosis were completed. Upon the request of the health authorities of five States, the organization and operations of the respective boards of health were studied and recommendations advanced for the improvement in the powers and duties of these bodies. The health organizations of several cities were likewise investigated.

During the year the service has continued its systematic studies of typhoid fever. This has taken the form of epidemiological surveys of local outbreaks when requested by the State authorities.

advice in improving local methods of sewage disposal, object lessons in prevention, typhoid vaccination of Government employees and beneficaries of the service, and educational lectures, bulletins, press notices, etc. Rural sanitation work was carried on in six different States and everywhere resulted in the reduction of typhoid and other communicable diseases.

Public health laboratories for the prevention of the interstate spread of disease were established at Chicago, Seattle, and numerous other railway centers. Additional duties have been placed upon the service by the extension of relief benefits to the newly organized Coast Guard and the physical examination of seamen applying for the rating of "able seamen." For this reason, and because of the greatly increased health functions of the service an increase in the commissioned personnel is recommended.

It would be superfluous to praise the work of the Public Health Service. It will suffice to say that its high standard of efficiency has been well maintained during the past year and that judging from results it must be regarded as one of the main health assets of the country.

MEDICO-MILITARY ASPECTS OF THE EUROPEAN WAR.

It goes without saying that when the European war first broke out the organization of the German armies was superior, by far, in all respects to that of the armies of the Allies and of course this remark applies with equal force to the medico-military service of the contending armies. However, time has to a great extent remedied this state of affairs, and now, at any rate so far as the French and British medico-military services are concerned, there are few points in which the Germans can boast of a superior organization. Recently, a most instructive book has been published being a "Report on the Medico-Military Aspects of the European War from Observations Taken Behind the Allied Armies in France," by Surgeon A. M. Fauntleroy, U. S. Navy. The book in question is most illuminative and provides an excellent "bird's eye view," if the term is allowable, of the medico-military situation in the allied armies in France.

It would be impossible within the limits of this notice to consider even briefly the various phases of the subject dealt with by the author. With regard, however, to the prophylactic treatment of the septicemic grade of wound infection it is of interest to quote the following statements: "The prophylactic procedures would seem to resolve themselves into the precautions which are more or less familiar to all, and which are the usual precautions against wound infection. Under the present circumstances of trench warfare in Europe, it would seem to be well-nigh impossible to obviate an exceedingly high percentage of wound infection, and especially infection with the organism responsible for the progressive emphysematous necrosis. The reasons for this are not far to find. In the first place the entire western European war area has undergone for many years an intensive process of cultivation which has resulted in the soil being saturated with fertilizers and caused it to be the medium par excellence for harboring the infective organism. Once the trenches are dug deep in this soil, there is no escape from the ever-present conditions which are favorable for infecting every wound. Soldiers are obliged to occupy these trenches for days and nights consecutively under all weather conditions, so that their clothing and body surface become more or less permeated with the trench dust and dirt, which, of course, contains the infective organism in great numbers."

Consequently, the author thinks that a consideration of these facts must lead to the theoretical conclusion that something might be accomplished in a prophylactic way by not only covering the floor of the trench with small fagots of wood, which is now the universal custom, but by making an effort to disinfect the sides of the trench. As said before, however, it would be useless to endeavor to consider the book in detail, and it must suffice to say that it is well worth a careful study. The illustrations are not the least attractive part of the book.

Carcinoma of the Male Breast.

As is generally understood, this neoplasm has but slight connection with typical cancer of the female breast, being of very exceptional occurrence despite the fact that it occurs in a superfluous structure. It bears some resemblance to the scirrhous or atrophic form of cancer of the female breast in that it occurs in senile subjects, grows slowly, attains but limited size, and tends from the first to involve the lymph node paquet in the neighboring axilla. That so rare yet typical a growth can occur in a highly atypical form is shown by a case described by Husse in the *Muenchener medizinische Wochenschrift* of November 9. The man was but 43 years old, a consumptive, and had besides a mitral lesion of unknown duration and origin. Two months before consultation a small tumor was noted in the left breast. This grew with amazing rapidity and both macroscopically and microscopically appeared to be a medullary cancer. The lymph nodes in the axilla already formed a paquet the size of an English walnut. The patient submitted to a very radical type of removal without ill consequence. The case is singular in many respects. Florid cancer in any location is not prone to attack a man with health impaired by cardiopulmonic disease, and it is of course a mystery why it should have selected so rare a site. Since it was the left lung alone which was involved as well as the left heart, one is inclined to wonder whether frequent percussion close by or over the cancer area could have by a succession of petty traumatisms furnished the necessary determining factor. The author is entirely silent on this possibility, perhaps because it was difficult to secure a good personal history.

Von Noorden on High Protein Dietaries.

In discussing a paper on blood as food read by Blum at Frankfurt last May (*Münchener medizinische Wochenschrift*, October 19), von Noorden

stated that the longer he lived the more firmly he believed in a high protein regimen. Experiments with low protein simply show what man can do if he must. He deprecates present day efforts to ascribe all evil to high protein diet. If we choose the low protein regimen future generations will be weaklings. The physiological protein minimum is a fad (Modethorheit). Hence we must—especially when meat foods are high—make an economic use of such products as blood, naturally in the form of sausages (blood pudding, blood and tongue sausage, etc., etc.). Blood is even medicinal as a carrier of organic iron. Blood powder and the like may also be used for reinforcing other dishes, such as soups, with protein. As far back as 1893 the author tested subjects on a bread and butter and potato diet by adding increasing quantities of blood, using as controls eggs and cheese and meats. Up to a certain point the utilization of blood was excellent. The blood serum is doubtless readily utilized while the reverse may be the case with the hematin which appears to increase the indican and other sulphuric acids in the urine. The subject should be studied anew, von Noorden holds.

Warfare Against Diphtheria in Greater Berlin.

The presence of the great war does not appear to interrupt in any way the warfare against contagious diseases in the German metropolis. Ritter, in a brief communication to the *Berliner klinische Wochenschrift* for November 1, claims that the typical form of the disease, appearing rapidly in epidemic incidence presents no problem at all. It permits of ready recognition, prompt isolation and immunization, and low mortality. A certain bacteriological diagnosis requires but 16 hours, and the telephone and special messengers for carrying swabs are great time savers. A problem arises when nasal diphtheria of a subacute course arises among young children, especially in asylums. It may present only the clinical picture of rhinitis, and cultures may be negative; especially the nonvirulent and pseudodiphtheritic bacilli may complicate the finds. But the slow course of these nasal cases gives time for animal inoculation.

News of the Week.

Deaths in New York.—During the week ending January 8 there were reported in New York City a total of 1,880 deaths, giving a death rate of 17.08, as compared with 1,714 deaths and a rate of 16.01 during the corresponding week of last year. Of these 85 deaths were due to grip, as against 10 during the same week of 1915, showing that there has undoubtedly existed a very large number of cases of the disease. Bronchitis and pneumonia caused a total of 466 deaths, as compared with 347 during the first week of 1915; heart disease and nephritis also showed an increased mortality of 34, some of these deaths in all probability being hastened by "colds" recently contracted. The statistics for the last two weeks of 1915 and the first two of 1916 show a steadily increasing mortality due to influenza, bronchitis, and lobar pneumonia, the figures being as follows: Week ending December 18: influenza, 12; bronchitis, 18; lobar pneumonia, 185; total, 215. Week ending December 25: influenza, 24; bronchitis, 36; lobar pneumonia, 251; total, 311. Week ending January 1: influenza, 74; bronchitis, 29; lobar pneumonia, 272; total, 375. Week ending January 8: influenza, 85; bronchitis, 29; lobar pneumonia, 293; total, 403.

Chicago Death Rate.—During the first week of this year, the total number of deaths reported in Chicago was 1,002, giving a death rate of 21.0 per 1,000, which was a slight decrease as compared with the previous week, when the deaths numbered 1,112 and the rate was 23.7, but a very large increase as compared with the corresponding week of last year, during which there were only 658 deaths, with a rate of 14.0. Pneumonia was the chief cause of death, having a fatal ending in 251 cases during the week ending January 8, and in 302 in the previous week. Influenza caused 80 deaths during the first week of this year, and 95 during the last week of 1915, while tuberculosis caused 90 and 91 deaths respectively. In the first week of 1915 only 2 deaths were ascribed to influenza. It was estimated that the number of cases of pneumonia in Chicago during the latter part of December was five times as large as during the same period of 1914.

Low Death Rate in New York State.—The New York State Department of Health in a summary of the returns of deaths in the State during 1915 gives the death rate as 15.0 per 1,000, computing it on the new estimate of population furnished by the Census Bureau. This rate is the lowest on record for the State: the total number of deaths was 145,552. The rate given by the State Department for New York City alone is 15.1, as compared with 15.0 for 1914 and 1913, and 14.9 for 1912, while for the State outside of New York City the estimated rate for 1915 is 14.9, as compared with 15.2 per 1914 and 15.8 for 1913. These figures have been protested by Commissioner Emerson of the City Department of Health, who believes that the rate for New York City, having been based on inaccurate census returns, are too high.

Hospital Acquires Property.—The New York Medical College and Hospital for Women has announced the purchase of the apartment house at 21 West 110th Street, adjoining the college property. This gives the institution a total frontage on the street of two hundred feet, and permits of a considerable extension of its plant. The purchase was made possible by the gratifying progress of the campaign for a $200,000 building and endowment fund for the college.

A Eugenic Journal.—The Eugenical Record Office at Cold Spring Harbor, N. Y., issued this month the first number of a new publication, the *Eugenic News*, which is to serve as a medium of intercommunication between eugenists, giving besides the news of the Record Office, items of interest concerning workers in this field throughout the country.

American Journal of Orthopedic Surgery.—The American Orthopedic Association announces the appointment of Dr. Mark H. Rogers of Boston as editor of the *American Journal of Orthopedic Surgery*, which, beginning with the issue of January, 1916, will appear as a monthly instead of a quarterly. The publication office has been transferred to 126 Massachusetts Avenue, Boston.

Military Medicine.—Harvard University is about to establish in its graduate medical school a course in military medicine, which will be under the charge of Major Weston P. Chamberlain, medical corps, United States Army, who is an alumnus of the Harvard Medical School.

Typhus in Mexico.—An official statement issued in Mexico City on January 12 says that 962 new cases of typhus fever were reported during the first week of January in the city and its suburbs. This is fifty less than the number reported during the last week of December.

Case of Smallpox.—The first case of smallpox in New York City since last spring was reported to the Department of Health on January 11 from Flushing, Long Lsland. The patient had come from Sioux City on December 22. Inspectors from the department were immediately detailed to guard against the spread of the infection.

Open Seaside Hospital.—On January 18, the Seaside Hospital, supported by St. John's Guild at New Dorp, Staten Island, was reopened for the reception of sick and convalescent children, and announcement was made that hereafter the institution would remain open throughout the year. Detailed information concerning admission of patients may be obtained at the office of the Guild, 103 Park Avenue.

Physicians for Tuberculosis Clinics.—The Department of Health is anxious to secure physicians interested in tuberculosis work to serve as volunteer assistants in the tuberculosis clinics of the department. By a rearrangement of the salaries of the physicians attending these clinics, it has been possible to provide for a considerable increase in the salaried staff at $300 per annum, and the volunteer assistants now in the service will shortly be promoted to the salaried staff, pending an examination by the Civil Service Commission to secure eligibles for these positions, the tuberculosis clinic physicians having only recently been placed under civil service regulations. As these temporary appointments will practically exhaust the list of volunteer assistants, the department is ready to make new appointments of volunteers, who will thus if they take the examination be eligible shortly for promotion to salaried positions. Applications should be addressed to the Bureau of Preventable Diseases, Department of Health, New York, and should in each instance state the medical college and year of graduation, and hospital or dispensary experience of the applicant.

Personals.—Dr. LEONARD G. ROWNTREE, formerly of Johns Hopkins Hospital and recently appointed dean of the medical school of the University of Minnesota, took up the work of his new office on January 10.

Dr. ROSS V. PATTERSON has been appointed visiting physician to the Philadelphia General Hospital in succession to the late Dr. Robert N. Willson, Jr.

Dr. CHARLES S. MILLER has been appointed chief of the division of vital statistics in the Philadelphia Bureau of Health.

Grip Spreaders Arrested.—The anti-spitting crusade, which was begun by the City Department of Health last week, with the assistance of the police, resulted in the arrest of several hundred of persons each day. In the Magistrates' Courts to which the offenders were summoned fines of from $1 to $5 were imposed in the majority of cases.

To Study Influenza and Pneumonia.—Dr. Wilmer Krusen, director of public health and charities of Philadelphia, has appointed a commission to make a study of the causes of the prevailing epidemic of influenza and pneumonia, as follows: Dr. David Riesman, chairman; Dr. Hobart A. Hare, Dr. W. Egbert Robertson, Dr. Randle C. Rosenberger, Dr. Paul A. Lewis, and Dr. John A. Kolmer.

The New York Physicians' Association.—At the next regular meeting of this association to be held at the Park Avenue Hotel on Thursday, January 27, a lecture will be delivered on "The Definite Treatment of Pneumonia" by Prof. S. Solis Cohen of Philadelphia.

Deaths of Foreign Medical Men.—Dr. BOLESLAW WICHERKIEWICZ, Professor of Ophthalmology in the University of Cracow, has recently died in a sanatorium in Vienna of cancer of the stomach, at the age of 68 years. In addition to his great achievements as an ophthalmologist he was known as a public spirited citizen. Since the beginning of the war he had been at the head of the Red Cross organization of the Polish Legions, giving to the work his entire time.

Dr. GUIDO BACCELLI, for many years Professor of Medicine at the University of Rome, died on January 10 at the age of 84 years. He was one of Italy's leading physicians and citizens, having been a Senator in the Italian Parliament as well as Professor in the University. He was a Latinist of repute, a brilliant orator, an acute diagnostician and clinician, a good writer and a clear thinker. He was editor and one of the founders of *Il Policlinico* and was President of the International Medical Congress in Rome in 1894. Among his notable achievements was the advocacy of carbolic injection in the treatment of tetanus, a therapeutic measure that has survived the introduction of antitetanic serum, being widely employed by army surgeons on both sides of the present war.

Bubonic Plague in Ecuador.—Health reports show that during the last year 236 cases of bubonic plague occurred in Ecuador, of which 109 ended fatally. Of yellow fever, nineteen cases were reported, eleven terminating fatally.

Baby Week.—The week from March 4 to 11, 1916, has been designated "baby week" by the Children's Bureau of the Department of Labor, and the bureau has issued a bulletin containing suggestions as to the proper observances to be held in different communities, infant welfare exhibits, follow-up campaigns, etc., together with lists of public and private organizations from which exhibit material may be borrowed. Copies of this bulletin may be obtained free of charge by application to the children's bureau.

Medical Society Elections.—NEW YORK NEUROLOGICAL SOCIETY: At the annual meeting held on January 4 the following officers were elected for the ensuing year: *President*, Dr. W. M. Leszynsky; *First Vice-President*, Dr. Frederick Tilney; *Second Vice-President*, Dr. F. Kennedy; *Corresponding Secretary*, Dr. J. Ramsay Hunt; *Recording Secretary and Treasurer*, Dr. C. E. Atwood.

KENNEBEC COUNTY (ME.) MEDICAL SOCIETY: The annual meeting of this society was held at Augusta on December 28, when the following officers were elected: *President*, Dr. H. K. Stinson, National Soldiers' Home; *Vice-President*, Dr. O. C. S. Davies, Augusta; *Treasurer*, Dr. S. E. Vosburg, Augusta; *Secretary*, Dr. S .J. Beach, Augusta.

The Late Dr. A. A. Smith.—The following minutes were adopted at a meeting of the council of the New York Academy of Medicine, held December 22, 1915: "The members of the council of the New York Academy of Medicine record with profound sorrow the death of their late associate, Dr. A. Alexander Smith. For more than fifteen years Dr. Smith was an active member of the council, rendering constant service to the best interests of

the medical profession. His energy was untiring, his judgment was of rare value, and his influence most beneficial, while his genial personality and strong Christian character made a deep and lasting impression upon all who enjoyed the privilege of his friendship. It is resolved that this record be spread upon the minutes of the council and a copy be sent to the family of Dr. Smith."—(Signed)—D. Bryson Delavan, M.D., W. Gilman Thompson, M.D.

Obituary Notes.—Dr. LEO R. NATHAN of New York, a graduate of the New York University Medical College in 1889, died at his home, on January 10, aged 61 years.

Dr. PETER HUGO ERNST of New York, a graduate of the New York University Medical College in 1886, adjunct professor of gynecology at the New York Polyclinic Medical School, attending gynecologist to the New York Polyclinic Hospital and the Demilt Dispensary, and a member of the American Medical Association and the New York State and County Medical Societies, died at his home, on January 9, aged 52 years.

Dr. GEORGE VANDER BERG ROCKWELL of Brooklyn, N. Y., a graduate of the Bellevue Hospital Medical College, New York, in 1882, died recently at his home, aged 57 years.

Dr. JAMES BOWEN, formerly of Brooklyn and of Buffalo, N. Y., a graduate of the New York University Medical College in 1895, and a member of the Medical Society of the State of New York and the Erie County Medical Society, died at Saranac Lake, on January 12, aged 40 years.

Dr. CHARLES G. AM ENDE of New York, a graduate of Bellevue Hospital Medical College, New York, in 1890, and previously of the University of Jena, Germany, and a member of the American Medical Association, the New York State and County Medical Societies, and the Greater New York Medical Society, died at his home, on January 14, aged 76 years.

Dr. FENNER H. PACKHAM of Providence, R. I., a graduate of the Yale University Medical Department, New Haven, in 1866, and a member of the Rhode Island and Providence District Medical Societies, died at his home, on December 26, aged 71 years.

Dr. THOMAS JOSEPH LEAHY of Cambridge, Mass., a graduate of the Harvard University Medical School in 1892, and a member of the Massachusetts Medical Society, the Middlesex East District Medical Society, and the American Medical Association, died at his home from pneumonia, after a brief illness, on December 25, aged 46 years.

Dr. SAMUEL STILLE died of pneumonia at Atlantic City, N. J., on December 26, at the age of 86 years. He was graduated from the Pennsylvania Medical College in the class of 1857.

Dr. WILLIAM BAKER BANKS died of pneumonia at Philadelphia on December 27, at the age of 66 years. He was graduated from the Medico-Chirurgical College in the class of 1891. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. MILTON D. LICHTENWALNER died at the Homeopathic Hospital at Reading, Pa., on December 28, at the age of 69 years, as a result of injuries received a short while ago in a fall.

Dr. JESSE W. THATCHER died of pneumonia at Philadelphia on December 29, at the age of 65 years. He was graduated from Hahnemann Medical College and Hospital in the class of 1871. He was a member of the Germantown Medical Society and of the Pennsylvania State Society of Homeopathists.

Dr. ROBERT GRAY KINNIER died at Philadelphia on December 31, at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1880.

Dr. HENRY H. LOWRIE of Plainfield, N. J., a graduate of the Georgetown University School of Medicine, Washington, D. C., in 1863, died at his home on January 3, aged 75 years.

Dr. ARTHUR W. DUNNING of St. Paul, Minn., clinical professor of nervous and mental diseases in the University of Minnesota, College of Medicine and Surgery, Minneapolis, a graduate of the University of Illinois, College of Medicine, Chicago, in 1885, and a member of the American Medical Association, the Minnesota State Medical Association, and the Ramsey County Medical Society, died suddenly at his home from heart disease on December 22, aged 55 years.

Dr. JAMES MATTHEW KIERNAN of Bridgeport, Conn., a graduate of the University and Bellevue Hospital Medical College, New York, in 1908, and a member of the American Medical Association, and the Connecticut State and Hartford County Medical Societies, died at his home, from pneumonia, after a brief illness, aged 36 years.

Dr. HENRY H. ATKINSON, medical missionary at Harpoot, Eastern Turkey, died recently, from typhus fever, at Harpoot, where he had been stationed for fourteen years.

Dr. WARREN B. PALMER of Brooklyn, N. Y., a graduate of the Albany Medical College in 1880, died in the Prospect Heights Hospital, Brooklyn, from pneumonia, on January 7, aged 58 years.

Dr. JOSEPH H. TOWNSEND of New Haven, a graduate of the medical department of Yale University in 1887, secretary of the Connecticut State Board of Health since 1906, chief surgeon of the Connecticut National Guard, and a member of the American Medical Association and the Connecticut State and New Haven County Medical Societies, died at his home, from pneumonia, on January 7, aged 53 years.

Dr. EDGAR REEVE BRYANT of San Francisco, a graduate of the Hahnemann Medical College and Hospital, Philadelphia, in 1889, chief surgeon of the homeopathic division of the City and County Hospital, a member of the California State Homeopathic Medical Society, and professor of surgery in the Hahnemann Medical College of the Pacific, died at the Lane Hospital on December 30, from injuries received in a fall on the grounds of the Exposition while watching the illumination on the closing night.

Dr. JOHN G. DEARBORN of Boston, Mass., a graduate of the New York University Medical College in 1858, assistant surgeon in the United States Navy during the Civil War, from 1869 to 1872 surgeon of the State Prison in Charlestown, and a member of the Massachusetts Medical Society, died at his home, after a short illness, from pneumonia, on January 4, aged 80 years.

Dr. ALONZO P. CHARLTON died of heart disease at Philadelphia, on January 12, at the age of 57 years. He was graduated from Jefferson Medical College in the class of 1880. He was a member of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Correspondence.

DESTRUCTION OF THE GONOCOCCUS BY HEAT.

To the Editor of the Medical Record:

Sir:—I was interested in reading an editorial in the January 1 number of the Medical Record on "The Fever Therapy of Gonorrhea." I fully agree with what you say as to the destructibility of the gonococci by a prolonged exposure to temperatures of about 108° Fahr., but not when you say "ordinary hot air and diathermy seem to exert no decided action on the disease, probably because the entire blood mass should be heated at once." Dr. Weiss' experiments are most interesting, and from my own clinical experience I can corroborate all that he has proven in his experiments. In several cases of gonorrhea an attack of typhoid fever has promptly cured the disease. I have seen a case of tuberculosis of the breast with extensive ulceration promptly get well after a prolonged severe attack of erysipelas with a very high temperature. I have seen one undoubted case of pulmonary tuberculosis recover and remain well for at least five years after a long siege of typhoid fever. I have given much study to find some method which would enable us to raise the temperature of the body safely and at will, for I have long believed that fever was Nature's method of checking the growth and destroying pathogenic bacteria. My efforts in this direction have, however, not been successful.

But what I started out to refer to particularly was your statement as to diathermy exerting no decided action on the gonococci. In an article which appeared in the Medical Record, February 12, 1912, I stated that the urethra will stand a temperature of 120° Fahr. without injury to the tissues. That a bougie heated to a temperature of 120° Fahr. and held steadily at that temperature in the urethra will raise the temperature of the skin along the side to 104° or 106° Fahr. I have proven this many times. Since this is true, certainly all the blood and all the intervening tissues are subjected to a steady heat of considerably over 104° Fahr.; probably nearer 110° Fahr.; the urethra certainly to a temperature above 115° Fahr. That such an application of heat does exert a decided action upon the gonococci I have proven many times and any one else may prove the same if he will go to the trouble of making a test. In acute cases of gonorrhea such an application of heat prolonged for from thirty minutes to an hour will destroy every gonococcus reached by the heat.

J. A. Fulton, M.D.

Astoria, Ore.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HOSPITAL EXPENDITURE—SIR E. CASSEL'S SECOND DONATION TO HOSPITALS—GUNSHOT WOUNDS OF CERVICAL VERTEBRÆ AND OF THE ABDOMEN, TREATED BY OPERATION.

London, Dec. 23, 1915.

Another Xmas is at hand. Everyone is talking of the many modes of celebrating it, so even in a serious medical journal it may be excusable to refer to the joyous season. It is also natural to look back on some of the events of the closing year and the questions that have in its progress held our profession's attention. The expenditure of the 108 London hospitals for the year amounted to £1,081,162—a slight increase over that of the preceding twelve months. The number of in-patients was, on the other hand, somewhat less, fewer beds being accordingly in constant use. The number of out-patients was also rather fewer. Among the in-patients of the year there were 5,478 naval or military cases, chiefly of wounded soldiers. This number was received on an understanding with the authorities during the latter months of 1914. A much greater number of such patients are being treated during the present year in the voluntary hospitals of London. The exceptional circumstances under which these hospitals had to carry on their work renders comparisons with previous years of little value. The rise in prices and the difficulties brought about by the departure for military and Red Cross duties of members of the medical, nursing, and administrative staffs greatly increased the cost of working, while at many hospitals the number of beds occupied was affected, either by some being added for the accommodation of the wounded or by others being kept vacant, in readiness for a sudden or unexpected demand. The necessity of preventing undue increase of cost is more obvious and urgent than ever and it is hoped will continue to receive the consideration of the King Edward Fund while it maintains the high standard of efficiency it has hitherto promoted.

Sir Edward Cassel's further munificent donation of £50,000 in the 4½ per cent War Loan Stock to hospitals and kindred charities is to be distributed on the same general lines as his previous donation of £50,000 made in 1911; that is, partly in direct gifts and partly through King Edward's Hospital Fund. The sum of £22,000 has accordingly been allotted by Sir Ernest to certain hospitals in varying amounts from £50 to £1,000. The £28,000 remaining beyond that has been entrusted by the donor to King Edward's Hospital Fund for the purpose of increasing by one-fifth the grants already made by the fund this year.

Wounds are the subject of numerous reports and discussions both at societies and elsewhere. At the Royal (Section of Laryngology) a soldier was shown who was wounded at Ypres in June by a bullet which entered over the right side of the nasal bridge, passing through the right maxillary antrum, the roof of the mouth, the tongue, and the left ramus of the lower jaw; then out at the left side of the larynx. The jaw which was fractured had been skilfully wired in place and had firmly united. The right antrum had been quite dark on transillumination for weeks, no doubt from blood clot, but had become clearer. A bullet wound in another soldier's neck must have injured the larynx, as a web now occupied nearly half the glottis, greatly impairing speech and breathing. An opinion was sought as to the treatment. The president, Dr. Bond, suggested laryngo-fissure in order to remove the web; Dr. McKenzie proposed diathermy. Another case of bullet wound in the neck was reported by Dr. McKenzie. It was inflicted on an officer in Gallipoli who became aware at the moment that he could only speak in a whisper. It healed in three weeks and the voice returned, so that he could converse comfortably, but shouting soon tired it. The laryngoscope showed the left vocal cord paralyzed. The bullet had entered the neck opposite the fourth cervical vertebra, emerging at the anterior border of the sternomastoid, midway between the upper edge of the thyroid cartilage and the hyoid

bone; so it must have been the left vagus which was severed, and yet there was no obvious damage to the carotids, the internal jugular, or the sympathetic. The pulse was normal, both in rate and rhythm. Another case of bullet wound was shown by Major Perry Goldsmith: it was of the left mastoid and left orbit with detachment of the retina. Dr. Watson Williams said he would not hesitate to open up the affected sinuses, particularly the sphenoids. Dr. Dundas Grant advised draining them. A bullet wound of the nose closed by plastic operation was shown by Dr. A. Wylie and a shrapnel wound of the nose and cheek by Dr. Pegler, who also showed a case of empyema of the right frontal sinus.

Adominal wounds have always excited great attention, and C. Wallace who is consulting surgeon to the expeditionary force in France has contributed to the *Lancet* his views on the early treatment of those caused by gunshot. It is only recently that the usual systematic treatment has been by operation, and the rapid collection and transport of patients for this purpose has been well arranged; perhaps partly because of the belief that rest, morphine, and no mouth-feeding afforded the best chance of recovery. It was generally held that intestinal wounds healed by themselves, for as cases did recover in which a shot had passed through the abdomen it was assumed that the missile must have injured a hollow viscus. But recent operations have proved that this assumption is not justified. Blood and bile may set up the symptoms of peritonitis and many operations have revealed injuries such as perforations and divisions of the intestinal walls, a bullet being capable of doing as much damage as a fragment of shell. I meet no one who has had experience in the field who retains the old belief in the spontaneous cure of these wounds—except in the stomach, and only in that when the missile has taken an anteroposterior direction. Mr. Wallace suggests that in stomach wounds the nonprotrusion of the mucous membrane is a factor in their spontaneous cure, since the pouting of the membrane would prevent a contiguous coil becoming adherent to the peritoneal surface while it can adhere to another part of that surface and be thereby shut off. If operation be done early some cases may present no lesion of intestine, yet a peritoneal cavity full of blood. Should the bleeding still be going on it will be arrested; in other cases, the bleeding point cannot be found or the hemorrhage may have ceased. In either case many lives are saved by early operation, and removal to a hospital where it can be at once performed should not be delayed. Less blood will be lost through the jolting of an ambulance than by leaving it to trickle away for hours. Symptoms of peritoneal involvement will be present in nearly every case by the time the hospital is reached, but they should not be waited for if the surgeon considers the wound has penetrated a dangerous area. A paramedian incision is the standard one for opening the abdomen and a long incision saves time, and consequently shock. Results will be reported later.

Private Woods of the Sixth Buffs was rendered dumb by the shock caused by the parapet of a trench falling upon him in France. He was transferred to the military hospital at Colchester, where he recovered his speech suddenly when one day his mother appeared unexpectedly at his bedside. At once he exclaimed "Mother!" and from that time continued to converse freely.

The soldier from whose brain a bullet was extracted in Belfast Hospital, after it had been buried there for three weeks is making a good recovery.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 6, 1916.

1. Address on Medical Testimony. J. W. Courtney.
2. Simplified Methods of Transfusion. Edward H. Risley.
3. Insanity by Contagion. B. Henry Mason.
4. Notes of a Conference on the Medical and Social Aspects of Syphilis of the Nervous System. Latent Neurosyphilis and the Question of General Paresis, Sine Paresi. E. E. Southard and H. C. Solomon.
5. The Treatment of Headache. Justin Herold.

1. On Medical Testimony.—J. W. Courtney, in an address given before the graduating class of Harvard Medical School on November 19, 1915, gives some very practical advice to the medical man who is called to the witness stand. He says that any medical man who steps on the witness stand, armed with all the medical facts of his case, and who adheres closely to these facts in giving his testimony, has little to fear from cross-examination. His troubles begin the moment he allows himself to be drawn into the realm of speculation, and to venture opinions based on hypotheses. His testimony may embody the most scientific thought of the day, but unless it is couched in simple terms its sole effect upon the jury is generally a purely soporific one. Upon the stand the witness's manner should never be flippant, nor should it bear the stamp of spurious ease. His answers to counsel should be rigidly responsive; he should never volunteer a statement when no question is before him. Directly he steps on the stand he should have prominently in mind that he is the servant of the commonwealth. This does not mean that he is in any sense an advocate; quite the contrary. Therefore he should always refrain from argument with the counsel. He may find it difficult at times to give the desired answer "Yes" or "No," but it is always better to do so, because both the court and his own counsel will see to it that he has later an opportunity to amplify his statements to his entire satisfaction. He should sedulously avoid the answer "Not necessarily," which never serves other purpose than to get him deeper into the mire of cross-examination. He should not keep one eye on his own counsel and the other on the cross-examiner. His whole attention should be directed to the jury. He should not constantly appeal to the court when crowded by legitimate cross-questioning, and, above all things, he should never allow his voice to sink to an inaudible murmur, nor allow a display of temper to betray itself by shrill or petulant tones. He should shape his conduct so that through his efforts the ends of justice will really be accomplished.

2. Simplified Methods of Transfusion.—Edward H. Risley has recently tried out in the laboratory the various methods of transfusion. His experience leads him to make a few suggestions. It occurred to him to try, among other procedures, the collection of blood in a simple cylinder, uncoated with paraffin, but kept at body temperature by previous immersion in hot water (110°) and during transfusion wrapped in a hot towel wet in sterile water. This cylinder is a modification of the Kimpton-Brown tube which the writer has found easier to handle and less breakable. Using one part of a 2 per cent. citrate solution to ten parts of blood, he finds that transfusion is made extremely simple, safe, and sure by any of the various techniques one wishes to employ. This applies only to indirect transfusion. The author is almost equally divided between the use of the uncoated glass cylinder and the method by syringes. The purpose of the writer is to point out the value of ci-

trate solutions in transfusion and to show that almost any method can be made to succeed if this is used. He recommends that every physician who contemplates doing transfusion at all provide himself with the following apparatus: Two large (100 to 300-c.c.) glass cylinders, 500 c.c. of sterile sodium citrate solution in two bottles. (This can be sterilized by boiling repeatedly without deterioration.) Also a set of glass syringes (two 5 c.c. and one or two 20 c.c. and two 16-gauge cannula trochars). This outfit is sufficient to accomplish successfully any transfusion he is called upon to do.

3. **Insanity by Contagion.**—B. Henry Mason calls attention to a number of psychical epidemics of a hysterical nature recorded in history. He finds that insanity by contagion is met with at the present time, though it is more infrequent in its manifestations than it was a century or more ago. It is probable that contagion is in correlation with some underlying mental disorder. A mild contagion may be met with when a presumably normal indivdual adopts a delusive attitude, but in whom a diagnosis of communicable insanity would not be justified. One individual may impose his systematized paranoid delusional concepts upon another who is intellectually weaker than himself. A feeble-minded person may be so weak mentally that the intelligence is in every respect unproductive, but if the intellectual powers are but slightly inferior to the normal, then the individual is predisposed to communicated insanity. A person hereditarily predisposed to insanity may be the subject of contagion when intimately associated with an insane individual. The manifestations of mental disease may be simultaneous in two or more persons with an insane family taint.

4. **Latent Neurosyphilis and the Question of General Paresis, Sine Paresi.**—E. E. Southard and H. C. Solomon draw attention to a group of cases showing the laboratory signs characteristic of central nervous system syphilis—that is, positive Wassermann reaction in the serum and spinal fluid, pleocytosis, excess of globulin and of albumin in the spinal fluid, and the gold sol reaction of central nervous system syphilis, and which show no sign or symptom of neural syphilis. The writers believe these cases represent a form of chronic cerebrospinal syphilis probably paretic in type. They have the greatest theoretical and practical significance in the consideration of the life history of neural syphilis, on the concepts of allergie, in regard to results of treatment, and as to the evaluation of the laboratory tests. The authors believe that here is offered the last link to a chain between the symptoms of the primary stage of syphilis and its final termination of life as the result of cerebrospinal syphilis or general paresis.

New York Medical Journal.

January 8, 1916

1. Common Diseases of the Ear. S. MacCuen Smith.
2. Tuberculin Therapy. Henry L. Shively.
3. The Medical Treatment of Exceptional Children. Tom A. Williams.
4. Sarcoma of the Inferior Maxilla. J. Dawson Whitall.
5. The Minor Communicable Diseases. S. W. Newmayer.
6. The Normal Stomach. C. Winfield Perkins.
7. The Causes of Rickets. William Jacobsohn.
8. Syringing the Ear. Max Lubman.

1. **Common Diseases of the Ear.**—S. MacCuen Smith emphasized the importance of prophylactic measures, not only in the treatment of aural disease, but with a view of preventing its serious complications. During the catarrhal stage of acute suppurative otitis media the patient should receive divided doses of calomel, followed by a saline, and small frequently repeated doses of aconite. Rest in bed is of great value. Blood letting by means of an artificial leech in front of the tragus and douching with normal salt solution as hot as can be borne every second or third hour are of assistance; or, in place of the douche, warm drops of a 10 to 15 per cent. carbolic acid in glycerine, or equal parts of tincture of opium and tincture of belladonna can be used. The same treatment is applicable to acute involvement of the mastoid process if seen by the physician in the early stage. But at this time the measure of the greatest prophylactic value in arresting an acute inflammation is free incision of the membrana tympani. Many cases of mastoiditis do not exhibit the classical symptoms, but there is one physical sign which is never wholly absent, unless the disease is confined to the tip, and that is drooping of the superior and posterior wall of the external auditory canal. In incising the membrane tympani the chief requisite is to carry the incision from the most bulging point downward to the lower border of the canal, and then continue it in an anterior or posterior direction until one-sixth part of a circle has been formed. This provides good drainage and insures the opening remaining patulous long enough to admit of proper after treatment. This simple treatment aborts the great majority of simple uncomplicated cases, but a goodly number of cases complicating influenza, the eruptive fevers, pneumonia, tuberculosis, and syphilis demand prompt surgical intervention.

2. **Tuberculin Therapy.**—Henry L. Shively says there is a general agreement among sanatorium physicians that patients who receive tuberculin treatment lose their bacilli more readily than patients who do not, that a greater proportion are discharged arrested, a larger number are restored to working efficiency, and that after a period of years their cure is better maintained than that of patients who have not had tuberculin. Besides these regular routine effects, which are gradually obtained over long periods of time, there are certain fortunate patients for whom tuberculin treatment is a real boost. The special field for tuberculin is that large group of patients with fairly good resistance, with little or no fever, stationary or slowly progressive, who are ineligible for or cannot go to a sanatorium, or who have failed to obtain a cure or an arrest while at a sanatorium. The time has come when the tuberculin treatment may be applied in private practice without danger and to advantage, or at least every tuberculosis clinic should have its tuberculin class. It is well for the beginner to select one preparation of tuberculin, preferably one representing all the substances contained in the bacilli; the best for all purposes is probably the bacillen emulsion. Hitherto the technique of the administration of tuberculin has been invested with unnecessary difficulties. A blood count, the determination of the opsonic index, or a complement fixation test, is of little practical value in treating the patient. Much time may be lost in beginning with or continuing too long with excessively minute doses. It is probable that doses of one-tenth million or even a millionth of a milligram are practically inert.

3. **The Medical Treatment of Exceptional Children.**—Tom A. Williams considers some of the physical causes which produce neurotic behavior in children, such as insufficient air and too tightly fitting clothing, incorrect food and drink, inadequate or improper exercise of the body, imperfect elimination and disordered glandular action. He says that since much of the food given to children has been deprived of its indigestible constituents, the husks of fiber and cellulose, the child eats too much meat, eggs and milk to get enough bulk. The best diet for the neurotic child, or any child, is a plentiful supply of such cereal foods as are prepared from whole grain, supplemented by an abundance of fruit, especially the banana. The psychological sources of disturbance to child life are mismanagement of attention

and mismanagement of emotion, sentiment, desires, inclinations, and intemperance and its contrary, over-repression. In connection with these author discusses affection, altruism, religiosity, fear, anxiety, scruples, obsessions and shame. He emphasizes the point that a child's mind needs work. Proper mental labor is essential for sound psychic health. The impression that growing organs should not be subjected to work is a gross error. The other extremes—over-sustained attention and over-intensity—are to be guarded against. Just as bones and muscle become strong by arduous exercise in childhood and early youth, so does the psyche become resistant to the "slings and arrows of outrageous fortune" by practice against them in childhood. It is a crime against the child not to give him practice in self-mastery against rebuffs, snubs, slights, and discouragement. In the treatment of these psychopathological conditions the most important thing even in children is to a realization of the situation. It is only when the patient can intelligently interpret the symptoms of a psychogenetic disorder that he is in a position to cause them to disappear. The patient does not get well from the analysis, but because of the psychic procedure adopted therefrom.

6. The Normal Stomach.—C. Winfield Perkins has made a röntgenological examination of fifty-eight normal stomachs from which he concludes that peristalsis does not seem to exert any influence on the tone of the stomach; that there are no determined fixed points of any type of stomach in the abdominal cavity except the cardiac portion; that a stomach may be of any of the types and yet be normal from an *x*-ray standpoint; that the average normal stomach is orthotonic. The usual position of the orthotonic stomach is as follows: Greater curvature (lowest point) one to two inches above the interspinous line, either median or to the left; lesser curvature (lowest point) three to four inches above the same line, median or one to two inches to the right. The pylorus is placed two or three inches above the line, in the median position or one and a half inches to the right. The axis of the stomach is vertical and parallel to the median line. The length is eight to ten inches and the width three to three and a half inches. The tendency of the male stomach is always toward hypertonicity, while that of the female is toward hypotonicity. The stomach is not, as a rule, as high in the abdominal cavity as many textbooks of anatomy teach. There is no structure in the human body that has such variations in form, tone, and position. A chart of the relative positions of the stomach should be of service to the clinical diagnostician in locating pathological lesions of the organ if *x*-ray methods are not at hand.

Journal of the American Medical Association.

January 8, 1916

1. The Treatment of Respiratory Diseases in Infancy and Childhood, with Special Reference to the Value of Fresh Air. John Lovett Morse
2. Program for the Promotion of the Physical Welfare of Children and the Prevention of Tuberculosis Among Them. Sherman C. Kingsley.
3. The Epidemiology of Tuberculosis. F. C. Smith.
4. The Urochromogen Reaction as an Aid to Prognosis in Pulmonary Tuberculosis and Non-tuberculous Disease. Alexander M. Burgess.
5. The Syndrome of Toxemia: An Expression of General Nervous Discharge Through the Sympathetic System. Francis M. Pottenger.
6. Soft Eyeball in Diabetic Coma. David Riesman.
7. A Strangulated Epigastric Hernia. Caldwell.
8. A New Method of Intestinal Anastomosis with a Study of the Intestinal Movements After Its Use. Golder L. McWhorter.
9. Linitis Plastica Hypertrophica (Leather Bottle Stomach): Report of a Case. Alexius McGlannan.
10. Action of "Autolysin" on Mouse Tumors. Francis Carter Wood.
11. The Extent and Significance of Gonorrhea in a Reformatory for Women, and the Consideration of the Treatment of Venereal Disease Among Delinquents. Elizabeth A. Sullivan and Edith R. Spaulding.
12. The Incidence of Syphilis Among Juvenile Delinquents: Its Relation to Mental Status. Thomas H. Haines.
13. Fuller's Earth in the Intestinal Disorders of Infants. Alfred F. Hess.
14. The Treatment of Intussusception. F. J. Parmenter.
15. Pott's Disease Treated by Operation: A Report of Six Hundred and Eighty-two Cases. W. E. Wolcott.
16. The Anatomic Distribution of Cutaneous Neoplasms. F. T. Van Beuren, Jr.
17. Artificial Pneumothorax for Pulmonary Hemorrhage. John R. Littlefield.
18. Shortening of the Suspensory Ligament of the Liver for Ptosis by the "Round-Ligament" Method. Gaston Torrance.

1. The Treatment of Respiratory Diseases in Infancy and Childhood.—John Lovett Morse discusses more particularly the value of "fresh air" in the treatment of respiratory diseases in infancy and childhood. He says that it is evident that as fresh air is the opposite of bad or close air, the essential characteristics of fresh air are not freedom from carbon-dioxide or a hypothetical organic poison, but coolness, dryness, and motion of the air. Therefore, fresh air may be defined as air which is cool, dry, and in motion. Fresh air need not necessarily be pure air, if by pure air is meant air which does not contain bacteria or dust. The writer discusses the action of cold air on the respiratory mucous membrane and that which it exerts on the system as a whole, and concludes that fresh air is of advantage in the treatment of all diseases of the respiratory tract. It is also of advantage to have the air pure—that is, free from bacteria, dust, and smoke. Cold air is of advantage in some conditions, but harmful in others. In children in the early stage of acute nasopharyngitis, in acute laryngitis, and in the early stages of acute bronchitis, whether or not associated with dyspnea and cyanosis, cold air has a strong irritant action on the inflamed mucous membrane. During the later stages of acute bronchitis, in cases in which bronchopneumonia has developed, the most acute stage of the causative bronchitis having passed, and in lobar pneumonia where the bronchial mucous membrane is not involved, there is no contraindication to the use of cold air. There is no question that children with lobar pneumonia are more comfortable in cold air than in warm, but they must be dressed for it. It is sufficient to expose the face. The body must be warmly covered and protected. It is not possible to treat all diseases of the respiratory tract in the same way.

2. Child Welfare and Tuberculosis.—Sherman C. Kingsley publishes the results of a study made by a committee appointed by the Mississippi Valley Tuberculosis Conference, having for its object the arrangement of a program of activities for the promotion and safeguarding of the physical welfare of children and the prevention of tuberculosis among them in the conference territory. The report includes a comparative study of the physical condition of children in rural and urban communities which shows that rural children are less healthy and are handicapped by more physical defects than city children. The better showing made by the cities in this respect are attributable to the work of health departments and child-welfare agencies. If tuberculosis is to be prevented a more complete and effectual work must be done with the children. Our program must begin with them when they are babies. Infant-welfare work should be made universal in this country as it is in New Zealand, where through such efforts the death rate of babies for the whole country has been reduced to fifty-one out of 1,000. The next great goal is to see to it that in the school period the needs of the school-children are recognized and understood. We should fight the fight in the earlier and more promising years of childhood and not wait until the same defects and conditions which produced failure in school become the causes of failure for life.

4. Urochromogen Reaction.—Alexander M. Burgess

presents a study of the relation of the occurrence of urochromogen reaction in the urine of tuberculous and nontuberculous patients to the stage of the disease present, and to the ultimate prognosis. The number of tests carried out in studying 171 patients suffering from advanced tuberculosis was 469; in studying 650 cases of nontuberculous disease, 1,030. From the results obtained the writer concludes that the urochromogen reaction is of no value in determining the prognosis in diphtheria, scarlet fever, and measles; that in advanced tuberculosis a positive reaction indicates a severe and actively progressing lesion which will probably lead to death in six months, and that a negative reaction in advanced tuberculosis is of no value.

8. **Intestinal Anastomosis.**—Golder L. McWhorter describes his modification of the technique of the right angle and his new method of notch enterorrhaphy. In the technique of the right angle he cuts the bowel at an angle of 45 degrees, leaving the oblique mesenteric sides. The mesenteric portions are approximated first by a mattress suture, which when tied on the inside occludes the uncovered area of the bowel and invaginates the edges. With a needle on each end of this suture they are continued around so that this mesenteric half is first sutured accurately with a hemostat button-hole stitch. These are then continued as Connell sutures, ending at that end of the bowel opposite the mesentery. A Dupuytren's stitch is now taken outside the first stitch to approximate a wide area of serosa. A few stitches join the mesenteries. The right-angle union has advantages over the usual end-to-end in that it not only has a richer blood supply but the angle of the blood vessels toward the union lessens the danger of the second row of sutures causing gangrene of the inverted margin of the bowel. In the new method of notched enterorrhaphy, after deciding upon the area to be resected and preparing the field, the mesenteric vessels supplying the bowel to be resected are ligated. Double clamps are put on the ends of that portion to be resected. The bowel is cut between the clamps with a cautery, leaving them temporarily on the ends to be united. The ends of the bowel that are to be united are overlapped for union as far as may be desired, restoring the direction of peristalsis; two inches is usually satisfactory. A Dupuytren's stitch taken along the sides near the mesentery approximates them. The clamps temporarily holding the ends of the bowel closed are cut away and the sides of the intestine which approximate each other are nearly cut away, beginning at the end of the lumen and leaving a small edge of the side near the mesentery for the approximation of serosa by an inner stitch through all the coats of the bowel. A similar width of the bowel is left on the convex side for approximation and invagination by sutures. These notched sections of the bowel should have rounded corners in order that they may be accurately approximated. A hemostatic button-hole stitch started on the inner side near the mesentery through all the coats of the bowel and continued around the other side as a Connell suture invaginates the edges. The Dupuytren's stitch previously started is now continued around the first suture line, approximating a safe margin of serosa. The notched anastomosis has the advantage that a large opening can be secured as well as one that functions satisfactorily.

10. **"Autolysin" in Mouse Tumors.**—Francis Carter Wood, after making tests in twenty-one animals bearing spontaneous tumors, concludes that "autolysin," either in small or very large doses, does not affect malignant tumors in mice.

11. **The Extent and Significance of Gonorrhea in a Reformatory for Women.**—Elizabeth A. Sullivan and Edith R. Spaulding present an exhaustive study of the problem of gonorrhea in the Reformatory for Women at Framingham, Mass. They find that the facts that stand out most prominently are: (1) That among delinquent women in general 75 per cent. at least have a gonorrheal infection. This is a very conservative estimate of the number who at some time have had the disease. Among the prostitute class, however, the proportion of gonorrheics increases to over 98 per cent. (2) Sixty-seven per cent. of the positive cases present symptoms of pelvic inflammation while 40 per cent. become surgical cases. (3) The birthrate appears to be diminished over one-half on account of the disease, and 35 per cent. of the positive cases present "one-child" sterilities. (4) Gonorrheal ophthalmia and endocarditis are among the serious complications. (5) The majority of cases have apparently run an uninterrupted course sometimes for a period of twenty-five years without treatment, and during that time have been a prolific source of infection in the community. Methods that suggest themselves for dealing with this problem are segregation, early diagnosis, and intensive treatment of all persons who pass through the courts and are detained in public institutions on any charge, and the provision throughout the country of hospitals for the treatment of such persons, if necessary, free of charge. Treatment may be given in special wards of general hospitals because of the stigma attached to hospitals for the exclusive treatment of venereal diseases.

12. **The Incidence of Syphilis Among Juvenile Delinquents.**—Thomas H. Haines has made a study of 147 boys in the Boys' Industrial Home and 218 girls in the Girls' Industrial Home in Ohio with reference to the relation of syphilis to mental deficiency. He concludes that from the evidence at hand it seems impossible to charge congenital syphilis as a cause of mental impairment in these cases of delinquents. No larger percentage of those yielding positive Wassermann reactions are defective in intelligence than in the general population of these reform schools. There is complete absence of evidence of the signs of congenital syphilis in thirty positive cases examined. Cases of positive Wassermanns, with sister or father yielding a negative Wassermann, point to individual infection. The court charges against the girls in a majority of the cases, and the extent of sexual immorality, allow of abundant opportunity for individual infection. The absence of evidence of syphilis in personal history and in the medical certificates can be given no weight either for or against individual infection. The absence or exaggeration of deep reflexes without difference in the two sides of the body, and without disturbance of the light reflex of the pupil, indicates that if these signs are due to syphilis of the nervous system they are early signs, and so far tend toward evidence for individual infection.

15. **Pott's Disease Treated by Operation.**—W. E. Wolcott makes a preliminary report on 682 cases of Pott's disease operated upon by sixteen surgeons located throughout the country. In the series there was a mortality of 5 per cent., not directly attributable to operation. Of 642 operative cases 83 per cent. were benefited by the operation. From an analysis of this series the writer concludes that there is no doubt that these operations, in a large percentage of cases, abbreviate the treatment of tuberculosis of the spine by definitely hastening the curative ankylosis. By hastening ankylosis the likelihood of an increase in the deformity is proportionately decreased. These operations are undoubtedly best adapted to the treatment of Pott's disease that involves the cervicodorsal or dorsolumbar regions. Ankylosis of several vertebræ in this region is not associated with any serious amount of limitation of motion if unattended by marked deformity. On the

other hand, as approximately 75 per cent. of Pott's disease involving the cervical and lumbar regions develop but a slight degree of deformity when treated by external appliances, and since the development of ankylosis of several vertebræ by operation in either of these regions would be associated with marked restriction of motion in the majority of cases, it would seem best not to be too hasty in advising operation in either of these regions. It seems to be the general opinion of the majority of the contributors that the operation should be considered only as one phase of the treatment for Pott's disease and that supportive treatment should be continued until all signs of active disease have disappeared.

The Lancet.

December 25, 1915.

1. Wounds in War. Anthony Bowlby.
2. On the Bactericidal Effect Exerted *in Vitro* by Ethylhydrocupreine (Optochin) Hydrochloride on a Fecal Streptococcus Obtained from Wounds. A. C. Inman.
3. Functional Nerve Disease and the Shock of Battle. A Study of the So-called Traumatic Neuroses Arising in Connection with the War. David Forsyth.
4. Another Human Coccidium from the Mediterranean War Area. C. M. Wenyon.

1. Wounds in War.—Anthony Bowlby chose this subject for the Bradshaw lecture which he delivered before the Royal College of Surgeons of England, on December 20, 1915. Having served in two campaigns, the lecturer contrasted the conditions under which war was conducted in South Africa with those that have prevailed in Flanders. The Boer campaign was conducted mostly in dry sunny weather, in wide wastes never brought under cultivation, and far from human habitations. France and Belgium are lands of copious rainfall, with frequent cloudy days, civilized and cultivated for nearly two thousand years; their population is dense, their rich loamy soil allows of luxuriant crops, is freely manured, and supports cattle and poultry in abundance. In consequence all septic microorganisms, including one of the worst, practically unknown in civil life, flourish even deep down from the surface of the soil. Wounds are therefore infected from the first, and are at the same time very severe owing to the character of the missiles employed. Mud, dust, and pieces of stone from the soil or the trenches are blown into the wound; the expansion of gas is alone sufficient to kill, as in one case in which numerous minute hemorrhages were detected in the brain; a bullet in its passage through the tissues exerts great force from within outward, and imparts its momentum to the fragments of bone which it shatters. Muscles and solid organs are widely damaged, as is shown by microscopical examinations, illustrations of which serve to illustrate the lecture. This far extended microscopic damage favors septic infection. The lecturer spoke of the beneficent results of subcutaneous or intravenous injections of normal saline solution, of enemas of hot water and brandy, and of pituitary extract in those suffering from shock and collapse following wounds, and called particular attention to the gas forming anerobes, which were found in almost every wound in this war; they attacked the tissues more rapidly and violently than other organisms, and multiplied freely in the dying substance in the midst of the muscles and harder structures damaged by the expanding force of the projectile. He believes that while the severe wounds caused by modern projectiles can hardly be sterilized at a single dressing, antiseptics are useful and necessary for their proper treatment. The period during which the saline hypertonic treatment is useful is strictly limited to the separation of sloughing and unhealthy tissues, and once a granulating surface is obtained throughout it had better be abandoned. He also expresses a very decided opinion that the hypochlorous acid treatment is an important advance, more especially when used in recent wounds before suppuration has occurred, and states that it has to a great extent displaced all other forms of treatment in many of the casualty clearing stations. It should, however, be only used in solution. Efficient drainage in all wounds of war cannot be too strongly emphasized; the stimulus of Sir Almroth Wright's work in this field has been of inestimable value in promoting sound practice along these lines.

2. Bactericidal Effect of Ethylhydrocupreine.—A. C. Inman has been investigating the bactericidal power of ethylhydrocupreine (optochin) on a fecal streptococcus obtained from wounds, and finds that it has very limited powers of penetration. This fact would seriously limit its efficacy in the treatment of bacterial infections, for it would be unable to diffuse into and exert its influence in abscess cavities, infiltrated tissues, and other dead spaces. It would appear that it might find a useful sphere of application in cases of streptococcal bacteriemia; but it has not yet been put to this test.

3. Functional Nerve Disease and the Shock of Battle.—David Forsyth presents a study of the so-called traumatic neuroses, cases of which have become unprecedentedly numerous since the outbreak of the war. The clinical picture in these cases is best described as that of "nervous exhaustion." It seems that the intensity of the shock is measured in terms not of the trauma, but of the sensitiveness of the individual, a psychopathic tendency having been noted by the writer in all cases coming under his notice. Some cases recover with rest and quiet in the course of a few months; in others the treatment must follow psychoanalytic methods. With an increasing experience the writer entertains a strong doubt as to the judiciousness of sending any case of nerve shock, with few exceptions, back to the firing line. If this source of anxiety could be removed the patient's chance of making a speedy recovery would be increased.

4. Another Human Coccidium from the Mediterranean War Area.—C. M. Wenyon reports that he has encountered a coccidium which produces within the oöcyst four sporocysts, each of which has two sporozoites and a residual body, so that it must be placed in the genus *Eimeria* (Coccidium). This coccidium resembles most nearly the parasite of the mouse, though it is impossible to state definitely if it is actually this species or one quite distinct.

British Medical Journal.

December 25, 1915.

1. The Bradshaw Lecture on Wounds in War. Anthony Bowlby.
2. Iodine and Sodium Hypochlorite as Wound Disinfectants Harry Schütze.
3. The Use of Quinine Hydrochloride Solution as a Dressing for Infected Wounds. Kenneth Taylor.
4. Notes on Traumatic and Arteriovenous Aneurysm. F. L. A. Greaves.
5. Arteriovenous Aneurysm, Anastomosis of Vein, and Suture of Artery. H. J. Godwin.
6. The Character and Treatment of Frostbite. H. E. Munroe.

2. Iodine and Sodium Hypochlorite as Wound Disinfectants.—Harry Schütze has carried out a number of laboratory tests with reference to the effect of phenol, iodine, and Dakin's hypochlorite solution as wound disinfectants. These experiments show the failure of 5 per cent. phenol to sterile malignant edema spores and the difficulty with which iodine does so, whether serum be present or not. Dakin's solution even in one-half the strength in which it is usually employed is, on the other hand, in the absence of serum, most effective. Even small quantities of serum, however, can interfere with its action; this would lead one to expect no direct lethal effect of the solution on similar resistant spores embedded in the tissues of a wound unless by irrigation the serous fluid surrounding these spores could be re-

placed to well above 95 per cent. by the hypochlorite solution.

3. **Quinine Hydrochloride Solution as a Dressing for Infected Wounds.**—Kenneth Taylor finds that the clinical experience with quinine hydrochloride has been consistent with the laboratory work previously reported. It has been active in ridding heavily contaminated wounds of the gas bacillus, acting as an antiferment, inhibiting the activity of the putrefactive organisms, and reducing the offensive odor associated with them. The solution does not appear to be precipitated by the serum or discharge from wounds in the case of the 1 per cent. solution. The one-tenth per cent. solution has occasionally shown precipitation without the additon of one-tenth per cent. hydrochloric acid or 1 per cent. of alcohol. The addition of neither of these drugs has appreciably increased the bactericidal activity of the quinine solution *in vitro*, but appears to prevent precipitation of the alkaloid caused by the strongly alkaline discharge present in some profusely suppurating wounds.

4. **Notes on Traumatic and Venous Aneurysm.**—F. L. A. Greaves relates the history and symptoms of four cases, and compares some of the points with the description in Keen's Surgery. The textbook states that the time of appearance is from four hours up to many weeks after injury; in three of these cases it was observed in from twenty-four hours to three days. Ecchymosis of the skin is stated to be seen when the vessels are superficial; this was only noticed in one case and was not a marked symptom. The murmur is stated to be heard by the patient if the aneurysm is in the subclavian or carotid regions. Neither of the subclavian cases here reported could hear his own murmur. Superficial veins above and below the aneurysm are said to be dilated, tortuous, or pulsating with systole. Very slight dilatation of a vein was seen on one subclavian case; none whatever in the others. Tortuousness and dilatation with systole were not seen in any case.

Berliner klinische Wochenschrift.

November 22, 1915.

Arthritis Deformans in the Light of New Research.—Axhausen objects that a recent general review of this subject did not do justice to several important papers of recent date, including one of his own. The author believes he has established the fact that a primary total or partial necrosis of the joint cartilages is one component of this affection. With this is conjoined a proliferation of cartilage and subchondral tissues. The relationship between these processes is not clear, so that the author resorted to experiment. First, joint cartilage was destroyed in spots by electrolysis. This destruction thereupon called forth the proliferative phenomena. The author was enabled to make similar experiments in mankind, and, without going into particulars, he claims that a complete parallelism exists between the natural and experimental. The origin and nature of the necrotic process in the spontaneous disease forms the crux in the case, and much histological study has been carried out to solve these problems. The author does little in this direction, his article becoming almost entirely controversial in defending his assumptions against those of his colleagues.

Primary Generalized Spindle-Cell Sarcoma of the Lymphnodes.—Von Baumgarten shows in a reported case that genuine sarcoma may replace lymphosarcoma in this incidence. From a patient with alleged lymphatic leucemia two enlarged nodes were excised for microscopic study and found to be the seat of spindle-cell sarcoma. The patient, an elderly man, had first noted the presence of enlarged axillary glands to the right. When examined adenopathy was found in various localities, others being exempt. Some of the enlarged nodes were significant of serious disturbance (anterior mediastinal) while others seemed merely casual. Certain lesions in the skin doubtless represented a lymph-stasis. The liver and spleen were both enlarged. Blood count showed red cells and lymphocytes reduced in quantity. Under arsenic there was considerable improvement, but hemoglobin fell. At this point two nodes —one a swollen gland and the other a cutaneous nodule —were excised with diagnosis as above stated. The patient after his slight improvement went rapidly from bad to worse with various intrathoracic symptoms. The left leg and right arm were edematous. The lympnodes of the major flexures were all considerably enlarged, forming in some cases paquets. Nodules in the skin suggested metastases. Ascites had developed. There was no benefit from *x*-rays. The author gives most elaborate autopsy finds, as befits the importance of the case, which appears to be almost or quite unique. The diagnosis originally made of lymphadenosis aleucemia had to be renounced. Aside from the evidence of spindle-cell sarcoma the blood picture did not agree with the first diagnosis. Pathological lymphocytes were absent throughout, while normal lymphocytes were down to 6½ per cent. Local spindle-cell sarcoma of lymphnodes is not rare, but the type is large cell. The author's case was a sarcomatosis of the entire glands with the small type of cell. It would be easy to claim that this sarcomatosis was all metastatic, but the author searched the entire cadaver in vain for a primary focus. Secondary sarcomatosis was excluded by the virtual absence of metastases in localities other than in the lymphnodes and by the fact that metastases in such cases are regional. The nodules in the skin of the thorax were doubtless due to backward lymphatic propagation, from the enlarged axillary nodules. The thoracic cavity was the seat of enlarged nodes, both mediastinal and tracheobronchial, with recent pleurisy of one side and adhesions in the opposite cavity, with a high degree of arteriosclerosis of the aorta.

Münchener medizinische Wochenschrift.

November 23, 1915.

The Oligodynamic Action of Copper.—Spiro recalls the discovery of Naegeli that metallic copper is able to kill algæ, *i.e.* when the latter are placed in water contained in a copper vessel they cannot survive. The amount of copper actually in solution is minimal. Naegeli calls this action an aligodynamic one, and states that it is possessed by a number of metals, etc., the salts of which are toxic. Israel then sought to determine whether this form of activity was or was not specific. The author is especially interested in the problem of direct or indirect action. Does the trace of copper combine with something in the cell, or is the action a catalytic one? The addition of certain substances placed in the water causes the copper of the vessel to go into solution (H_2O_2); in other words, solution of copper is due to an oxidative process. In the case of algæ, bacteria, etc., the oxygen contained in these organisms must be responsible for the solution and binding of the copper in the dish, adsorption being a factor in the process. In what manner could this slight increment of copper poison the organisms in question. We have to think of the possible formation of cyanogen compounds and of ferment catalysators. The oligodynamic action has at first sight nothing in common with the specific (caustic) action of copper on the tissues. But the latter consists in the union of a copper salt with the tissue albumin, and there seems to be no evidence to show that the oligodynamic action has a different mechanism.

Therapeutic Action of Colloidal Silver.—Bersch thinks this remedy for sepsis much undervalued in textbooks. Recently, in a base hospital, he tested it on a subject who was thought to have pneumonia, but was really suffering from a typical sepsis. The symptoms were headache, thirst, and exhaustion; fever with typical septic curve—violent chills, followed by fever of 40° C., sinking at times as low as 35.8°, with profuse perspiration—lasting three weeks. The chill, rise, fall, and sweating occurred daily, beginning in the afternoon. The subject showed evidence of septic endocarditis, pulse 160, feeble. The principal treatment was digitalis for the heart, but the response of the latter was becoming less marked. Under intravenous injection of colloidal silver the symptoms changed for the better and the patient made a slow but complete recovery.

Cure of a Vulval Cancer by Zeller's Method.—Reusch relates the following case: A woman of sixty-two was attacked by profuse hemorrhage from the vagina. Her health had been failing, but she had had no local symptoms beyond hemorrhage. Only when the labia majora were separated did an ulcerated carcinoma come into view. This had originated on the inner aspect of the right labium majus and then involved the labium minus and clitoris. There were no enlarged inguinal glands. The patient refused both the knife and radiotherapy. Nothing was left but to employ the caustic-paste method of Zeller first recommended in 1912, which has never received the attention it merits. The formula is as follows: R. Acid. arsen., 2.0; hydrarg. sulphur. rubr., 6.0; carbo. animal, 2.0. Misce. This powder is made into a paste with water. The mixture of silicates of potash and soda was given inwardly. Both these remedies were devised for Czerny's Cancer Institute. The paste caused a violent phlegmonous inflammation *in situ* extending down the thigh and up the abdomen. For the first time the inguinal lymphnodes became swollen. The patient had to be kept under morphine. In about two weeks a great slough came away comprising the entire cancer. A course of radiography now followed and the cancer area healed over completely. Nine months have now passed without recurrence, although the enlarged lymphnodes have never undergone resolution.

Deutsche medizinische Wochenschrift.

December 2, 1915

Late Tetanus After Prophylactic Injections of Antitoxin.—Teutschlander relates a case of a fatality due to tetanus bacilli occurring 145 days after a shell wound which had furnished the port of entry for the germs. The prophylactic injection of antitoxin appeared to have been responsible for this long period of latency. The sudden development and rapid, fatal type of disease showed that there had been a general awakening of virulent germs. The actual determining cause of the disease was a resection of the ribs for empyema in the immediate neighborhood of the scar of the shell wound. Late tetanus in connection with scars is no new subject, but in the old cases of this incidence there was no special reason for suspecting tetanus infection of wounds, and tetanus antitoxin had not then come into use. Moreover, the alleged period of latency in some of these cases amounted to several years, and it would have been more reasonable to accuse some overlooked or cryptogenetic source of infection. In a few recently published cases in man and horse the conditions were parallel with those in the author's case, *i.e.* antitoxin was injected after wound or operation and tetanus developed in from two to five months in the scar. This subject of late tetanus deferred by prophylactic injections of antitoxin will no doubt constitute a problem to be reckoned with in the future. The author calls attention to some points of interest involved: Wherever there is a notable proliferation of granulation tissue in a recent wound tetanus germs may be walled in and eventually be retained in the scar without giving rise to symptoms. These shut-in germs may remain alive and able to reproduce themselves and secrete toxin. An injury to the scar may mobilize the bacilli or the toxin, and cause fulminating tetanus, and this may even occur after a number of years. Antitoxin given as a prophylactic can neutralize any toxin that reaches the blood, but is powerless against the shut-in germs themselves. The sole resources in these cases are surgical—prevention of healing-in of foreign matter and extirpation of scar-tissue.

A Quarter Century of Antitoxin Therapy.—Kossel shows by means of a simple chart the relationship between diphtheria deaths and antitoxin treatment in German cities of over 15,000 population for the twenty-nine years preceding 1915. The figures begin in 1886, antitoxin therapy having been introduced in 1894-1895. In preantitoxin days there were relatively high mortalities in 1886 and 1893, while in 1891 the death rate was relatively low. Antitoxin was introduced in 1894, when the mortality was reactionary, corresponding to that of 1891. By 1895 there had been an unprecedented drop, instead of an equilibrium or rise. The fall continued with less pronounced breaks until 1900. Since that time it has not changed materially, and even the "severe" epidemic of 1911 makes but the slightest ripple in the almost constant curve. No one can dispute the truth of the chart, and from enemies and skeptics as to serotherapy the only argument can be that diphtheria has yielded to other factors, which would be an unexampled begging of the question. Serotherapy, however, really began with Koch's tuberculin treatment, which enables us to speak of its quarter century anniversary, antitoxin in the strict sense being but one expression of it, although all serotherapy has a common province in immunization activities.

Glucose as Prophylactic of Shock.—A. C. Burnham advocates the administration of glucose solution as a routine measure after every operation in which there is reason to fear more than the ordinary amount of postanesthetic shock; it should be given in every case in which post-operative oral feeding may be difficult or insufficient for a considerable period after operation; it should be given as an emergency measure either before or after operation for the relief of an existing or threatened acidosis. Kausch has recommended 7 per cent. solutions intravenously and 4 to 5 per cent. solutions by hypodermoclysis. Solutions should be freshly prepared and sterilized, as they become more easily contaminated than does the ordinary saline. Strictly speaking, contamination is as easy in one as in the other, but owing to the fact that glucose is an excellent culture medium, accidental contamination is of more consequence than in the case of common salt solution. Following the use of glucose by hypodermoclysis there is no more pain or discomfort than after the injection of physiological salt solutions. As much as two or three liters, representing from 90 to 210 grams of glucose, may be given during twenty-four hours, the amount depending on the character of the case and the urgency of the symptoms. In addition to the hypodermic administration, glucose may be given by proctoclysis during anesthesia and for a period of several days after operation. It is given in 5 per cent. solution, dissolved in ordinary tap water, 12 to 16 ounces being introduced during the operation, and its administration continued by the Murphy drip method, after the patient has returned to the ward.—*American Journal of the Medical Sciences.*

Book Reviews.

MANUAL OF EMBRYOLOGY. By A. MELVILLE PATERSON, M.D., F.R.C.S., Professor of Anatomy in the University of Liverpool. Member of the Institute of American Anatomists. Past President of the Anatomical Society of Great Britain and Ireland, etc., pp. 391. Price, $2.75. London: Henry Frowde, Oxford University Press, Hodder and Stoughton, 1915.

THIS volume is worthy of note because it has condensed the entire subject of human and comparative embryology into less than 100,000 words of actual text; because it has three-fourths as many illustrations as pages, giving it the status of an atlas; and because every significant word or term, besides being printed in the text in full face type is duly indexed. The index contains about 1,200 titles and is therefore neither scanty nor redundant. Each of the over 300 illustrations is made quite independent of the text by topical designations and a full legend. Everything seems to have been done for the student without minimizing the innate difficulties of the subject.

A MANUAL OF SURGERY FOR STUDENTS AND PHYSICIANS. By FRANCIS T. STEWART, M.D., Professor of Clinical Surgery, Jefferson Medical College; Surgeon to the Germantown Hospital; Out-Patient Surgeon to the Pennsylvania Hospital. Fourth edition. Octavo of 774 pages with 580 illustrations. Price, cloth, $4.00 net. Philadelphia: P. Blakiston's Son & Company, 1915.

IN the preface to the first edition the author stated that his main aim had been to be brief and practical; and that the chief desire had been "to set down concisely and completely those facts which the student must know and to make such suggestions in diagnosis and treatment as will best aid the physician in his daily practice." Stewart's experience as a teacher stood him in such good stead that a fourth edition of the work is already demanded. In this edition he has revised certain sections of the work, expanded others, and added a number of sections in order to cover those branches of surgery in which there have been marked advances in operative technique or in diagnostic methods, or where surgery has invaded new fields, as in the treatment of hemorrhagic conditions by transfusion.

In general, Stewart has covered the subject concisely and well; though it was rather too much to hope to cover it "completely" in a relatively small work of this character designed for undergraduates and as a "guide" for practitioners. For instance, in the section on transfusion several methods are detailed, including that by arteriovenous anastomosis and the use of the Kimpton tube. Strangely enough, while the citrate method is mentioned, that of Lindeman, the most widely used of any up to the elaboration of the Lewisohn-Weil technique, receives no notice. Again, we occasionally see inaccuracy of statement, or a statement which should have at least been qualified in some way. A case in point occurs on page 416, where we find the following: "The parathyroid glands are four in number. They are brownish red, oval bodies, . . . one near the pole of each lobe." While this may be true in a certain proportion of the cases, it has long been known that the parathyroids are very variable, not only in position but also in number. Typographical errors are not at all infrequent. For example, Graves' disease is regularly called Grave's disease.

While other errors of omission or commission might easily be cited, we do not feel that it is necessary to do so; for the book as a whole is extremely well written and seems unusually well fitted for the class of readers for which it was intended. The author has fulfilled his promise to be concise, the most practical points in diagnosis and treatment are well brought out, and his statements are usually accurate.

A MANUAL OF THE PRACTICE OF MEDICINE. Prepared Especially for Students. By A. A. STEVENS, A.M., M.D., Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania; Lecturer on Medicine in the University of Pennsylvania; Physician to the Philadelphia General Hospital, to the Episcopal Hospital, and to St. Agnes' Hospital; Fellow of the College of Physicians of Philadelphia, etc. Tenth edition, illustrated. Price, $2.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS new edition has been brought up to date by the insertion of information on Vincent's angina, diverticula of the esophagus, acholuric jaundice, embolism and thrombosis of the mesenteric vessels, alcaptonuria, albumosuria, tests of the functional capacity of the kidneys, polycystic disease and malignant disease of the kidney, chronic enlargements of the spleen, hypopituitarism, infantilism, glandular fever, Rocky Mountain spotted fever, Weil's disease, kala-azar, congenital amyotonia, and myasthenia gravis. A few other articles have been slightly modified, otherwise the book remains as before.

A MANUAL FOR MIDWIVES. By C. NEPEAN LONGRIDGE, M.D. (Vict.)., F.R.C.S. (Eng.), M.R.C.P. (Lond.). Examiner to the Central Midwives Board, Late Resident Medical Officer at Queen Charlotte's Hospital, Lecturer on Midwifery for London County Council; and JOHN BRIGHT BANISTER, M.A., M.D., B.C. (Camb.), M.R.C.P. (Lond.), F.R.C.S. (Edin.). Physician to Out-Patients Queen Charlotte's Hospital; Surgeon to Out-Patients; Chelsea Hospital for Women; Assistant Gynecologist Prince of Wales' Hospital, Tottenham; Examiner to the Central Midwives' Board; Lecturer in Midwifery Maternity Nursing Association. Second edition. With fifty-one illustrations. Price, 85c. net. London: J. and A. Churchill; Philadelphia: P. Blakiston's Son & Co., 1915.

THE authors of this little manual are to be congratulated on having performed most creditably a difficult task. They have produced a book scientifically correct, couched in the simplest language, and written so clearly and concisely that it may be said to set a standard for books for nurses. With good paper, large print and original illustrations, it is difficult to see how the publishers are able to offer the volume at so reasonable a price. It is far superior, both in appearance and contents, to many volumes of the kind that cost three or four times as much.

NURSING IN DISEASES OF THE EYE, EAR, NOSE, AND THROAT. By THE COMMITTEE ON NURSES OF THE MANHATTAN EYE, EAR, AND THROAT HOSPITAL. Second edition, thoroughly revised. Price, $1.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

THE first edition of this work was reviewed in these columns on its appearance a few years ago. It is, therefore, only necessary now to draw attention to the new edition, and to say that the present revision contains a new chapter on "preparation of surgical dressings," and sections on "mental disturbances after operations on the eye" and "functional test of the static labyrinth." The general get up of the book, and its size and price are alike attractive.

COLLECTED PAPERS OF THE MAYO CLINIC, ROCHESTER, MINN. Edited by Mrs. M. H. MELLISH. Volume VI, 1914. Octavo of 814 pages with 349 illustrations. Price, cloth, $5.50 net; half-morocco, $7.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

THERE are no less than 75 articles in this volume, grouped under six general headings as follows: nineteen articles in the first section, which is devoted to the Alimentary Canal; nine in the section on Urogenital Organs; five in that on the Ductless Glands; sixteen in that on Head, Trunk and Extremities; eight on Technique; and eighteen under the title General Papers. In the foreword of this book we find the suggestion that the amount of material emanating from the Mayo Clinic in the course of a year is getting to be so great that in order for it to appear in a single volume of reasonable size condensation is necessary when possible. To this end, we are told, it has seemed expedient "to abstract for the present volume some of the articles, the material for which has been partially covered in this or in previous volumes." The hope is expressed "that this method will serve to give a clearer conception of the relationship of researches on one subject by the same investigator as well as to reduce the size of the volume."

Since the articles herein contained are the work of many (31) authors and have all been published elsewhere, and since such a large field is covered, it would be manifestly unfair to single out special articles for comment. Suffice it to say that the book is of value not only to the surgeon but also to the progressive general practitioner who realizes that he must keep in touch with the advances in the field of surgery and allied sciences if he would be in a position to safeguard the interests of his patients.

Society Reports.

JOINT MEETING OF THE NEW ENGLAND PEDIATRIC SOCIETY, THE PHILADELPHIA PEDIATRIC SOCIETY, AND THE SECTION ON PEDIATRICS OF THE NEW YORK ACADEMY OF MEDICINE.

Special Meeting, Held in Philadelphia November 9, 1915.

Dr. WILLIAM N. BRADLEY OF PHILADELPHIA IN THE CHAIR.

THE members of the Philadelphia Pediatric Society entertained the guests during the day with clinics, short talks, and demonstrations in various hospitals and research laboratories of the city. Among the institutions visited were the following: Henry Phipps Institute of the University of Pennsylvania for the Study, Prevention and Treatment of Tuberculosis; Jefferson Hospital, where Dr. E. E. Graham gave a clinic; the Health Center of the Child's Federation, where Dr. S. McC. Hamill explained the intensive work which was being conducted for the prevention of diseases in a congested foreign quarter of the city, the first unit of the new group of buildings of the Children's Hospital, and the Children's Building of the Woman's Hospital, where luncheon was served to the visiting physicians. The greater part of the afternoon was spent in the various departments of the University of Pennsylvania. Here three talks were given in the Department of Research Medicine of the Laboratories of Pathology, Physiology, and Pharmacology. These were as follows:

Acidosis in Children.—Dr. ALONZO E. TAYLOR of Philadelphia gave this talk in which he described the work they had been doing in their endeavor to determine the actual relation of intermittent vomiting to acidosis. They had studied the elimination in a child whose diet was known before, during, and after the attacks of vomiting. The urine was also examined forty-eight hours before the onset of the attack. The quantitative determination of the acid elimination, ascertained by estimating the quantity of the different ketones, showed that for two days previous to the attack there was no acidosis; acidosis did not show itself until three days after the onset of the vomiting. The ketonuria continued until the child was again taking a normal diet when it dropped to normal. These findings seemed to indicate that the ketonuria was the direct result of the starvation and had no direct connection with the intermittent vomiting. The conclusion seemed to be warranted that there were two types of acidosis; one connected with intermittent vomiting, and one dependent on the withdrawal of food and having nothing to do with the intermittent vomiting.

Metabolism Studies Before and After Splenectomy in Congenital Hemolytic Icterus.—Drs. RICHARD M. PEARCE, O. H. PERRY PEPPER, and SAMUEL GOLDSCHMIDT presented this study and also the patient upon whom the observations had been made. This patient was a boy five and one-half years of age with a history of congenital hemolytic icterus, which had been complicated by a partial paralysis of the left side, loss of power of speech, and otitis media. There was a tendency to localized edema and obstinate constipation together with the usual symptoms of this condition, Two other children in the family had been slightly jaundiced after birth but had otherwise been in good health. The father was said to have had an enlarged spleen and offered a history of exposure to lues, of skin eruption, and of chronic abscess. The Wassermann reaction in the patient had always been negative; however, salvarsan had been administered five times per rectum. The literature showed that in only three instances had metabolic studies in man been made both before and after splenectomy. Two of these were studies of Banti's disease by Umber and the third was a study of pernicious anemia by Minot. In none of these was the study as complete as in the present instance. The first metabolic period ran from the 4th to the 14th of December, 1914, during which time there was little change in the patient's condition. Examination again on January 26, 1915, revealed nothing new. Splenectomy was performed on January 28, and was followed by a satisfactory convalescence. On February 5, the second period of metabolism study was started and continued for ten days. After comparing the results of their observations during the two periods the authors summarize as follows: (1) A slight positive nitrogen balance before splenectomy was followed by an increased retention eight days after the operation. (2) The output of uric acid showed a decrease of 47 per cent. after the operation. (3) In the period directly after the operation a change in the partition of creatinin and creatin elimination occurred; the total creatinin, however, showed but slight change (4) Other urinary nitrogen constituents showed no variation from normal, and no change was found in the hydrogen ion concentration. (5) The utilization of nitrogen was good at all times. (6) Fat metabolism was normal. (7) There was a large loss of iron through the feces before splenectomy, followed by a decided decrease (40 per cent.) after the operation. (8) The excretion of urobilinogen and urobilin in the feces was markedly diminished after splenectomy, the amount excreted after the operation being about one-ninth that excreted before splenectomy. Dr. Pearce exhibited the spleen that had been removed and presented the pathologist's report.

Electrocardiographic Tracings in Children.—Dr. E. B. KRUMBHAAR of Philadelphia spoke briefly on this subject and exhibited the cardiographic tracings which he had made. He stated that in studying pathological hearts in young children and in making tracings he had found that there were no electrocardiographic tracings of the normal heart in infancy and childhood and that hence they had nothing with which to compare their findings in abnormal conditions of the heart in children. He had succeeded in getting tracings of the fetal heart, and had records taken just before and just after the cord was cut. These showed that the heart acted much better just before the cord was cut than for a time afterward. At birth there was a preponderance of the right ventricular sounds, and this persisted up to the sixth or eighth week. This preponderance of the right ventricular sounds had been observed in older individuals occasionally and had been difficult to explain hitherto. One of the electrocardiographs was of special interest because when they began to take it there was a perfectly normal, regular interval, and within a few minutes the interval became four times as long. This child later developed heart block and it seemed that they had succeeded in observing it in its early stage.

Inbreeding Experiments with the Albino Rat.—Dr. HELEN DEAN KIND read this paper at the Wistar Institute of Anatomy and Biology, and gave the audience the opportunity of inspecting the rat colony. The inbreeding experiments were undertaken to determine whether close inbreeding altered the sex ratio by increasing the number of males, as several investigators had maintained, and to ascertain whether, as generally believed, this form of breeding necessarily led to sterility, loss in body size, and in constitutional vigor. The experiments were begun six years ago with a stock litter of four albino rats, two males and two females. At the present time there were twenty-one generations of rats. The descendants of each pair had been kept separate and the closest kind of inbreeding had been carried on, namely, the mating of brother and sister of the same litter. In both series environmental and nutritive conditions had been identical. The average rate of males to females in 1,000 stock litters had been found to be 107 males to 100 females, practically the same sex ratio that is found in man. During the first six generations no attempt was made to influence the sex ratio, and in 1,500 individuals belonging to these generations there were 105 males to 100 females. This indicated that close inbreeding alone did not appreciably alter the sex ratio. From the sixth generation on there had been a careful selection of breeding animals. The descendants of the one original pair were designated the male line, those of the other pair, the female line. In the first series every male used came from a litter containing an excess of males, while in the second series, the female line, every female had belonged to a litter containing an excess of females. Each female was mated twice to a brother of the same litter. Following this method the sex records were now complete for nineteen generations. In the male series there had been an increase in the proportion of males, varying from 3 to 42 per cent. above the normal in the different generations; in the female series, there had been an increase in the number of females in each generation, the number of males being from 6 to 33 per cent. below normal. At present no explanation could be offered as

to the way in which this change had been brought about. The sex ratio of a given litter could not be predicted and it was only when a large number of litters were taken that the results cited were obtained. With reference to the body weight of inbred rats, it had been found that during the first sixty days of postnatal life the growth in body weight was practically the same in inbred and stock albino rats, but that after this time the inbred rats exceeded the stock rats in weight at any given age. After 150 days of age inbred males were about 15 per cent. heavier than stock males. In the females there was less difference, the inbred females being about 3 per cent. heavier than the stock females. This result was the more striking since no attempt had been made to breed for body size, although the largest and most vigorous individuals from the litters were selected to continue the series. Sterility had been said to be one of the evil effects of inbreeding, but here the rat seemed to be an exception, for the average litter contained seven young and the records of over 1,200 litters of inbred rats showed the average number of young per litter to be 7.4. In this colony the inbred rats lived fully as long as did the stock rats and appeared to be equally resistant to disease. During the past ten years observations had been made on about 50,000 rats and at present some 3,000 were under observation.

Lobar Pneumonia: The Corelation of its Symptoms and Physical Signs with the Findings of the Röntgen Ray.—Dr. Howard Harrison Mason of New York presented this communication and stated that at the Presbyterian Hospital in New York City, during the past two years, all cases of lobar pneumonia had been *x*-rayed at least once. Weil and Mouriguard from 300 cases studied by the *x*-ray concluded that the early shadow was usually triangular in shape with its base always cortical and generally axillary. They stated that they had never seen a shadow entirely central and the shadow was often present before the signs of consolidation appeared, and in some cases these signs of consolidation never appeared. In the present study all cases having fluid had been excluded and this left thirty-seven uncomplicated cases of lobar pneumonia. All of these showed definite shadows, quite dense and uniform, and usually definitely outlined. In every case the shadow was situated so that the consolidation must touch the pleura at some point. The exposures were all made with the children on the back or abdomen. It was believed that the inference was justified that the dimensions of the shadow corresponded to the extension of the consolidation. From the observations made in this study it might be concluded as follows: (1) The consolidation of lobar pneumonia in children began in that portion of the lung which laid just beneath the pleura. (2) A central pneumonia in the strict sense never occurred. Silent consolidations were subpleural consolidations and were separated from the hilum by normal lung. (3) Bronchial breath and voice sounds were dependent upon the presence of a medium of comparatively uniform density from the site of their origin (the trachea and large bronchi) to the point where the ear or stethoscope was applied. These conditions were fulfilled when the consolidated area extended from just beneath the ear to the region of the hilum. Of the thirty-seven cases studied, fifteen showed in the first Roentgenogram a uniform dense shadow extending over almost all of one lobe. The first negative of seven cases showed a medium shadow and it was impossible to tell how deep the shadows extended. In thirteen cases the shadow was lateral and as it developed further triangular with its base standing on its periphery. In other words consolidation seemed to begin at the point anatomically farthest from the hilum, but it might begin along the mediastinal pleura or along the diaphragmatic pleura, but always in a portion of the lung close to the pleura.

Dr. Leon T. LeWald of New York showed lantern slides of radiographs which were confirmatory of Dr. Mason's. One case of very early pneumonia showed the practical application of Dr. Mason's work. Several slides were also shown illustrating the bronchial tree after injection through the bronchoscope. These had been made with the assistance of Dr. H. D. Lynah and showed that there was normally a dense shadow about the hilus on each side and that this had led to many misinterpretations of radiographs and to the diagnosis of tuberculosis when there was really nothing abnormal in the region of the hilum. Dr. LeWald showed the Roentgenogram of a child who was taken ill very suddenly and complained of pain in the right lower quadrant of the abdomen. There were other physical signs pointing to appendicitis, but there was very little suggestive of pneumonia. However, it was impossible to tell from the physical signs whether one was dealing with a pneumonia or an appendicitis. The Roentgenogram showed an area of consolidation in the right lung and the diagnosis of pneumonia was made. A definite pneumonia could be made out the next day and the child went on to crisis and recovery. This instance showed the utility of the *x*-ray for otherwise the child would have been subjected to an altogether unnecessary operation. Another slide also showed the necessity of radiographing a child in the presence of conditions not readily recognized. This child had suffered from symptoms which were thought to indicate the necessity for a rib resection. No *x*-ray examination was asked for; the operation was done, but without relief. The child was then radiographed and a foreign body, an upholstery tack, was located in the right bronchus, where, upon careful inquiry, it was found to have been lodged for two years. This body was removed by Dr. Nathan W. Green through the bronchoscope by means of an electromagnet. Dr. LeWald showed another lantern slide presenting a wedge-shaped shadow which might easily have been mistaken for an encysted pleuritic effusion, but it resolved of itself, as disclosed by confirmatory radiographs, and this also showed how a mistake might have been made and an unnecessary operation performed.

Studies in Tuberculosis in Infancy.—Dr. Charles Hunter Dunn of Boston presented this study which was made at the new Memorial Building of the Infant's Hospital in Boston. He said that for the past nine months they had made the giving of permission to perform an autopsy in case the child died one of the requirements for admission to the hospital, and that this rule had made possible the present investigation. He reviewed the contradictory evidence with reference to the portal of entry of the tubercle bacilli in children and expressed the opinion that the explanation of these different theories as to the mode of invasion of the tubercle bacilli was due to a variation in the character of the milk supply in different localities, and in the variation in the amount of tuberculous disease in cattle in various parts of the world. He believed that infants could become infected with tuberculosis either by the human bacillus entering through the lungs or with bovine tuberculosis by the bacillus entering through the intestine. The present study, he said, must be taken as bearing on conditions in Boston and the vicinity. Von Pirquet adhered to the view of Ghon that tuberculous infection always showed a lesion at the portal of entry. This view differed from that most generally accepted that the tubercle bacilli in infancy could and usually did pass through the tissues at the portal of entry, and then followed the lymphatic channels, reaching the lymph nodes where they produced the primary lesion. In the present study an investigation had been made of the primary lesion, making a careful examination of the lungs and intestines in each case. In this series of cases the lungs were cut up in the smallest fragments and all suspicious areas were subjected to examination. In all there were twenty-five post mortems and in twenty-two of these a primary lesion was found at the portal of entry. Three cases in which the primary lesion was not found at the portal of entry showed chronic tuberculosis of the bronchial lymph nodes, but none of the mesenteric lymph nodes. The nature of the primary lesion in some cases was such as to suggest that it might easily have been overlooked, and it was possible that in the three cases in which it was not found a still more inconspicuous primary lesion might have escaped notice. Dr. Dunn believed with Ghon that it was more probable that when a primary lesion was not found at the portal of entry, it was overlooked. As to the location of the primary lesion, in twenty cases it was found in the lung and in two in the intestines. If one added to the twenty cases the three in which only chronic lesions were found in the bronchial lymph nodes, one had a ratio of twenty-three cases of infection through the lungs and two cases of infection through the intestines. It was evident that in Boston the most frequent mode of infection was by inhalation from the human source, but bovine infection from milk might occur. The principal lesion in the lung was easily recognizable; in most of the cases there was a circular area, varying in size from that of a pea to a hazel-nut; the

center was caseous but of a greyer color than the yellowish caseation seen in the secondary lesions. In some instances there was caseous softening, or small cavities, and in one instance there was calcification. In a few cases the primary lesion was much larger reaching the pleura and marked by firm fibrous adhesions. Around the periphery of some of the smaller lesions there were numerous miliary tubercles suggesting direct extension of the tuberculous process. In only one case was there more than one lesion of this description. Microscopically, the primary lesion differed from the caseous tubercles and secondary areas, in that the latter, even when the section showed wholly necrotic tissue, the lung structure, the outlines of the bronchioles, and the alveoli were faintly discernible, while in the primary necrotic lesion it always appeared homogeneous. In only one case was there evidence of healing in the primary lesion. However, all the cases were fatal ones in young children with a low degree of resistance. The primary lesion found in the intestine was a tuberculous ulceration, sometimes single and sometimes multiple. They did not differ from the secondary lesions found in several cases. The reasons for believing that these were primary lesions were (1) that only the mesenteric lymph nodes were involved and that there was no tuberculosis of the bronchial lymph nodes; (2) the involvement of the bronchial lymph nodes in twenty cases having a primary lesion in the lung and in three in which no primary lesion was found; (3) the fact that one of the cases was one of a series occurring in that locality, all using the same milk supply, and animal inoculation yielded the bovine type of bacillus. The mesenteric lymph nodes were tuberculous in seven cases in addition to the bronchial lymph nodes, and were involved alone in two cases having the primary lesion in the intestine. There was tuberculous ulceration of the intestinal mucous membrane in seven cases besides the two in which this lesion was considered primary. There were good reasons for believing that these were secondary lesions, because in all seven the primary lesion was found in the lungs, in all the involvement of the bronchial lymph nodes was more advanced than the intestinal lesion and because in no cases in which there was caseous softening cavity formation in the primary lesion was there a failure to find ulceration in the intestine. In the writer's opinion these intestinal lesions were secondary and caused by swallowing tuberculous material from the lesion in the lungs. Many cases showed tuberculous mesenteric lymph nodes without intestinal lesions. This was evidence against the view that the tubercle bacilli were able to pass through the intestinal mucosa without leaving traces of their progress in the form of a definite lesion. Other secondary lesions were found but were mostly of an acute character, a more or less generalized miliary tuberculosis. In nineteen cases a tuberculous meningitis was found which was the immediate cause of death. In thirteen of these the meninges showed small miliary tubercles without evidence of exudation. In only five cases were animal inoculations made and in one of these the bovine type of bacillus was found; the other four showed the human type. The bovine case was known to have had contaminated milk and the primary lesion was found in the intestine. As to the diagnosis, in fifteen of the series there was definite picture of tuberculous meningitis with the characteristic cerebrospinal fluid. Dr. Dunn said he was inclined to doubt if miliary tuberculosis could be diagnosed in infancy unless the brain was involved. The important point was whether the condition could have been recognized before the onset of acute manifestations. There were three points upon which the diagnosis of tuberculosis in infancy rested: (1) The finding of physical signs of tuberculosis in the chest; (2) evidence of tuberculosis as attested by a positive von Pirquet reaction; (3) evidence furnished by the *x*-ray. In this series the physical signs were positive in fourteen cases, negative in eleven. In four of the fourteen cases d'Espine's sign was the only one found. In the other ten cases there was evidence of consolidation suggestive of tuberculosis. A comparison of the physical signs with the autopsy findings brought out the following points: (1) Acute miliary tuberculosis of the lung without tuberculous bronchopneumonia gave no recognizable sign in the lungs; (2) tuberculous bronchopneumonia usually did give recognizable signs in the lungs; (3) the presence of d'Espine's sign in the infant usually meant tuberculosis of the bronchial lymph nodes, but might not be obtained in cases in which the glands were found enlarged at autopsy; (4) the primary lesion gave no recognizable signs in the child unless very large and there was consolidation indicating bronchopneumonia. The von Pirquet reaction was present in six cases, negative in twelve and not one in seven. A positive von Pirquet reaction meant tuberculosis in infancy; a negative reaction, however, did not mean that tuberculosis was absent. The *x*-ray evidence was positive in thirteen cases, in fact in every case in which it was used. There were several cases in which it gave the only positive evidence of tuberculosis obtainable. Enlarged bronchial lymph nodes were made out in most cases.

Experimental Studies and Clinical Value of the Guinea Pig Test for the Virulence of Diphtheria Bacilli.—Drs. JOHN A. KOLMER, SAMUEL S. WOODY, and EMILY L. MOSAGE of Philadelphia presented this communication, which was read by Dr. Kolmer. He stated that the morphological, biological and tinctorial qualities of the diphtheria bacillus were so distinctive that with comparatively little experience they were readily detected in properly made cultures, and if diphtheria bacilli were found on mucous membranes only in diphtheria and disappeared in a reasonable length of time after the clinical evidence of infection had disappeared, nothing would be simpler or more satisfactory than the bacteriological diagnosis of the majority of these infections. From a practical standpoint, however, the bacteriological diagnosis of diphtheria was greatly complicated by reason of the fact that many persons harbored diphtheria-like bacilli on the mucous membranes, particularly of the the nose and throat, that were apparently harmless and compatible with normal health. In the presence of inflammatory changes in these parts following direct exposure to a known case of diphtheria, the presence of these "carrier" bacilli greatly complicated the situation when it was necessary to determine whether actual infection with diphtheria was present or not. Likewise following an attack of diphtheria the bacilli might persist for long periods of time on the mucous membranes even though the patient was in all respects restored to health. Prolonged, expensive, and tiresome quarantine was thus necessary until repeated cultures showed the patient to be, temporarily at least, free from diphtheria bacilli. It was now known that these "carrier" cases, both the convalescent and the person who had never had clinical diphtheria, might carry, virulent or non-cirulent bacilli, or both, on the same mucous membrane. It was thus readily understood that some practical and reasonably sure means of differentiating virulent from non-virulent diphtheria bacilli was highly desirable. Before any test could be accepted as sufficiently safe in practical work to regard a carrier as free from danger to himself and others, several important questions must be answered: (1) Could bacilli that were without disease producing powers according to their tests resume virulence and induce disease? (2) Might not bacilli of low pathogenicity produce an infection in a second individual of signs of malnutrition in the way of rickets if they low resistance while causing no apparent harm to the carrier? (3) Might not virulent bacilli gradually lose virulence and later resume full pathogenic powers under conditions over which they had no control? The weight of experimental evidence was to the effect that diphtheria bacilli which had proven non-virulent with every test remained so indefinitely despite prolonged efforts to give them even feeble powers. It was entirely different, however, with bacilli of low pathogenicity; with these passage through animals or from throat to throat among men might readily enough restore a high degree of pathogenicity. It was reasonable to suppose and clinical experience supported the contention that bacilli of low virulence and apparently harmless to the host might be capable of harm in a second individual. The third question was more difficult to answer. Many observers had noted that diphtheria bacilli retained their virulence until they disappeared, regardless of their length of stay. They had found this true in not a few instances. But they had also reason to believe that after a time, the minimum being not less than two weeks, a proportion of the bacilli proved non-virulent when tested by animal inoculation. Whether or not they regained virulence when they passed from throat to throat they had no direct evidence. Most physicians depended upon two or three consecutive negative cultures before discharging a patient as cured, but when one stopped to consider the fallacies of this method it was a question whether a

good virulence test was not to be preferred. Animal inoculation tests had been found of great value in determining the virulence of diphtheria bacilli. Virulence tests in order to be practical and reliable must be sufficiently delicate to detect low degrees of virulence and this constituted the first and important essential; it was also desirable to conduct the test as economically as possible and as speedily as was consistent with specificity and delicacy. The subcutaneous injection of a 250 to 300 gram guinea pig with a culture was found to yield better results than intracutaneous and intraperitoneal injections. The subcutaneous injection of 4 c.c. of a good twenty-four hour culture of diphtheria bacilli on a tube of Loeffler's media washed off with a 10 per cent. normal salt solution was found to yield as delicate and specific results as any method, besides being a test requiring a short space of time for its conduct. A second method yielding excellent results, but requiring more time consisted in cultivating the bacilli in serum dextrose broth for seventy-two hours and injecting a 250 to 300 gram guinea pig subcutaneously with 1.3 to 1.5 c.c. of unfiltered culture. Focal edema and even the slightest evidence of toxemia in the test animal with absence of these signs in the control animal was regarded as indicating virulence, even though the animal did not succumb in the four day period of observation. In classifying the cultures submitted to the virulence tests the types were recorded after the classification of Westbrook, Wilson, and McDaniel. The results of 1,054 tests conducted after this method with granular, barred, and solid bacilli from the throat, nose, ear, and other mucous membranes were shown in charts, an analysis of which showed that the granular types of diphtheria bacilli were found virulent in about 70 per cent. of the cultures from the throat, nose, and ear; barred bacilli were found of equal virulence as the granular types. The long solid bacilli were found virulent in about 42 per cent. of the cultures; cultures of short solid bacilli were found uniformly to possess no virulence. These virulence tests were of the utmost value in determining the potential harmfulness of the solid varieties of diphtheria bacilli because these types were specially likely to be found in the "carriers." In the Philadelphia Hospital for Contagious Diseases, in all instances where the virulence test was negative the patient was considered non-infectious and fit for release from quarantine. These cases had been followed closely and the number of "return" cases had become practically negligible.

NEUROLOGICAL SOCIETY OF NEW YORK.

Three Hundred and Forty-first Regular Meeting, Held Tuesday, October 5, 1915.

THE PRESIDENT, DR. WM. M. LESZYNSKY, IN THE CHAIR.

Case of Cerebrospinal Syphilis.—Dr. E. G. ZABRISKIE presented this patient, a man 39 years of age, a locomotive engineer. In October, 1913, his brother, a railway engineer, was killed in a wreck. This depressed the patient a great deal. He began to be very talkative and his ideas assumed an expansive character. He maintained that a bill should be introduced to Congress making bridge and trestle inspection compulsory. He talked about it and the accident all the time. He became extremely agitated in manner and speech and his hands were so tremulous that he had difficulty in feeding himself. Dr. Gaines, who examined him at this time, said he displayed no realization of the seriousness of his mental condition. At that time he had Argyll-Robertson pupils, unequal in size, irregular in contour, speech somewhat indistinct, knee jerks somewhat exaggerated, a slight facial and manual tremor. He was sent to the Johns Hopkins Hospital where at that time it was learned that he had in addition to the above symptoms a desire to buy tracts of land in Florida and he expected to become rich thereby. In a short time he developed marked insomnia, talking constantly, and was extremely nervous and agitated in his manner, so much so that for a period he was unable to feed himself. His deportment was good and his language proper. Under treatment in a sanatorium, where it was necessary to confine him, he slept well, gained weight, and became quiet. On Feb. 19, 20, and 21, 1914, he was in an elated, over-talkative condition, expressed many grandiose ideas about his future plans which were extremely visionary in character and impossible of execution. He apparently did not realize the seriousness of his mental condition. Physical examination was the same as that of Dr. Gaines. There was elicited from his past history the fact that he had a primary sore about 15 years ago. The examination at the Johns Hopkins serological department showed a positive Wassermann, in the cerebrospinal fluid, a positive gold chloride reaction, positive globulin, 30 cells. Diagnosis of general paresis was made. He was given, under Dr. Barker's direction, five or six injections of salvarsanized serum, which were followed by a very marked clinical improvement. He was then given neosalvarsan intraspinously by the Ravot method which was followed by sphincter incontinence, spasticity of the legs, and intense pains in the legs and rectum. Root pains were very similar to those at the present time. The mental symptoms had entirely subsided. The patient had been extremely uncomfortable, complaining constantly of pain and stiffness in the legs, sleeplessness, incontinence of urine and feces. He had had three further injections by the Swift-Ellis method and a series of five intravenous injections of 0.5 gm. salvarsan. His blood had become negative, but the cerebrospinal fluid had remained constantly positive. Cells and globulin remained plus. The mental attitude at the present time was that of a man constantly introspective over his sad plight and very discouraged. The physical examination showed unsteady station, spastic gait; left pupil larger than right, both irregular and fixed to light. The facial expression was dull and listless. Reflexes of the arms were slightly increased, and of the abdominals slightly exaggerated. Ankle jerks were present, left greater than right. There was a double Babinski and no ankle or patellar clonus. The serological findings were: blood Wassermann positive; cerebrospinal fluid, positive; cells, nine; globulin weakly positive; gold chloride positive. The case was presented to illustrate the possible consequences of certain methods of administration of salvarsan.

Results of Intraspinal Treatment in General Paresis.—Dr. HANSON S. OGILVIE read this paper. The cases reported presented at the original examination the classical syndrome of dementia paralytica. All gave positive serobiological evidences of syphilitic disease in the cerebrospinal fluid, and all but two showed positive findings in the blood serum. The average duration of symptoms was one year and nine months, the shortest being six months, and the longest four years and six months. Out of the entire series only five were "socially possible" when treatment was instituted. Twenty-two patients had previously received intensive intravenous and intramuscular treatment during six months to two years, and 8 had had remissions of from two to eight months with relapse. The method employed was a modification of that of Swift and Ellis. The curative serum was of standard strength, prepared *in vitro*, according to a previously detailed technique. Eighteen hundred treatments had shown the serum to be safe and effectual where intraspinal therapy was indicated. In general paresis it was superior to the Swift and Ellis serum. Statistics were as follows: Total number of patients treated 35; average number of treatments given, 21; minimum number to induce a remission, 6; and maximum 14; largest number given to one patient, 42. Salvarsan intravenously and mercury intramuscularly were given systematically, the intravenous treatments being scheduled to alternate with the intraspinal. Three groups of cases were recorded: (1) with complete; (2) with incomplete clinical remissions, and (3) with failure to respond to treatment.

Group I, of twelve cases, or 34 per cent., all had been totally incapacitated for work, eight being insane. Of these nine resumed their former vocations. Biologically, four of the twelve were negative in blood and spinal fluid. Eight still had positive Wassermann tests. There was marked improvement in the health of all. Group II, of fourteen cases, or 40 per cent., all had been totally incompetent. Of these the remissions were incomplete, but rendered the patients socially possible. They were able to live at home and attend to daily functions without help. None of these Wassermanns became negative. Group III, of nine cases, or 25 per cent, were counted as failures, clinically and biologically. The question of permanency of results presented itself. No accurate prediction could as yet be made. In true parenchymatous disease of the brain it was impossible to secure a completely negative Wassermann. Where the specific process was confined to the interstitial cerebral tissues the outlook was prob-

ably better. Yet, many cases of remission, occurring without treatment and spontaneously, were on record. Obviously other factors besides the presence or absence of laboratory findings determined the duration of a remission. The value of intraspinal treatment, however, could not be judged by the duration of remissions. No two cases were identical. The method showed better results in a far greater percentage of cases of all kinds, than the older methods of treatment. Here, as elsewhere, the time to treat the disease successfully was in its incipiency, before the parenchyma of the cortex had degenerated. Other factors essential to success were care and judgment as to serum strength and frequency of administration. No fixed set of rules was possible. In paresis a stronger serum was indicated. Dosage often extended over many months and should be kept well within the patient's tolerance.

Intraspinal Treatment of Paresis.—Dr. GEORGE AMSDEN presented this paper, which was an attempt to arrive at a practical estimate of intraspinal treatment of luetic disease of the central nervous system. The report was based on sixteen cases of paresis. The treatment was started at Bloomingdale on April 13, 1915, since which they had admitted nineteen cases of paresis. Of these fourteen were treated. Very advanced cases were not considered. Of two groups of cases, each consisting of seven patients, the first were commenced about two years ago, the second group were more recent. Of Group I, five showed a high degree of improvement, and retained it for a year or more, two permanently, and three subsequently relapsing. Of Group II, five attained good improvement, and three of them retained it for considerable time. Roughly then, 62 per cent. attained improvement, but only 12 per cent. retained it. Comparison with untreated cases, carefully noted, had not been made, however, therefore there was no exact criterion. The duration and quality of remissions must be considered in judging the value of results. In about 38 per cent. no improvement was shown, although the patients were not injured by the treatment. Of the 68 per cent. which showed some improvement the remissions lasted from three months to one year and a half. The quality of improvement offered no great interest. Most cases, however, gained insight, in some thoroughly. The prevailing mood was one of seriousness, sometimes slight anxiety, otherwise they were little different from normal well being. A whining depression often characterized the remissions. Untreated cases, on the contrary, showed complete complacency. The advantage, for the time being, to the family, was considerable, but the prolongation of the burden which the patients must ultimately become, must be considered. Evidently intraspinal treatment with salvarsanized serum markedly checked the progress of the disease, at least clinically. In very rare cases it stopped it. Where a temporary improvement was desirable, the method was encouraging. It would be unfortunate if poor permanent success in arresting the disease should discourage physicians from trying it and trying to improve it.

Treatment of Cases of Cerebrospinal Syphilis.—Dr. HENRY A. COTTON of Trenton made this presentation. At the Trenton State Hospital they had been treating cases of cerebrospinal syphilis for over two years and a half, and they had been able to classify three different types; general paralysis, tabes dorsalis, and cerebrospinal syphilis, a mixed type, which was neither tabes nor paresis. The last type showed very marked sensory disturbances, Argyll-Robertson pupils, severe bladder disturbances, but, as a rule, no marked psychosis and they were consequently not committed to the State institutions. Altogether about seventy-five cases had been treated, and at the present time there were twenty-five patients under treatment. The treated cases fell into four groups: (1) arrested cases (11 or 35 per cent.); (2) much improved (7 or 22.5 per cent.); (3) not improved (7 or 22.5 per cent); (4) fatal cases (6 or 19.5 per cent). Subsequent observations would change these figures somewhat, but they would not vary to any great extent. Dr. Cotton's experience had been similar to Dr. Amsden's with regard to relapses and several of his most promising cases at the beginning of the treatment (some in spite of persistent treatment and others from the fact that they were removed and treatment discontinued), had shown a tendency to relapse. In spite of the fact that certain cases had relapsed, he thought the work had been extremely encouraging. An important point to be emphasized was that the patient must be treated in the incipient stage if good results were to be accomplished. The length of the duration was not always the index of the severity of the process, as some of the patients, in which the duration was two years, had done remarkably well. In order for the treatment to be effectual it had to be administered early in the incipient stage. The question was, could this incipient stage be diagnosed by the general practitioner or the consulting neurologist or psychiatrist. He thought the answer was in the affirmative. There was no reason why incipient paresis could not be diagnosed as well as incipient tuberculosis or any other disease, where the treatment must be early to be effectual. Seventy-six per cent. of patients with paresis committed to the State hospitals were insane beyond any therapeutic help, which left 25 per cent. who could be much benefited by treatment, and often the progress of the disease could be materially arrested. The symptoms of incipient paresis should not be difficult to recognize and in the records of a large number of cases, there were shown definite periods, from three to ten years, before they were committed to the hospital, when the patient had evidences of some neurological or psychic disturbance. Sensory disturbances were shown, such as dizzy spells, delirious episodes, mild depressions, neurasthenic episodes, irritability, change of disposition, general inefficiency; and on the neurological side, paresthesias, bladder disturbances, defects of vision, changes in the pupils, changes in writing and gait, high blood pressure without apparent cause. When such symptoms were present in a man of middle age or even younger, especially with a history of previous syphilitic infection, a thorough examination of the blood and spinal fluid should be made. These symptoms usually occurred during the incipient stage of paresis and might well correspond to the invasions of the spirochetæ in the meninges. It was possible that even with a positive cell count, increased globulin, positive Wassermann reactions in the blood and spinal fluid and a positive gold chloride reaction, that such a case might not develop paresis, but chances were against this assumption, and such a patient should certainly be treated with salvarsanized serum intraspinally, or mercurialized serum. In two patients, in whom the most prominent symptom was high blood pressure, one was suffering from depression, ideas of poverty, but was attending to his work. When examined he had stiff dilated pupils, the eye grounds suggested specific trouble, and lumbar puncture revealed plus cell count, increased globulin and positive Wassermann in spinal fluid. The blood Wassermann was negative. This patient had been successfully treated, and biologically and clinically he presented at the present a normal picture. The other patient was a locomotive engineer who was apparently perfectly well and in the routine examination he was found to have a blood pressure of 220. He had a history of syphilis five years previously. Lumbar puncture revealed 89 cells per cm. 4 plus globulin and 4 plus Wassermann in the spinal fluid. The blood serum was negative. He had no headache and no neurological disturbance, except that the pupils were somewhat slugglish. While such cases could not be called paresis, Dr. Cotton was fully convinced that if untreated, such patients would, within a year or two be classified as such. Thus they were considered incipient. The general practitioner should be educated to recognize the first symptoms of such a stage. In the State hospitals the disease had progressed too far to be benefited by treatment. In regard to methods of treatment: The Swift-Ellis was familiar and gave as goods results as any. The criticism that the amount of salvarsan could not be estimated had been met by the Ogilvie method where a standardized serum was used. The cerebral puncture of Wardner had much to recommend it, but it was not likely to produce results where the Ogilvie or Swift-Ellis method had failed. Wardner's method might be more permanent and might not tend to relapse so much. The method of Byrne, mercurialized serum, might prove just as efficient as salvarsanized serum, and the increase in cost of salvarsan increased the necessity of a substitute. Two tabetic cases treated by this method did not react well; one died; one recovered and did well later. Recently he had gotten most encouraging results by this method. Its small cost was in its favor, especially for dispensary cases. The method of Hammond and Sharpe, ventricular puncture, had no advantage over the method of Wardner. A sixth method was their own modification, whereby they used the standardized serum of Ogilvie for cerebral puncture, and mercurialized serum for both cerebral and intraventricular puncture. It had not been used long-

enough to give a final report on. They had not been able to prevent relapses. Some patients had done well for six months or a year and had then relapsed in spite of treatment. In some the biological reactions were positive, in some negative. A persistently strong Wassermann reaction in the spinal fluid was a bad prognostic sign. Treatment should be continued till the Wassermann was negative. Most patients showed a decided improvement after four or five treatments; the cell count dropped; the globulin became negative, and the Wassermann much reduced; clinically also there was improvement. With an uninfluenced Wassermann, however, the prognosis was bad, even with clinical improvement. They had reduced the gold chloride test in many cases. The intraspinal treatment was not dangerous. Eight hundred intraspinal injections had been given and in only three were there irritative effects. These cleared up in a day or two, but they had severe pain. The fact that they had been able to produce remissions in 33 per cent. of cases with treatment, as against 4 per cent. without, warranted the feeling that the treatment was worth while. The treatment improved the physical condition and prevented the patients becoming useless and bed ridden. Interruption of the treatment was dangerous, and regular treatment produced the best results.

Dr. H. C. Solomon of Boston stated that when they started this work three years ago at the Psychopathic Hospital, Dr. Myerson had charge and he published his results. Later, Dr. Solomon treated a certain number of cases intraspinously and the results were not particularly favorable and after a few months he became discouraged, as only one case out of the series recovered completely, serologically and clinically. They then adopted the ideas of the difference between the meningovascular syphilis and the syphilis centralis, of Head and Fearnsides; between the mesenchymal and the parenchymatous variety of Alzheimer. In the former type they expected improvement by treatment. They felt unable in many cases to differentiate between general paresis and Fournier's syphilitic pseudo-paralysis or Binswanger's postsyphilitic dementia, and therefore felt that treatment was indicated. The method of treatment was salvarsan intravenously, twice a week and dosage varying from 0.6 to 1.2 gram. Some cases also received mercury salicylate, intramuscularly, once or twice a week with potassium iodide, grains 15 to 100, three times a day. In a recent series of nine patients treated intravenously, two became much worse, seven were now able to go about their business, one woman had a baby who had never gone beyond the fifth month of pregnancy without miscarriage. Two of the cases, indistinguishable from general paresis, had been serologically negative for many months and had made clinical recoveries. It should be remembered, as Alzheimer had pointed out, there were two processes in general paresis, a meningitic and a true parenchymatous degeneration with cell atrophy. This cell destruction could not be repaired, but many of the symptoms were due to meningitis and not to primary cell degeneration, and a good deal could be done to cure the meningitis. One early case, after having considerable treatment, died, and at autopsy, showed no evidence of meningitis in brain or cord. Microscopically there was but very slight perivascular infiltration, but marked parenchymatous degeneration. Clinically the case was typically paretic. Oppenheim and Westphal stated that in cases that improved under treatment they had to change their diagnosis of paresis—if they improved they were not paretics. In regard to cases serologically negative, Nonne stated that cases that were serologically negative were not cases of general paresis.

Dr. I. Strauss of New York said he thought this discussion was rather a fruitless one. They were not exactly sure of their ground. They had not the statistics, the biological tests, over a long period of time, to compare with present cases, no real scientific basis upon which to form judgment. Dr. Strauss knew that Dr. Cotton could make a better diagnosis of paresis than he could, but he did not think he would call the engineer, with high pressure, a paresis case. He had had such cases in the hospital with no sign of paresis. He had had a boy of 15 with blood pressure of 240 with 3 plus Wassermann in the spinal fluid, but that was a case of congenital syphilis, and no one would consider it a case of paresis. He would also take exception to the case of the patient who was depressed, but in whom the biological findings were positive, as being more than a case of cerebral lues. From his standpoint that was not paresis. In regard to the tabetic cases of Dr. Cotton, why form any judgment regarding the efficacy of the method because tabetic patients could walk? Fraenkel taught tabetic, bedridden patients at Montefiore Home to walk. It looked like a miracle, but he accomplished it. At one time they stretched their cords to make them walk. All kinds of treatment could bring results in tabes, even applying silver nitrate to the urethra was effectual. Another point was that other kinds of treatment than salvarsan had given results in paresis, as good, if not better than those shown to-night at Wagner's clinic. Pilcz treated paresis with tuberculin injections combined with mercury. He reported in 1911 that of 86 cases treated, 23 were able to return to work. In April, 1912, he reported that of the cases treated in 1911, 46 had died and of the 26 living, 10 were attending to work. If the presence of a positive Wassermann in the blood and spinal fluid in a patient who suffered from headache, was to be regarded as incipient paresis, then we had to consider every case of lues in the secondary stage as belonging to this category. He was certain that most authorities would consider this as too extreme a standpoint, therefore the difficulty in diagnosis was another factor which rendered the discussion futile.

Dr. Bernard Sachs of New York said he did not think they could confine themselves to general paresis. They could not exclude cerebrospinal lues; they must refer to lues of the central nervous system. Every form of general paresis was lues. They must speak of this treatment in its bearings upon the kind of lues of the central nervous system, especially these cases of assumed general paresis. In listening to the clinical histories this evening, as presented by Drs. Zabriskie and Cotton, some of them might have disagreed with the diagnosis of paresis, but all could agree that they were lues of the paretic or tabetic type. In his work with associates in hospital and in private work, he was among the first to advocate intraspinous treatment. Since that time he had become more indifferent, and had come to feel that the method had been unduly pushed. The question was whether more was accomplished by this intraspinous method than by the intravenous. The intraspinous method was more difficult and more likely to lead to serious complications, and had been followed at times by disastrous consequences. He felt that he had seen as great and satisfactory improvement follow upon intravenous therapy as upon intraspinous. They had shown that very little salvarsan was found in salvarsanized serum, and that little was accomplished by that method. Almost any injection had been known to change the cell count and globulin. He had no fault to find with the Swift-Ellis or the Ogilvie method. They had been most carefully studied. They had also to determine whether more had been accomplished by these than by former methods of treatment. A patient had been referred a year and a half ago from the Middle West. He had all the mental and physical symptoms of general paresis. He had had six intravenous salvarsan injections and the result was that he had improved sufficiently to be competent to undertake management of a large commercial concern. All that was noticeable was a slight exuberance, an undue optimism, but yet the man was not cured. He was merely in a remission and would sooner or later relapse. There was danger of attaching too much importance to remissions. The matter was an extremely difficult one. Perhaps there were more cases of remission now than formerly. The period, one or two years, was too short to speak of the cases as really cured. One suggestion to the larger hospitals, he would make, the difficulty of getting salvarsan would increase, and the opportunity was at hand to compile very careful statistics as to the results of treatment in 1915-16, as compared with the salvarsan results of 1913-14. He did not believe that slight changes in the cell count were very important. "Cured" cases must not be only biologically cured, but clinically cured. The latter was of more importance. He believed with Dr. Ogilvie that many more cases were made socially possible with treatment, but he was not inclined to look upon these as cures, although the results were, in some cases, encouraging enough to warrant the treatment. Personally, Dr. Sachs said, he would continue to give his cases most thorough intravenous treatment.

Dr. Walter Timme of New York said that he had seen some of the cases reported by Dr. Ogilvie, which showed certainly remarkable improvement. Dr. Sachs had mentioned that he had obtained as much improvement with the intravenous method, and stated that it would do less harm than the intraspinous with salvar-

sanized serum. In the past six weeks Dr. Timme had seen three cases that had had absolutely no treatment for one year to eighteen months. At the beginning of this time, the spinal fluid examination had shown from 16 to 18 cells, Wassermann positive, and globulin in excess in each case. They had had no treatment of any kind during the entire year. Within the past six weeks their fluids had been again examined by competent laboratory workers, and the findings had been returned absolutely negative, that is, there were no cells, Wassermann negative, no globulin. So it could be seen that intraspinous treatment, intravenous treatment, and, in a few cases, no treatment at all, produced similar results. Nonne, in Hamburg, had made similar observations on his cases.

Dr. D. M. KAPLAN said that general paresis was a type of cerebrospinal syphilis that could not be cured. The patient would be brought back. He appreciated what Dr. Solomon said as to the stubbornness of general paresis. One could only influence the meningitic phenomena, but could not repair dead cells. Dr. Cotton was more enthusiastic than the other speakers. He quoted a few cases with remarkable remissions, but he did not call them complete cures. He had spoken of a plus Wassermann without clinical manifestations. Whether that was general paresis Dr. Kaplan could not say, but when one said syphilis of the central nervous system, it could be included. General paresis was incurable and the others were more or less curable as Dr. Sachs had said. In Ogilvie's cases, four out of thirty-five were complete cures and remained in good health. That was a small percentage. The cases were very strongly treated, intraspinously, intravenously, and intramuscularly. He did not believe that one could obtain more than temporary remission, from one month to three years.

Dr. COTTON of Trenton, in closing the discussion, said that he felt he could add very little to what had been said. Most of the criticisms which had been raised had been answered in his article on the treatment of paresis, now in process of publication in the *American Journal of Insanity*. Question had been raised as to the diagnosis of some of the cases presented in the demonstration. Because one or more of the biological reactions might be absent, it was no reason to question the diagnosis of paresis in certain cases. To one who had spent 15 years in a State hospital in almost daily contact with paresis and with the opportunity of making autopsies and studying the brains in a large majority of cases observed during life, questioning the diagnosis by one who had given little, if any, time to the study of paresis seemed somewhat presumptuous. He would answer Dr. Sachs' criticism that one should study the remissions of untreated cases of paresis before one considered remissions due to treatment by stating that a number of studies had been made on this subject. In the State hospital, one found, in the 127 cases admitted over a period of seven years, that the number of remissions in paresis, where the cases were accurately diagnosed by means of lumbar puncture, were at the most only 4 per cent. The question of remissions, had, he thought been thoroughly treated in the article mentioned above. As his figures corresponded to those of Dr. Ogilvie (33 per cent. and 34 per cent. of remissions), as a result of treatment, he thought the question was answered as to the relation of remissions to treatment or no treatment. He still insisted that the question of paresis should be determined by the effects of treatment, that is, even though the patient had all the clinical signs of paresis and the positive biological findings were arrested by treatment, such a case should not be considered some other form of cerebral lues, merely from the fact that the process had been arrested. The argument would be the same as to say that a person suffering from incipient tuberculosis had never had tuberculosis, because the disease was arrested. The cases were similar; it was absolutely necessary to treat tuberculosis in the incipient stages, in order to obtain results. It was fallacious to condemn the treatment of paresis because we could not cure the end stage. He had not found, with Dr. Sachs, that lumbar puncture was a dangerous procedure. In only three cases out of 800 injections had they had irritative effects. He considered intravenous injection of salvarsan attended with more danger than intraspinous. In certain cases of myocardial trouble an intravenous injection might readily prove fatal. This had occurred, Dr. Cotton said, in two patients in his experience. He never had given a full dose of salvarsan intravenously for the first time.

Therapeutic Hints.

Throat Paint.—The following is recommended for the sore throat of acute pharyngitis:

℞ Glyceriti acidi borici.
Glyceriti acidi tannici.
Glyceriti acidi carbolici, āā ʒj.

M. Sig.: To be painted over the fauces and pharyngeal mucous membrane.—*The Prescriber.*

Frostbite may sometimes be prevented by thoroughly greasing the feet and socks with an animal or vegetable oil; this is especially useful when the feet are wet with melting snow and slush.

Arsenic and Potassium Iodide in Chronic Bronchitis.—Wilcke has found this combination extremely effectual in cases of chronic bronchitis, especially in the aged. His method is to give 2 drops of Fowler's solution three times a day on the first, third, and fifth days, alternating it with a 5 per cent. solution of potassium iodide, of which 15 drops is taken three times a day on the second, fourth, and sixth days, and so on. Each of the drugs is taken in milk after meals. Larger doses are liable to derange the stomach.—*Medizinische Klinik.*

Muscular Rheumatism.—

℞ Ammonium chloride, ʒi.
Extract of cimicifuga, ʒii.
Syrup of acacia.
Cherry-laurel water, āā fl. ʒi.

M. Sig.: Teaspoonful four times a day, after meals and at bedtime.—Anstie.

℞ Tincture of iodine.
Tincture of aconite root, āā ʒii.
Tincture of opium, ʒss.
Chloroform liniment, ʒiii.

M. Sig.: For external use.—Bartholow.

Stomach Cough.—This begins usually late in the day and lasts well into the night, interfering with sleep. The following may be given:

℞ Aluminis, ʒss.
Potassii bromidi, ʒjss.
Syrupi tolutani, ʒiij.
Aquæ carui, q.s. ad ʒiv.

M. Sig.: One teaspoonful every hour, beginning at 4 P. M.; or the following:

℞ Aluminis, ʒss.
Tincturæ belladonnæ, ʒiss.
Syrupi pruni virginianæ, ʒiij.
Aquæ menthæ piperitæ, q.s. ad ʒiv.

M. Sig.: One teaspoonful every hour after 4 P. M.

Quinsy.—Faulkner recommends the following as a cleansing gargle in tonsillitis: Essence of peppermint, 5 minims, in 4 ounces of a saturated solution of bicarbonate of soda.

Acute Coryza.—

℞ Dried suprarenal gland, gr. v.
Menthol, gr. iii.
Camphor, gr. x.
French chalk, ʒss.
Powdered acacia, ad ʒi.

M. Sig.: Use as snuff or apply with a powder blower once or twice daily.—Faulkner, "Tonsils and Adenoids," 1915.

Palatable Castor Oil.—The taste of castor oil is effectually disguised in the following mixture:

℞ Olei ricini, ʒss.
Olei caryophylli, ♏ij.
Pulveris acaciæ, ʒiss.
Syrupi zingiberis, ʒij.
Aquæ menthæ piperitæ, q.s. ad ʒij.

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THE TOBACCO HABIT.*

BY ROBERT ABBE, M.D.,

NEW YORK,

SENIOR SURGEON ST. LUKE'S HOSPITAL.

IN this society of a small group of men of wide experience, we should be able to give unprejudiced thought to observations we make daily, on a subject of such medical and social importance as the one I have chosen.

Physicians are natural observers of details, and tonight we should not tincture our views, by our prejudice for or against tobacco, because all of us either are smokers or have smoked and given it up. The world looks to our profession for advice—not reform.

If one asks of a librarian for works on tobacco, he may ask you, "For or against?" It is not in that spirit we will consider the subject. Taking sides is not called for here! We will consider only the *fact* of so widespread a habit; and, *why* we smoke.

For more than a generation fallacious claims of its vicious effects in stunting body growth, causing mental imbecility, moral turpitude, impotence and nerve wrecking have been rife. These hoped for deterrents issued by moralists and clergymen have been a thousandfold neutralized by lurid advertisements of commercial monopolists. It is fair to admit with Towns that "Smoking confers mental satisfaction; it seems to give one companionship when one has none; . . . something to do, when one is bored; . . . keeps one from feeling hungry when one *is* hungry; . . . and blunts the edge of hardship and worry."

To my mind its virtue both for good and evil lies in the fact that it is a stimulant. Grant that it is also an irritant, its essential quality is stimulation. There are practically four strong stimulants to which civilized people are addicted—alcohol, coffee, tea, and tobacco. All are used from the poles to the equator. Alcohol, in one form or another, meets the needs of every nation for a quick, diffusible stimulant. Its abuse is its only curse. Coffee, tea, and tobacco meet an equally wide call for a mild, innocent stimulant. Either of these is also too easily subject to abuse.

Most habitual users of tobacco will say, "Why call it a stimulant, for it *soothes me?*" That is the keynote of its action! When one has come to the end of a laborious day's work; when one has known the fatiguing strain of holding a prolonged surgical clinic, or the confined work of the laboratory and classroom, or experienced the exhaustion of ministering to the sick, hours upon hours, one easily finds the fatigue of nerve and brain soothed by the spur of a cigarette or pipe. That is stimulation. It is practically true that one may have better stimulation by a brisk walk in the glorious out-of-doors, with oxygenation of the impurified blood, but through ease and simplicity the brief cigarette smoke has become a habit, with those who rely upon it. If one has never tried it, one never misses it. Of all the stimulants, tobacco, introduced the latest into civilized communities, has, in its use, spread the fastest, partly by natural demand, largely by alluring advertisement.

Of the other two stimulants, tea and coffee, the best testimony of their relative merits was made to an inquiry of mine to Admiral Peary: "Why do you not use coffee instead of tea for the rations of the polar explorers?" He said that hot tea gave the necessary stimulus against the fatigue of labor and the cold, and soothed as well as stimulated, whereas coffee would be so stimulating to their nerves, that with the added effect of intense cold to do their work, the men would exhaust themselves by doing more than they could endure, and be soon worn out under too exciting a stimulus. On the other hand, in tropical countries, where heat induces laziness and represses work, the nervous energy, whipped up by coffee is needed to combat effectually the enervation of climate, and to accomplish adequate work. Hence we see drinking of large quantities of strong coffee in hot countries, and corresponding consumption of tea in cold countries like Russia, Japan, and North China Similarly, tobacco is heavily used in hot countries like Cuba and Spain to combat the somnolent effect of heat.

Our own climate represents the temperate, so-called "intellectual belt." There is here little need of the excessive activity of mind and body to be stimulated by tobacco. Yet, we have become so addicted to it during three centuries that it has been one added cause which produces a nervous over-activity, which is, to a certain extent, hurtful and degenerating. We see this in the rush of competitive business which amounts almost to a frenzy with commercial agents and warring business houses. Excessive smoking during work is not a delusion when men claim that it clears their brains, and keeps them active. It is like the Scotchman's snuff. If one analyzes the result, however, one can see that the false energy is as abnormal as the whip lash to a horse, and in the end hurtful. On the other hand, one sees numerous high officials in corporations of national importance, who think their weighty responsibilities are best met by cool, clear brains and natural balance of judgment, unwarped by stimulants, either alcoholic or tobacco.

The question must often come to the devotee of tobacco, "Is the pleasure or benefit at all commensurate with the bad effect of using tobacco?" It is fair to say that medical experience shows that the

*Read at a meeting of the Practitioners' Society of New York, Dec. 3, 1915.

farther we get away from natural life, the more it is clear that nature exacts a penalty. Youth has a surplus of energy, is tireless, and unable to judge fairly of the right and wrong of the effect of tobacco; but the very young boy, or the system of a man past middle life, is a more sensitive index, and here we often see the toxic effect of nicotine. There are very few boys in their first experience with tobacco who are not nauseated, dizzy, faint, pallid, confused, and afterward depressed. In later life also, excessive use of tobacco in any form creates, at times, palpitation, indigestion, vertigo, and confusion of mind. I am told training in high athletic competition requires abstinence from tobacco. Every man of us has recognized "tobacco heart" and vetoed smoking until improvement. It has not taken three centuries to find out the deleterious effect of tobacco using, for tirades have been periodical and vituperative since James I opposed it with his so-called "Counterblasts" after Raleigh introduced it to his Court. Even in France after a hundred years, it was said, "No one in France but what took snuff." Its abuse only has been the cause of condemnation. While in the semi-tropics where Columbus first found nations enjoying it, it was natural, indigenous, and desirable, it was deleterious when imported into cooler countries like our own. Insofar as it was unnecessary, it became harmful.

The word "habit" as applied to tobacco implies that it is to be classed with drinking, treating, spitting, chewing gum, and varying customs, not essential to life, but incidental. Curiously enough this general taking to tobacco is but three centuries old, and has gone through changes of fashion, which is the best ground for hope of its ultimate diminution. Smoking moderately was followed by snuff taking, then by chewing, then by "dipping," and all these having been tried and found unsatisfactory or objectionable, have at last been succeeded by *violent* smoking, if I may so speak, and this in turn is already declining. From general testimony it would seem that meerschaum pipe smoking is unfashionable, briarwoods are less and less used, and the cigar and cigarette are left alone in an undisputed field. With many advantages, the cigarette is now dominant.

It may be admitted that in any form tobacco exerts the same influence. It stimulates the body forces for a short while, and is followed by a degree of depression recognized in any sensitive person and calling for another cigarette or cigar, and another to follow that, as the evanescent effect passes away. The pleasing stimulation is so gratifying that its subtle power steals on one, and one indulgence follows another in rapid succession so that the blood is surcharged with nicotine before one is aware of it. We all know, after a period of abstinence, how we feel when we take it up again. The heart palpitates, head throbs, and the tongue next morning has a fuzzy, burnt feeling where the hot tobacco smoke strikes the surface, in contrast to the clean natural tongue of health.

This gives the clue to the terrific charge against tobacco in causing cancer of the tongue and throat. Last July I published a review of one hundred cases of cancer of the tongue and mouth taken from my private notes during fifteen months where the cause was searched for. I demonstrated that nine-tenths of the patients were inveterate users of tobacco. Thirteen cancers inside the cheek were all found in men who chewed, or had chewed. The others were inveterate smokers. I was amazed at the demonstration. Letters afterwards came to me, such as one from a man whose mother had died a terrible death from cancer of the tongue. He knew his mother had chewed cigars—three cigars a week—for many years, beginning on account of a toothache. His physician assured him the habit had nothing to do with her disease; it was impossible for tobacco to cause cancer, "and that most old people died of cancer anyway." Dr. Halsted of Johns Hopkins Hospital wrote me of a case which had first come to him, like one I had quoted, of terrible cancer caused by rubbing snuff on the tongue, or "dipping."

During the last six weeks I have been consulted by ten patients with grave cancer of the throat or tongue, every one of them heavy smokers, that is, from ten to twelve cigars daily. One man said fifty pipes a day would not exaggerate. He was one of the finest types of Spanish gentlemen, otherwise unsurpassed in health and physique, but with an advanced cancer of the tongue and floor of the mouth—a hopeless condition. One man boasted that he had always smoked cigarettes only, a pack a day of all-tobacco cigarettes, ten in a package. It was difficult to convince him he was the victim of this pleasant habit, but he was beyond saving—a nice chap, poor fellow! One handsome woman had beginning epithelioma on the tip of her nose, with a seborrheic eczema along one nostril. She smoked cigarettes constantly. With a light radium treatment and abandonment of tobacco her nose was perfect in six weeks. Somehow or other it seemed to me she was very happy to be told to stop smoking. It had been a late habit in her life, and a concession to the custom among a group of her lady friends, in diplomatic society especially.

As a habit, indeed, my experience has been to find very rarely a man or woman who cannot easily abandon tobacco, especially people of mature years. There is no drug habit which so lightly holds its victims. It is essentially a social habit. It is fostered by association with others who are smoking, or with certain places which suggest it, or by advertisements thrusting themselves in the faces of the tempted. Every journal, illustrated paper, newspaper, signboard, or one's very morning mail brings alluring pictures of a face of extraordinary cheerfulness pulling on a pipe, or an Oriental woman of surpassing attraction giving the tobacco a name, or appealing to patriotism and the necessity of tobacco to soldiers in the trenches. One of the most beautiful views of our noble Hudson above Grant's Tomb is wholly obscured by a huge house-top advertisement of a so-called "America's greatest cigarette."

The push of commercial monopolies is spreading the wider use of tobacco over China and Japan with alarming rapidity. Twenty-five years ago the gentle art of smoking in Japan was limited to the dainty ceremony of filling a very tiny bowl of an artistic pipe with a bit of the mildest golden thread tobacco; almost an aroma rather than smoke came from the three puffs that consumed all the bowl would hold. The ceremony was universally a light accompaniment of conversation. There would be five minutes of the latter and without interruption, a minute or two to open the ornate pouch, extract a pinch of tobacco, press it into the bowl. This would be held in readiness indefinitely, until conversation, which was the essential, permitted a slight interruption to tilt the pipe bowl over a small bit of glowing charcoal perched on a little mountain of ashes in a cunning dish. Following the

three dainty puffs, a long interval with more chat before the ashes were knocked out of the bowl into, possibly, a bamboo ash receiver. Then another wait. No hot smoking pipe bowl filled in rapid succession. The gentle art of smoking was a pleasing accompaniment of conversation. This seemed to me was the refinement of smoking.

By contrast, we see a group of men in our country sitting about a fire after dinner, armed with long, black cigars (each one would equal the strength of three or four days' smoking for a Japanese). Our friends keep time to their sentences by pulling hot smoke into their mouths as fast as they can for half an hour, inhaling meanwhile the fumes of others in a dense, cloudy atmosphere. Is it any surprise that next morning they find their clothes reeking with stale tobacco smoke? To occupy the same time some prefer to burn three or four cigarettes—always the same *hot smoke.* If we *must* smoke, why can we not learn to use mild tobacco, small cigarettes and infrequently. It is the amount of tobacco and the hot smoke that are responsible for the wrecks of young manhood we see. Even the dainty Japanese has been much corrupted by the seductive cigarette, and has the yellow finger tips and restless manner of the habitué.

From the plantations of Cuba and Virginia are spreading influences which are progressively more and more baneful, as the tobacco habit increases. A million and a quarter acres of the richest land given up to cultivating the plant, for which our country spends annually more than a billion dollars to send up in *smoke*—a large and costly tribute to the habit.

Fortunately, it is a habit that can be easily given up. When fashion dictates, its decline will soon follow. Already one sees more and more men enjoy each other's company after dinner without smoking. Conversation seems even more worth while when men are not artificially put at their ease by after-dinner cigars, which would seem to level up the ordinary man to the type of higher intellectuality by occupying his hands in smoking and giving him an undue sense of importance. *Pari passu* with the recently demonstrated deteriorating influence of alcohol in all nations, followed by a decline in social use of liquor and wine, we all have noted the growing feeling against tobacco. In business there have been scores of mercantile houses, notably in Western cities, who have prohibited cigarette smoking as far as possible, and discouraged its use by clerks and employees. Efficiency has been increased, and the morale of employees improved by it. In schools accumulated statistics show the grading of boys, smokers of cigarettes and non-smokers, gives a large percentage in favor of abstinence. This seems to be more universal in colleges and high schools, the more widely this subject has been investigated. Higher averages of work, less delinquency, more prize men are everywhere found.

I cannot do better than commend the reading of a small book comprehending this vital subject and giving much statistical information, lately written by Prof. Bruce Fink of Miami University, whose ripe experience and unbiased judgment lead him to very strong and sane views of the detrimental influence of cigarette smoking on the adolescent.

Fortunately, it is, as remarked before, a habit so easily surrendered that I have never seen a man in middle and late life especially, who has not immediately responded to my advice that he must be a quitter. Scores of men I have known to throw an unfinished cigar into the fireplace and say, "Never again!" Occasionally one begs to be allowed to try it a little, but when no compromise is permitted his will is strengthened and he braces up to the final complete decision. In all cases of malignant growth in the mouth, or of ulceration, or precancerous leucoplakia, or smokers' tongue, it is absolutely useless to treat the case, when the irritation of tobacco using continues. Indeed, I have seen great numbers of mouth cancers which had been irritated and increased not only by the persistence in tobacco, but by an added irritant like nitrate of silver, which does more harm than good in mouth cancers.

The resolution to stop smoking in boy cigarette fiends is not as easy as in men. The boy's inexperience with serious matters of life makes him less amenable to logic, so that unless he has great respect for his seniors, he is less impressed by facts. It therefore becomes necessary to invoke the psychological effect of companionship, a mouth wash, and tonic, which works very well when a crowd of boys resolve to stick together and help each other.

In the Western states, Kansas, Illinois, Wisconsin, California, and others, great strides are being made in self-control of the hurtful habit. Notably in Los Angeles an anti-cigarette clinic is conducted by the city, to which clamoring mobs of boys and men go on certain days to get their tonic treatment. It is said to make the taste of tobacco repugnant after five or six treatments. The master of juvenile delinquents who started this clinic found that nine-tenths of those brought before him were cigarette fiends, which had much to do with their depravity. This has been the growing and universal experience with social workers and in juvenile courts the country over. The tobacco habit, thus early initiated, leads to lounging, bad association, deception, lying to parents, stealing to buy cigarettes, thirst for stimulants to match the biting stimulation on the tongue which water is inadequate to quench—all of which is succeeded by lassitude and reaction, requiring repeated stimulation by tobacco, and thus the vicious circle.

We all take our smoking very seriously, as if it were a necessity. On the contrary, it is a luxury, and an *indulgence;* a luxury which many smoking men can ill afford (for some it would represent an annual premium on a good life insurance); an indulgence that is never health giving and often baneful. As it is only a habit, and as we are able to recognize the earliest signs of its ravages in the mouth, it is a sacred duty to stop all tobacco for patients so afflicted. Insurance statistics show that sudden deaths at about fifty years of age are more common among those who use tobacco and spirits heavily—about an equal toll from both classes.

The stand taken by many against tobacco is an unpopular fight. The frontiersman sneers at the tenderfoot who refuses whiskey and a chew, with the remark, "Don't drink? Don't chew? What do you do to smell like a man?" The college undergraduate is invited to attend a "smoker" and is initiated in a reeking atmosphere of tobacco. Yet, at West Point, smoking was prohibited in 1891, and fifteen years later the summary of medical records shows the great advantage in work and discipline. In college a group of men subjected to ergograph tests during abstinence and again after four days' smoking is said to have shown a loss of forty per cent. muscle power. In try-outs for football squads it is said that half as many smokers as non-smokers are successful.

The public recognizes already the obnoxiousness of many forms of tobacco using. The foul cuspidore is out of date; once a necessity, and within our memories a subject for ornamental devices for the drawing room, like bronze turtles whose backs flew up for use when one stepped on the tail—now it is seen only in Pullman cars and ordered out by most ladies before they will sit in the compartment. The wave of reaction is fast showing and medical testimony only is needed to help the coming generation against overindulgence.

Woman's voice against it seems likely to fail in achieving what it did against the spitting menace in the streets because the young women of to-day are imitating the men in companionship of the cigarette habit. It is rather disturbing to see beautiful gardens strewn with cigarette butts among the roses, thrown there by fair hands.

The singer's voice is impossible of its best in an atmosphere of smoke.

I have seen a great painter affect a style of painting so coarse that it shocked his friends, and was evidently due to transient indulgence in unlimited cigarette smoking. His painting was full of the nicotine effect.

Taken all in all, we medical men see and condemn heavy use of tobacco, yet we indulge a little for reasons given and stop when we feel it wise. Our advice to clients will be more severe than our practice perhaps, because of what we know, but we owe it to them to uncover the truth.

13 West Fiftieth Street

AN ENZYME THEORY OF CANCER ETIOLOGY.

By LEVERETT DALE BRISTOL, M.D.

UNIVERSITY, N. D.

PROFESSOR OF BACTERIOLOGY; DIRECTOR, STATE PUBLIC HEALTH LABORATORIES, UNIVERSITY OF NORTH DAKOTA.

Cancer consists of an abnormal growth composed of epithelial cells which are reproducing themselves rapidly, continuously, and atypically. What is the cause of this excessive atypical cell reproduction? The writer began a study of this problem about four years ago, and in 1913 an article[1] was published which expressed his first ideas on the subject. At that time the catalytic, "co-enzyme" influence of chemical substances, especially inorganic salts, concentrated in areas of injury and inflammation, on the rate of oxidation and growth of surrounding cells, was thoroughly discussed. In a more recent experimental study[2] of a preliminary nature, the writer emphasized the possible influence of intracellular, oxidizing enzymes, such as peroxidase and catalase, in causing and checking malignant growth. It is the purpose of this paper to discuss in more detail the different points upon which our Enzyme Theory is based.

The study of cancer may be separated into three periods: (1) The period of old theories, in which numerous hypotheses but few facts concerning etiology were advanced. (2) The period of experimental cancer research (of the last decade or so) in which a large number of important facts have been brought to light, but without the formation of any new theory of value. (3) The period of the present and near future, in which knowledge of older theories and of recent facts should be combined in an attempt to explain the mystery of this dread disease.

It may be said that those investigators who have definite convictions as to the cause of cancer are divided in their beliefs. One class of workers tells us that cancer is probably due to a biological or biochemical action of some kind, while the other class feels certain that a parasite, or living microorganism is the cause. Our enzyme theory may be said to be a compromise between these two extremes, inasmuch as enzymes are very closely associated with the biochemistry and biophysics of the cell, while at the same time they are non-living ferments somewhat closely related to bacteria (which are nothing more than living ferments—or ferments in an organized state).

Calkins[3] says: "The value of an hypothesis is measured by the number of phenomena which it accounts for." Morgan[4] expresses like views when he says: "The value of a scientific hypothesis depends, it seems to me, first, on the possibility of testing it by direct observation, or by experiment; second, on whether it leads to advance; and, lastly, on its elimination of certain possibilities." It is the hope of the writer that his theory may fulfill some or all of the above requirements, and that the results of the preliminary,[2] and later, experimental work will strengthen the hypothesis. A complete bibliography will not be attempted, only those references being given which appear to have a direct bearing on the subject matter of this paper. For recent extensive bibliographies covering the field of cancer knowledge, the reader is referred to the works of Bainbridge[5] and Woglom.[6]

To attract attention from the much studied morphological and microscopical aspects of cancer and tumors in general, there is no definition better suited than the following: "Tumors are anomalous manifestations of cell energy." It is interesting to note that this definition is found in a book on Pathological Anatomy.[7]

A further quotation from this same book[7] may throw light on the general discussion of our theory. "It is rather a matter for surprise that ever-changing, self-regenerating living tissue does not oftener go astray in its activities than that it should only now and then do so. This latter somewhat inverted point of view may be useful in calling away the attention, in discussing the etiology of tumors, from a too close regard to extraneous factors, and directing it to the many still unexplored fields in cell physiology with which we must perhaps become familiar before we can with fair hope of success attack the serious problems of both the excitation and the prevention of tumors." With Calkins, the writer believes that "the cause of cancer—the subtlest of human diseases today—is essentially a biological problem," and that "attention must be focused upon the underlying biological phenomenon of the division energy of the individual cancer cell."

Speaking of a study of the cell, Mann[8] says: "It is only by histological research based on a sound knowledge of chemistry and physics that we will be able to understand and to modify the events in the life-cycle, that we will be able to accelerate and to slow down nuclear and cytoplasmic activities. The importance of such research in connection with cancer and all fevers cannot be overestimated."

There is no questioning the fact that histological study of malignant growths has nearly reached its limit. The line of work for the future, in the field of tumor research, is in the proper interpretation of these microscopical changes from the standpoints of the chemistry and physics of the normal and abnormal cell.

Bland-Sutton[9] says: "Morbid histology has been and still is of great use in classification, diag-

nosis, and prognosis of morbid growths; for a knowledge of their cause new methods are required. For these we fix our attention on the men along the sky-line — bacteriologists, experimental physiologists, physiological chemists, and physicists; the future lies with them."

Precancerous Agents.—According to our theory of cancer etiology, the *first step* towards a malignant proliferation is usually found in *cell or tissue injury* which may be brought about by any of the following agents:

A. *Non-Infective.* 1. *Physical:* (*a*) Trauma (blow or incision). (*b*) Heat. (*c*) Cold. (*d*) Electricity. (*e*) Light rays (sunlight, *x*-rays, radium).

2. *Chemical:* (*a*) Drugs. (*b*) Chemical poisons. (*c*) Toxins. (*d*) Abnormal metabolic products. (*e*) Acids and alkalies.

3. *Functional:* (*a*) Over-activity. (*b*) Disuse.

4. *Nutritional:* (*a*) Interference with blood supply.

5. *Referred:* (*a*) Injury, at one point, referred along a nerve to a distant part where it may have its effect.

B. *Infective.* 1. *Living Parasitic Agents:* (*a*) Bacteria, (*b*) Protozoa. (*c*) Infusoria. (*d*) Flukes. (*e*) Cestodes. (*f*) Nefatodes. (*g*) Insects.

In general it would seem that cancer follows injuries whose agents have had their effect over rather a long period of time.

To say that a certain cancer was not preceded by an injury it is necessary to rule out all of the above named agents. But to do this is impossible, for some of them are unseen and unappreciated in their action. This relation of cell and tissue injury and trauma to tumor growth is not a new idea. Our theory attempts to explain *how* these precancerous lesions act in starting tumors. One of the most comprehensive articles of recent years on "Injury as a Causative Factor in Cancer" was written by Coley.[10] This investigator concludes that in a large number of cases a definite relation between trauma or chronic irritation and malignant tumors has been proven. He believes, however, that the injury prepares a good soil for an extrinsic agent to take effect. We believe the injury prepares the way for an intrinsic agent.

The *second step* in the precancerous period is that of *inflammation,* the reaction of cells and tissues to any of the above injuries, or, as Adami would define it, "the local attempt at the repair of injury." Based upon over six thousand autopsies on mice, of which nearly four hundred were cases of unquestioned spontaneous tumors, Slye[11] has come to the conclusion that "cancer is a mode of growth probably allied to regenerative processes." She has also been able to find in these cases "the finest possible gradation from inflammatory nodules, through nodules becoming malignant, to the most malignant infiltrating cancer."

In the process of inflammation certain rather mysterious chemical bodies are formed at the site of the injury which exert what is known as positive chemotaxis or attraction for the leucocytes of the blood, causing these "wandering" cells to concentrate at the point of injury. The process may be inhibited by certain means, or such strong agents may be involved in the injury that a negative chemotaxis will occur and the leucocytes be repelled instead of attracted. The migration of the leucocytes to the point of injury is also aided by their ameboid movements.

In addition to these white cells there are usually found varying numbers of red cells, which arrive at these areas either by a process of diapedesis through the walls of the blood vessels or as a result of actual hemorrhage from a ruptured capillary. Red blood cells are made up of a protoplasmic stroma and hemoglobin. This latter substance consists of globin (a protein material) and a coloring matter, hemochromogen, which contains iron. The possible influence of this concentrated iron on malignant proliferation will be referred to later.

Possible Functions of Leucocytes and Red Blood Cells in Cell Proliferation After Injury.—At this point let us leave for a time the general outline of our theory of cancer etiology, and consider in more detail the association of leucocytes and red cells with injured areas and the general functions of the former. We know that with, or closely following, the arrival of the white blood cells at the seat of injury, a proliferation of the tissue cells takes place in an attempt to repair the damage. Adami[12] says the two prominent factors in the process of inflammation in general are: "Sooner or later, proliferation of the cells immediately around the injured area; attraction of the wandering cells to the area of injury."

Besides the function attributed to the leucocyte by Metchnikoff—that of scavengers and phagocytes which rush to the point of injury and ingest bacteria and other foreign bodies, it would seem that leucocytes must have some dynamic energy or force which exerts an influence on the tissue cells to cause them to proliferate more rapidly in the process of repair. In an article on "A Study of Leucocytic Extract" Floyd and Lucas tell us "it would seem that the function of the leucocyte is by no means limited to its mechanical and digestive action upon bacteria, but that the intracellular juices have an important action. Furthermore, it is probable that with the destruction of the leucocytes there occurs a liberation of enzymes and possibly of activating bodies." It has been shown by certain investigators that one of the most important oxidizing enzymes, namely, peroxidase, is found in considerable amount in the blood where it is chiefly confined to the white cells.[13] Red blood cells in these areas of inflammation may either be taken up by the endothelial leucocytes or they may become distintegrated, thus liberating the iron containing hemoglobin in the tissues. While the white cell contains much of the oxidizing enzyme—peroxidase, the red cell contains considerable catalase—supposedly a protector against the overactivity of peroxidase. It is interesting to note that iron has been found to act as a coenzyme or accelerator of peroxidase.

What is the stimulus, the force, the source of acceleration, which causes tissue to proliferate more rapidly than normal, and at times overabundantly, in the process of local repair or attempt at repair? Is it too much to assume that such acceleration comes from certain intracellular oxidizing enzymes of leucocytes, or possibly from the iron of disintegrated red cells in concentrated amounts, brought to and liberated in the injured area? To this subject we will refer later.

It is known that most of the leucocytes become disintegrated in time after they have reached the point of injury, especially if the agent causing the injury persists in its effect for any length of time, causing a chronic inflammation. Following an agent the injurious effect of which is short or mild,

most of the attracted white cells may find their way back to the blood stream through the lymph channels.

Waldeyer[14] was the first to emphasize the association between greatly increased tissue vascularity and early malignant growths. He called attention to the great accumulation of white cells in a large number of areas which were the sites of beginning neoplasia, and suggested that "excessive nourishment and the loosening of the connective tissue thereby assist in the advance of the epithelial cells." These areas of increased vascularity, including marked leucocyte accumulation, Waldeyer looked upon as due to repeated irritation. Enlarging upon the above ideas, our opinion is that the above mentioned "excessive nourishment" is made up largely of liberated blood-cell enzymes, or of substances which other cells use in the production of enzymes, and that they act catalytically in "speeding up" the oxidations, growth, and reproduction of neighboring cells.

Relation of Enzymes to Cancer.—It is the action of these concentrated or accelerated enzymes, and coenzymes, which the writer looks upon as the most important agency in the formation of cancer, or of any other tumor. Before considering how these enzymes may be associated with neoplasia, it will be necessary to consider at some length the general nature, actions, and properties of enzymes, as they occur normally in animal and plant cells. Vernon[15] says: "The progress of research renders it more and more evident that the cellular protoplasm of all living organisms is made up very largely of ferments or enzymes, and that many or most of its properties are dependent upon their activities." Otto Cohnheim[16] states: "It is now the general opinion of physiologists that living organisms effect most chemical operations by means of enzymes, *i.e.* enzymes are the tools of the cell." If cells go astray, is it not logical to investigate the "tools" to determine whether or not they have been changed in quality or quantity?"

The General Nature, Action, and Properties of Enzymes.—Euler[17] defines enzymes as follows: "The name enzymes or unorganized ferments is given to animal or vegetable substances of unknown composition and constitution which, in the organism itself, or even independently of the organ or cells in which they reside are *able to accelerate chemical reactions.* The term enzyme is thus included in the much more general term catalyst. By catalyst we understand a substance which, without being required by the accelerated reaction or appearing among the final products, alters the velocity with which a chemical system strives to attain its final condition." Wells[18] says: "The action of enzymes is similar to that of all catalytic agents, that is, they *increase the speed of reaction.*" For the development of our enzyme theory, it is important to emphasize again that the law has been established for catalytic reactions and states that the reaction velocity is proportional to the quantity of catalyst —supposing the concentration of the substrate to be constant. This law has also been found to apply to most enzyme reactions.

Until recently ferments were divided into two groups: the organized ferments, such as living yeast cells and bacteria, and the non-living or unorganized ferments, which are better known as enzymes. Recent work has shown that there is no real difference between the activity of living and non-living ferments. For the sake of clearness and in the discussion of our theory, however, it should be understood that in speaking of enzymes we have reference to the unorganized, non-living ferments.

Enzymes may be divided according to their location and place of activity. Endoenzymes or intracellular enzymes are held within the body cells, and are not secreted. Their activity is generally confined to the cell. Exoenzymes, on the other hand, are eliminated from the cells in which they are formed and have their seats of action in the solutions outside the cells. Peroxidase is an example of the former, while pepsin in the gastric juice is an illustration of the latter group.

So far it has been impossible to obtain enzymes in a pure state. For this reason, the chemistry of enzymes remains shrouded in mystery. By some investigators it is thought that enzyme action is a physical rather than a chemical phenomenon. Enzyme action has been compared to magnetism. Both disappear on heating to certain temperatures or when treated with acid or alkali. We can no more isolate and define an enzyme than we can lay hold on magnetism.

A few authorities believe that enzymes are not forms of matter, but rather of energy. Enzymes are recognized chiefly by their action, just as electricity is recognized by its action. It is impossible to find or estimate the enzyme itself. We may determine the amount of a substance before and after it has been acted upon by an enzyme. When increased action has taken place we assume that an increased amount of enzyme was present. Until enzymes can be purified and better defined we cannot hope for accurate knowledge concerning their functions in, and associations with, life processes in cells and tissues, and until the chemist or physicist can give us this information we must be content to base our ideas and experiments on what we know enzymes can accomplish in an unpurified state.

According to their action enzymes may be divided into three classes:

I.—*Hydrolytic* (mostly in extracellular metabolism): (*a*) *Those which attack carbohydrates*—Diastase, maltase, invertase, cellulase, inulinase, seminase, pectinase, lactase, etc. (*b*) *Those which attack proteins*—Pepsin, trypsin, rennin, fibrin ferment, erepsin, etc. (*c*) *Those which attack fats* —Lipase.

II.—*Oxidizing* (mostly in intracellular metabolism): (*a*) *Oxidase*—Laccase, tyrosinase, aldehydase, etc. (*b*) *Peroxidase.* (*c*) *Catalase.*

III.—*Miscellaneous:* (*a*) Alcoholic, (*b*) lactic, (*c*) butyric, (*d*) acetic.

Most of the study, and all of the popular knowledge, of enzymes or ferments relates to the first and third groups—the hydrolytic and miscellaneous enzymes. Only recently have we come to know much about the oxidizing enzymes, which would seem to be the most interesting and important of all in relation to normal and abnormal cell activities and energy.

Enzymes are of a colloid structure and upon this fact most of their properties depend. They are soluble in glycerin, salt solutions, or water. High temperatures destroy most enzymes, different enzymes being destroyed by different maximum temperatures. The optimum temperature for body enzymes is body temperature. They resist low temperatures much better than high temperatures, although cold usually retards their action. Euler[17] says: "The influence of rise of temperature on an enzymic reaction is twofold—(1) Acceleration of the reaction, (2) inactivation of the enzyme."

Enzymes are precipitated from their solutions by excess of alcohol. Some exist in an inactive form called zymogen. For their activity a second substance called an activator (inorganic) or a kinase (organic) is necessary. In some cases also the activity of enzymes is often facilitated or increased by substances called coenzymes. Many of these latter are of the nature of inorganic salts or of electrolytes. From the standpoint of cancer, these so-called activators, or coenzymes, and paralyzors are doubtless of great importance. Some of these are of unknown composition, while others have a definite chemical structure. Among organic activators, salts of the bile acids may be mentioned. Acids and bases act specifically as activators of some enzymes and paralysors of others. Catalase action is greatly retarded by acids. The uric acid diathesis is very frequently associated with cancerous growths and this may be due to the paralyzing action of such acids on the protecting enzymes or antienzymes associated with cell oxidations. The marked activating effects of salts of calcium, sodium, and magnesium on enzyme action has been noted. The activating effect of salts of the bile acids as well as that of calcium is interesting in view of the association between gallstones and gallbladder cancer.

Since the chemical structure of enzymes has not been established, all we may say is that they are colloidal, organic substances, derived from or closely related to proteins. One of their chief characteristics is that they are taken up, or adsorbed, by carbon, clay, infusorial earth, and other finely divided colloid substances. In many instances the attraction seems to be selective in nature. Most enzymes will pass through porcelain filters, some going through more readily than others. Considerable of the enzyme, however, does not always filter because it is adsorbed by the filter itself. After the filter is thoroughly saturated with the enzyme more of the latter will pass through. Euler[17] says: "The permeability of the Chamberland filter for enzymes depends on the concentration of the hydrogen ions in the solution. If the solution is neutral toward phenolphthalein no adsorption takes place, the filter being permeable; but if the liquid is neutral to methyl orange, the filter is impermeable." The difference in these physical conditions of the filter and of the chemical reactions of the emulsions may largely account for the variable results obtained in the attempts at the transmission of tumors by so-called "filterable agents."

Enzymes differ in their degree of susceptibility to antiseptics. Some antiseptics will destroy bacteria and cell protoplasm, but will have little effect on enzymes. Formaldehyde is very powerful in its action against enzymes, while toluol has little or no effect on enzymes. The latter is often used to keep enzyme solutions free from bacterial growth, and even to differentiate between enzymes and bacteria.

Enzymes may be properly called ultramicroscopic bodies. Because of their colloidal nature, they may be seen as very fine particles through the ultramicroscope. At times these particles may even shown Brownian movement. Frequently a large number of these small particles may coalesce and form a large mass which is much easier to see.

The "agent" (separable from the tumor) used by certain observers to cause secondary malignant proliferation is similar to an enzyme in that it may be dried, exposed to extreme cold, preserved in glycerin (which kills most of the ordinary nonspore bearing organisms), and even passed through porcelain filters without losing its power. Heat destroys enzymes and also readily inactivates tumor cells.

Euler[17] states that "the biological action of light is of two kinds—one requiring the presence of oxygen and accelerated by fluorescent substances, and the other produced only by ultraviolet rays without any part being played by oxygen or fluorescent substances. Light exerts actions of two kinds on enzymes: (1) A *destroying action*, corresponding with denaturation by heat. (2) An *activating effect*, due to conversion of the 'zymogen' into the active enzyme." Many of these facts are interesting not only from the standpoint of the study of enzymes, but also from that of the study of cancer. Richards[19] has found that weak radiations accelerate the action of enzymes, while strong radiations inhibit. Using pepsin and diastase he came to the conclusion that "a short radiation with *x*-rays has the effect of accelerating the enzymotic activity, while longer radiation inhibits it. Between these two strengths lies a point at which the radiation is non-effective." Schmidt[20] treated different beans with varying doses of *x*-rays and then noticed the effect upon their subsequent growth. Large doses of *x*-rays inhibited the growth of the beans, while small doses greatly accelerated the growth, even above the normal rate found in untreated beans. It is our belief that these *x*-ray effects were upon the enzymes of the bean which have to do with their energy and growth rate.

Euler[17] writes that "in general, it may be stated that the healing action found by experience to be exerted by radium emanation depends on activation of enzymes. The promotion of plant growth by the emanation is also to be attributed to enzyme activation." These results, as previously mentioned, are dependent upon weak radiations—the opposite effect being associated with strong radiations. *X*-rays and radium thus have a *double* effect upon enzymes. Such rays also have a *double*, and apparently *opposite* effect upon cells of the body. For this reason Lazarus Barlow[21] goes so far as to uphold the idea that cancer may be both caused and cured by radiations. While many workers have demonstrated the retrogression and even the cure of animal and human cancer by the use of radium, Rovsing[22] and others have come to the conclusion, after considerable study, that radium promotes cancer growth instead of checking it. *Both of these findings may be correct.* Some workers use weak and unconcentrated radiations and get stimulation of tissue and cells due to acceleration of enzymes. This class sees danger in the use of rays. Others, seeing helpful effects, use strong, concentrated rays and thus cause destruction of cell life due to the inhibiting effect upon enzymes. A third class of workers use medium radiations and get no effect, from which they conclude that radiations are of no value. *All of which argues for large experience if one wishes good results in the treatment of cancer by x-rays or radium.* Furthermore, some fluorescent substances act as sensitizers in generally accelerating enzyme activity. Does this give a hint as to the reason for such a high percentage of cancer of the urinary tract in workers in aniline dyes, or for the marked epithelial proliferation caused experimentally by injection of Scharlach R or Sudan III?

Aniline in certain concentrations has been demonstrated to have a powerful paralyzing, or inhibit-

ing, effect upon the action of catalase. Thus it may be that the increased percentage of cancer in those whose occupation brings them into close contact with aniline, and other related hydrocarbons and their derivatives, such as pitch, tar, paraffin, and petroleum, is due not so much to definite stimulation from these chemical bodies, but rather to an inhibition of catalase action and, hence, a paralysis (either local or general) of those protecting forces which guard the body cells and tissues against riotous and injurious cell oxidations. It is certainly significant that most of the substances which have been demonstrated to have a rather close association with cancer etiology are quite intimately related in the group of hydrocarbons and their derivatives, and that they have definite effects upon cell enzymes.

Enzymes may cause the production, in the living body, of antienzymes, just as toxins may stimulate the production of antitoxins. These may be produced by active immunization or in some instances may be found naturally in normal serum. Antienzymes do not destroy enzymes, but merely inhibit their action. Many, or most, of the protective substances in the body are of the nature of antienzymes. Regarding antienzymes, Hammarsten[23] says: "They are perhaps of the greatest importance in life in retarding or regulating the action of the intracellular enzymes."

Relation of Enzymes to Tissue Respiration (or Energesis) and Vital Activities.—Vernon[15] says: "The processes of oxidation which are continuously taking place in all living tissues are even more important than those of hydrolysis, in that they are chiefly responsible for the production of heat and other forms of energy. Though our knowledge of the subject is at present very fragmentary, it seems probable that these oxidations are brought about by intracellular oxidizing enzymes."

The true oxidases are of wide distribution, but not present in all tissues. Kastle[13] gives the following "classification of the oxidases and other oxygen carriers concerned in biological oxidations":

"(1) Laccase, ferments oxidizing guaiacum, guaiacol, hydroquinone, phenolphthalein, tannin, etc.

"(2) Tryosinase, ferments acting on tyrosin and related substances.

"(3) Aldehydase, ferments oxidizing aromatic aldehydes and related compounds.

"(4) Indophenol oxidase, ferments oxidizing a mixture of a-napthol and paraphenylene diamine to indophenol and other substances.

"(5) The purin oxidases.

"(6) Glycolytic, ferments causing the disappearance of sugar from animal tissues."

As stated above, these oxidases are found in many forms of animal and plant life. However, they are not so directly associated with the oxidation process in plants and animals as are:

"(1) Peroxidases; oxidizing oxidase reagents only in the presence of a peroxide, such as hydrogen peroxide. . . . According to Moore and Whitley the peroxidase is the only type of enzyme concerned in oxidizing processes occurring in living cells and tissues.

"(2) Catalases. These ferments actively decompose hydrogen peroxide, but are incapable of effecting the oxidation of oxidase reagents by means of the peroxide."

It may be said that practically all living animal and plant cells contain peroxidase and catalase. In the blood of animals the enzyme peroxidase is chiefly confined to the white cells. Catalase is found most abundantly in the fatty tissues of the body, also in the liver, spleen, and blood (especially in the red cells of the latter).

Loew[24] believes that the function of catalase is to destroy the hydrogen peroxide as it is formed in the cells and tissues as a result of the cell respiratory process. Others, also, have arrived at the conclusion that catalase protects the tissues against injurious oxidations. Abderhalden,[25] in speaking of catalase, says: "Thus the cells evidently possess a means of restricting and regulating the activity of the oxidation processes taking place within them."

According to Jolles and Oppenheim[26] the "catalase value" for normal blood is 23. In carcinomatous conditions they found a greater decrease than in any other disease studied—the catalase values of the blood falling to 1.3-2.1. A possible interpretation of these findings is that the injurious oxidations taking place in the cancer have put a great demand upon the protecting enzyme catalase, thus markedly reducing the supply in the blood. It was with these, and other, facts in mind that experiments[2] were undertaken to determine the influence of concentrated catalase upon transplanted rat carcinoma. The results seem to indicate that the diminished store of catalase available for combating the tumor may be so replenished that its protecting influence is greatly enhanced, and the injurious oxidations and growth of the tumor held in check, or even made to disappear.

Buxton[27] and also MacFadyen and Harden[28] have demonstrated the almost constant presence in tumors of such oxidizing enzymes as peroxidase and catalase. Their mere presence is of no great significance (for they are found also in all normal cells), unless it be to further emphasize the similarity in constitution of normal cells and cancer cells. The important features to study are the exact amounts and concentration of these enzymes in normal cells and tumor cells, and the difference in catalytic power and activity of the enzymes in such cells. The difficulty in measuring exact amounts of enzymes has already been mentioned.

Starling[29] states that "so wide is their (enzymes) dominion in cell chemistry that many physiologists have thought that the whole of life is really a continual series of ferment actions." Abderhalden[25] says: "The ferments are unquestionably closely related to the life-processes of the cells." Howell[30] tells us that "in life the endoenzymes play their part within the bounds of the cell in which they are contained, and probably constitute the chief means through which are effected the metabolic processes that characterize living matter." Wells[31] is satisfied with saying that "the factors which incite cells to proliferate, as well as those that cause the cessation of proliferation after it has once started, are too entirely unknown to permit of speculation as to their exact nature." He agrees with Ziegler, however, "that they are identical with the stimuli which excite or increase functional and nutritive activity, and that these are in many instances of a chemical nature." He further admits "at the very least, however, we may look upon the intracellular enzymes as the most important known agents of cell metabolism, and consequently of all life manifestations; and *the changes they undergo or produce in pathological conditions must be fully as fundamentally important as is their relation to physiological processes.*"

In the light of recent work on enzymes is it not possible to say that the activity of certain intracellular enzymes (oxidizing enzymes) is probably the stimulus to, or speed regulator of, intracellular oxidations and tissue respiration or energesis? If we admit that cell and tissue activity and growth depend on cell and tissue oxidations or respirations, then it is possible to see how the action of these intracellular oxidizing enzymes is the regulator, if not the source, of growth and cell-division. Jacques Loeb[31] assumes that there is a direct relation between oxidations and cell-division when he says: "If we suppress the oxidations, we suppress also the processes leading to cell-division." This association of enzyme-like substances with vital oxidation was first demonstrated by the chemist Schoenbein of Basel. Regarding this association we again quote from Howell.[30] "The oxidations of the body those reactions that give rise to much heat . . . take place under the influence of the living matter, or by the aid of substances (enzymes) formed by living matter." "The point of view actually adopted by most workers is that the living matter effects its wonderful changes in the food matter with the aid of intracellular ferments or enzymes." "The supposition has naturally been made that probably the oxidations of the body are effected also by enzymes which in some way activate the oxygen. Enzymes of this character have been found; they are designated in general as oxidases and peroxidases. Whereas formerly the general belief among physiologists was that physiological or vital oxidations were effected as part of the metabolism of the living substance, the tendency at present is to assume that these oxidations are not effected directly by changes in the living substance, but indirectly, in that the latter forms these oxidases or peroxidases, which have the property of liberating oxygen in an active form. The oxidations effected by this means are the principal source of the development of heat in the body. Many physiologists believe that a portion of this heat is used in the work of the body, the muscular contractions, for example, *or the growth of new living tissue.* That is to say, they regard the body as a sort of thermodynamical engine in which the energy of the food is obtained first as heat, and the heat is then utilized in part for the other energy needs of the body."

Speaking of specific enzymes, Kastle[33] says: "It would seem, therefore, that it is not the oxidase, but rather the peroxidase which is the most important agent in plant and animal oxidations . . ."

Jacques Loeb[31] makes the statement that "the specific substances which accelerate the oxidations at body temperature sufficiently to allow the maintenance of life are the so-called ferments of oxidation. The work of Lavoisier and Laplace not only marks the beginning of scientific biology; it also touches the core of the problem of life; *for it seems that oxidations form a part, if not the basis, of all life phenomena in higher organisms.*" Spitzer[32] demonstrated, at least to his own satisfaction, that the most important oxidizing enzymes of the cell are located in the nucleus. Based on these findings, Jacques Loeb[33] "pointed out that the cell nucleus must be regarded as the essential respiratory or oxidizing organ of the cell."

Speaking further on the activation of the egg, Loeb says: "The spermatozoon causes the development by accelerating the oxidations in the egg." This he believes is brought about by two factors: 1. Cytolysis, by some chemical lysin, of the thin cortical layer of the egg—which initiates development. 2. An unknown substance containing, or acting on, oxygen which modifies the process of oxidation, and which is necessary for complete development.

Wells[18] says: "Although oxidation of organic compounds is the chief source of energy in the animal body, yet the way in which it is accomplished is very little understood. We only know that it is brought about within the cells. . . . There can be little question that this oxidation is accomplished through catalytic agents acting within the cells. . . ."

That oxygen is essential for the growth of cells and tissues is evident from the following statement of Leo Loeb:[34] "Our experiments show that complete lack of oxygen not only prevents the growth of tissues, but causes their complete death; anaerobic life seems to be impossible for mammalian tissue; this applies to normal tissues as well as to tumors. In experiments on the other hand in which we increase the oxygen in the atmosphere surrounding the piece of tissue, we found both the life of the tissues and the growth phenomena increased."

Jacques Loeb[33] also emphasizes that "there are, however, other vital processes which are more general than those of locomotion and heat production, which also require oxygen, *i.e.* cell division and growth."

Marshall and Rowntree[35] tell us that "the possibility of the increased rate of growth in plants (germinating oats, for instance) being due in part to enzymatic activation has been suggested." From Oostluizen and Shedd[36] we quote: "A great deal of work has been done in the last few years on the changes taking place in the germination and growth of seeds. It is now generally recognized that these changes depend primarily upon what are commonly called ferments or enzymes." These authors also speak of certain work by Waugh on the effect of enzymes on seeds in which he arrives at the following conclusions: "1. In some cases the percentage of germination in seeds is greatly increased by soaking for several hours in a solution containing some active enzyme or enzymes. 2. The vigor of the young plantlets is often enhanced at the same time. 3. Within limits these beneficial effects increase with the strength of the enzyme solution. Corn has been found to show increased germination, and also increased vitality in growth under the influence of an enzyme. Others have obtained the same results with seeds of barley, oats, peas, etc. —namely, increased germination and vigor of growth in the presence of certain enzymes."

Falta and Schwarz[37] have attributed the promotion of plant-growth by radium emanation to enzyme activation.

Thus, enough evidence may be found to show that intracellular enzyme action, chiefly oxidizing in character, has an important function in the metabolism, growth, and reproduction of normal cells, both of the animal and plant kingdoms.

Minot[38] believed that "by nourishing itself, protoplasm grows, and as a consequence thereof follows the multiplication or proliferation of cells." More rapid multiplication and proliferation are probably dependent upon more rapid growth.

Difference in Speeds of Normal and Cancer Cell Proliferation.—Cell proliferation in tumors is different from cell proliferation under normal conditions primarily in degree. In the former, cell reactions have been greatly accelerated and the growth rate is much faster than in the latter, and

is dependent upon increased concentration and activity of these same oxidizing enzymes or catalyzers, with a lack of their proper inhibition. Howard and Shultz[39] have shown that the other characteristics of a tumor cell, such as increased division rate, lack of differentiation, etc., *are dependent upon increased growth rate.* Mallory[40] also assumes that the embryonic type of cell is due to rapid growth when he says: "If a tumor grows rapidly its cells do not have time to differentiate to any extent; they remain of an embryonic type. . . ."

The important thing to explain, then, is the agent or force which initiates the change from normal cell growth rate to tumor cell growth rate, and which results in a permanent acceleration of energy in a local cell or mass of cells.

Howard and Schultz[39] believe that "Dynamic energy, produced by cellular metabolism, manifests itself in cellular growth and function. . . . In the malignant tumor cell the maximum limit of energy production for the normal cell is overstepped and the energy produced is abnormally distributed to the advantage of growth rather than of function." Carrel[41] says: "The dynamic condition of a tissue is manifested by the rate of its growth." From this may we not conclude that the excessive growth rate of tumors is a manifestation of increased dynamic force and energy in the individual cells involved? If so, does not the cancer problem resolve itself into a question of increased cellular dynamic energy? *Is it not proper to first consider how the normal sources of cell energy might be associated with this change, instead of looking for some extrinsic agent?* "It must be remembered that in cancer we have cell proliferation going on at a rate which is unknown in any other condition in grown up animals, and many of the appearances, both as regards the irregularity of mitosis and as regards cell inclusions, may be the result of this great rapidity of proliferation," says White.[42]

What is the cause of this "overstepping" of normal cell energy, or of this acceleration in the biochemical activities leading to accelerated energy production and growth? In the answer to this question we believe may be found the "formative stimulus" of tumors.

The "Formative Stimulus."—The writer believes the cause of this acceleration to be the *catalytic action of local, concentrated oxidizing enzymes (particularly peroxidase), or an increase in their co-enzymes (accelerators), in one or more previously normal cells; these cells take on a new, independent energy production and growth rate as a result. The transmission of this newly acquired concentration, or accelerated action, of endoenzymes from parent cell to daughter cells assures the progeny a permanent and independent increase in oxidations, energy production, growth rate, and division rate.* This concentration may be brought about through the process of injury and inflammation, as outlined above, in which the leucocytes are attracted to an area where their enzymes are liberated in an abnormal amount. Injury (mechanical, chemical, or parasitic) may also be of importance in first causing a cytolysis of the lipoids of the normal, but potential cancer cell (as has been shown by J. Loeb to be the case in the natural fertilization of the egg, or in so-called "artificial parthenogensis"). We must admit, also, that there are other forces such as light and heat rays which may directly stimulate enzyme activity, or which may attract and cause the localization and concentration of enzymes themselves. In fact, the writer believes that cancer of the lip in clay pipe smokers, cancer of the scrotum in chimney-sweeps, and cancer of the skin in wearers of the hot charcoal Kangri basket, are due in large part to the attraction, concentration, and acceleration of enzymes by the localized adsorbing clay or carbon, in addition to a rise in temperature, followed by increased oxidations permanently established in such local areas.

Buyo cheek cancer, prevalent in the Philippine Islands, seems to be caused in a very definite manner by the irritation of the buyo which is chewed by male and female natives. Buyo consists of a mixture of buyo leaves, betel-nut, slaked lime, and tobacco. Davis[43] believes that the active agent in the causation of the buyo cheek cancer is the lime. From a study of enzymes it is found that lime may act as an adsorbent and concentrator of enzymes, while it is also learned that calcium is an important activator of enzyme action (a co-enzyme). In connection with cheek cancer it may act by catalytically "speeding up" the enzyme action and oxidations of local epithelial cells.

Richards[44] says: "The speed of the chemical changes in the human body is a matter of capital importance to man. Indeed, it may be said that the difference between health and disease, between life and death, is primarily a question of the relative speeds of the various reactions concerned in the act of living. There is fortunately a wide margin of safety, but nevertheless, if anyone of the more essential chemical changes takes place too fast or too slowly, illness is certain consequence. All chemical reactions are dependent for their speed upon a few very definite circumstances, to wit: the *special affinities* of the substances concerned, the concentration of the reaction substances, the temperature of the mixtures, and the presence or absence of certain other substances (called *catalyzers* or *catalysts*) which do not themselves take part, but which stimulate the reacting substances to enter into combination. Each of these factors in the result is of great importance to the biologist. *The effect of concentration is especially interesting;* it influences all the various kinds of reactions, whether between a liquid and a solid, between a liquid and a gas, or between several substances dissolved in a single liquid. Whenever to a nearly balanced mixture more of any reacting substance is added, it tends to push faster and farther all the changes in which it takes part, so that some of the added substance is used up. For example, if more water is added, all the reactions which tend to use or absorb water are accelerated, and so forth. This is a very general law which is susceptible to mathematical expression in each separate case."

The above statements would seem to apply to individual cells, as much as to tissue, organs, or the body in general. *According to our enzyme theory, the difference between a normal cell and a cancer cell is essentially a difference in the speeds of their biochemical reactions,* depending upon a difference in their intracellular enzyme and co-enzyme concentration and activity, more especially of their oxidizing enzymes. In the words of Bell[45] of England it would seem that "the cancer entity is . . . in its original state, a normal cell, which has from a combination of circumstances become altered in character, not towards degeneracy, as I construe the term, but to increased activity."

Inasmuch as it has been shown by certain investigators that much of the normal exo-enzyme activity in the body is regulated and kept in check by the so-called anti-enzymes, it would seem that

the normal energy production, growth, and division of cells, which are so dependent upon the intracellular oxidizing enzymes, may also be regulated by anti-enzymes.

Definition of Cancer.—According to our theory, *cancer is the result of a combination of a local "formative stimulus," in the nature of concentrated oxidizing enzymes or accelerating co-enzymes, in one or more previously normal epithelial cells, with a general or local decrease (either hereditary or acquired) of the enzymes and anti-enzymes which control cell oxidation and proliferation.*

Well-Known Theories Examined in the Light of an Enzyme Theory.—In regard to the cause of cancer, Adami[12] says: "All recognize a change in cell properties, but none lay down what is the underlying influence or stimulus which brings this change about." He states further that "We recognize an inherent and permanent alteration in the properties of the cells that constitute, or are to constitute, the neoplasm. It is not something from without that determines the continued growth, not an external stimulus, nor again a diminished external resistance. An external stimulus, it may be, starts the cells on the path which leads eventually to their assuming neoplastic properties; diminished external resistance may well favor active neoplastic growth. . . . The more we study the life history of the different orders of tumors, the more we investigate the circumstances associated with the development of different examples of one particular order of tumor (such as the carcinomas), the more it is impressed upon us that there is no one specific causative agent, that *a multiplicity of agents induces a particular grade of cell reaction; all these causes may lead to a modification that is not transient but permanent and conveyed to subsequent cell generations.*" Adami and others believe that loss of cell function is closely associated with increased vegetative activity or power of growth. This idea is of interest from our standpoint and may be explained as follows: Increased oxidizing enzyme action (from all causes) leads to increased cell oxidations resulting in rapidity of growth and of reproduction, but, on the other hand, *causing an inhibition of cell function.* In a recent paper by Loevenhart[46] on Vital Oxidation, experiments are described which demonstrate the relation between vital oxidation and functional activity. It is shown that a decrease in the rate of oxidation in cells of the medulla resulted in increased functional activity, and vice versa. It is, therefore, concluded that functional activity varies inversely with the rate of these cell oxidations. Pasteur[47] discovered that with a lack of oxygen, yeast cells grow very slowly or not at all, *while their fermentative function is more energetic.*

Concerning the cause of cancer, Mallory[49] says: "Evidently something starts the cells, which produce a tumor, to proliferate just as a spermatozoon influences an ovum, or as recent experimental work has shown conclusively various chemical reagents may do."

According to the popular theory of Cohnheim a neoplasm *originates* in displaced embryonic cells or "rests." He did not explain satisfactorily, however, the cause for the sudden, rapid proliferation of these cells. His theory may cover the *origin* of some tumors arising from embryonic cells, but the *immediate cause* we believe is a combination of the inherent energy of embryonic cells, and a local or general decrease from one cause or another of the protecting enzymes and anti-enzymes.

Ribbert's theory lays more emphasis on a decrease in the external resistance and forces which oppose the growth of cells, but he assumes this resistance to be rather mechanical or physical in nature and a question largely of tissue tension. Our theory recognizes as essential a decrease in controlling forces, but we believe these forces are biochemical in nature and due to the action of enzymes and anti-enzymes.

The popular ideas which give injury, chronic irritation, or inflammation, a chief rôle in the production of tumors are substantiated in our theory. We simply go a little farther and endeavor to explain how these precancerous agents act in bringing about a concentration of enzymes, a permanent acceleration in cell oxidations, energy, and proliferation in the local areas which they affect; also, how these cells with new capacities for proliferation run riot when the controlling anti-bodies or anti-enzymes are insufficient to longer hold them in check. The numerous "parasitic" theories also appear more tenable when we assume that no one parasitic or microbic agent is the immediate cause of cancer, but that any or all infective microorganisms may be included in the large group or "precancerous" agents which lead to injury, inflammation, and finally to an upset in the normal enzyme properties, equilibrium, and activities of cells. So great a pathologist as Ziegler[48] says: "The natural history and clinical behavior of cancer are not such as to make it probable that it is of parasitic nature." Speaking of the cause of unlimited atypical proliferation of epithelium, he says further: "Whether this cause is to be found in a bioplastic stimulus comparable to that of fertilization, or in chemical influences stimulating the cells to increased proliferation, or in the removal of the influences that inhibit and regulate proliferation, cannot be stated at the present time." It is evident that he is much more in favor of the latter possibilities than of those of a specific parasitic causation.

White[42] says: "Cell proliferation in tumors is similar to cell proliferation under normal conditions. The assumption of a parasite to explain the causation of tumors is unnecessary." Tyzzer,[49] of the Harvard Cancer Commission, believes that "the accumulation of evidence . . . tends to show the non-infectious nature of tumors in general."

Speaking in favor of the action of an intracellular microorganism as the cause of cancer, Calkins[50] says: "The cancer cells must carry with them the sources of their stimuli." In answer to this it may be said that so also must normal cells carrry with them the sources of their stimuli, and there is no idea that such stimuli come from intracellular parasites. We believe the stimuli in both cases come from intracellular enzyme reactions, of different degrees and intensities.

Virchow[51] emphasized the analogy between the fertilization of the ovum and the growth of the cancer cell. In the former, segmentation, growth, and proliferation do not begin until the spermatozoon has entered the ovum. In cancer, he suggested the possibility of a fertilizing agent acting on normal cells to bring about malignant growth. Klebs[52] observed that leucocytes which had been found in or between cancer cells might "fertilize" normal epithelial cells and thus result in malignant proliferation. The ideas of Virchow are substantiated by Jacques Loeb[31] who says: "The analogy between the causation of the development of the egg by a spermatozoon and the causation of a pathological

growth seems correct." We know that the first process is one of an accelerated rate of oxidation. According to the analogies of Virchow and Loeb, and to our enzyme theory, a new growth is also due to a permanent local acceleration in the rate of intracellular oxidations brought about chiefly through the catalytic action of concentrated or accelerated intracellular oxidizing enzymes, following injuries and other influences.

Beard[53] believes that "at the basis, cancer is nothing more than the production abnormally of an asexual generation within a sexual generation." He has described it also as "an irresponsible trophoblast." Because the suppression of the trophoblast in the developing embryo occurs at the same time that the pancreas begins to functionate, he has decided that the former is a result of the latter. Based upon this, he has recommended the use of pancreatic ferments in the treatment of malignancy. His theory does not help us any more than does Cohnheim's. He does not explain why, even though the pancreas retains its normal activity, these "asexual cells" lie dormant for many years and then suddenly begin to proliferate in a malignant manner.

Without going into details concerning the many other minor theories of the cause of tumors, suffice it to say that many of them are explainable if analyzed in the light of an enzyme theory.

Experimental Transplantation, and an Enzyme Theory.—A careful study of the facts brought out in relation to the experimental transplantation of tumors does not reveal anything which rules out the possibility of concentrated intracellular enzymes acting as the etiological factor in the continued growth from one generation to another. In this work it is admitted by most authorities that it is not a question of infection, but one of transplantation, and that the tumors develop not from the cells of the host but from the original cells injected. Of course, the tumor producing agency must of necessity be transferred at the same time. This agent does not need to be a living microorganism, and is probably the normal intracellular oxidizing enzymes in more concentrated form. The fact that tumors may be transplanted successfully only in very closely related animals also speaks in favor of a very fine adjustment in biochemical activities, and against any specific parasite. The retention of life and activity of both tumor cells and enzymes exposed to extreme cold has been demonstrated. Likewise both are very susceptible to heat.

Haaland[54] demonstrated that radium destroyed the growth power and life of the cancer cell without in any way altering its anatomical structure. It has been shown that radium has a very definite effect on enzymes, and it may very well be that this effect in Haaland's work was on the intracellular enzymes of the cancer cells.

Immunity and Enzymes.—That natural and acquired immunity to experimental inoculation of cancer may be demonstrated, is admitted by most authorities. Active resistance may be brought about by inoculation with living tumor cells and even *by normal cells and tissues such as blood, spleen, liver, and embryo.* Bashford[55] showed that the injection of mouse blood produced a resistance against mouse tumors. Borrel[56] found that the injection of liver or spleen also led to a resistance. The injections of mouse embryo suspensions led to a definite resistance against the development of tumors, according to Schoene.[57] Jobling[58] confirmed Bashford's work and demonstrated "the effects of the injection of washed corpuscles of the rat into the peritoneal cavity on the development of grafts of this rat tumor . . . to be considerable."

To the writer these seem very significant facts. They certainly speak very much against immunity being established by the influence of living parasitic microorganisms, and point to an immunity or resistance stimulated by cells, or cell contents, such as enzymes.

The theories concerning the nature of immunity to inoculated tumors are many, three of which are worthy of mention: (1) *Ehrlich's theory of Athrepsia*—According to this theory the specific food substance supposed to be necessary for cancer cells is bound by the immunizing cells and hence is not available for the cancer and the latter disappears for want of proper food. (2) *Bashford's Theory*—The immunity is described as being due to a failure of the organism of the host to supply a specific connective tissue stroma reaction to support and nourish the cancer. (3) *Borrel-Levin Theory*—Immunity in experimental cancer is analagous to bacterial immunity and is caused by certain cytolytic bodies circulating in the blood. These bodies are supposed to be "ferments" of unknown character and action.

According to our enzyme theory, immunity is due, in these cases of experimental cancer at least, to anti-enzymes which are naturally present in normal amounts, or which may be artificially stimulated and increased (either actively or passively) by the intracellular oxidizing enzymes of normal cells, or of tumor cells, which have been injected for the purpose of immunization. Such "protecting" enzymes as catalase are also undoubtedly involved in the resistance of the body against tumor formation, and other forms of injurious oxidations.

"Filterable Agents" and Enzymes.—The work of Rous[59] in transmitting different forms of fowl "sarcoma" from one chicken to another by agents which pass through Berkefeld filters is doubtless the most important demonstration in the field of cancer research during the past few years. It certainly points to some specific etiological agent which is able to pass through these fine filters. The first thought is that the agent is an ultra-microscopic and filterable parasite or microorganism, but as has been suggested above, all other evidence is very much against the idea that true malignant tumors are caused by specific living microorganisms. On the other hand, cellular enzymes are ultra-microscopic in character, and are filterable under certain conditions. It is quite possible that the above described "filterable agents," separated from the tumor cells, were concentrated intracellular oxidizing enzymes specific for certain cells, whose catalytic action affected similar cells or "substrates" in the new host, resulting in neoplastic change.

Treatment in the Light of an Enzyme Theory.—It may truthfully be said that the non-operative agents which have been used in the treatment of human cancer, and of transplanted cancer in animals, are agents which have a direct and undoubted action against oxidizing enzymes. We may mention *x*-rays, radium, electricity, and heat in the field of physiotherapy. In reference to the last agent, Percy[60] says: "It is logical that there may be hope for the eradication of cancerous growths by attacking them through their vulnerability to heat. Heat and not cauterization is the object to be attained."

Heavy metals in colloid form have been used with considerable success in the treatment of human and experimental cancer from a biochemical stand-

point. These colloidal metals are often described as "inorganic ferments" or "inorganic catalysts." Both the oxidizing enzyme, catalase, and colloidal metals decompose hydrogen peroxide. Their chemical actions are the same, resulting in the formation of water and inert molecular oxygen. In experimenting with the enzyme, catalase, our results[2] in causing the disappearance of transplanted rat carcinoma are very similar to those obtained by other workers who used colloidal metals. A conclusion which may be reached is that both catalase and colloid metals, in decomposing hydrogen peroxide, check the injurious oxidations going on in tumors; and by checking these oxidations—destroying the life and vitality of the tumors, which are dependent upon these greatly increased oxidations for their very existence.

Immune serum, embryo, and other normal tissues, tumor emulsion, ascitic fluid from cancer cases, and bacterial toxins, have all been used with variable success in the biotherapy of cancer. It is quite probable that in such cases the influence has been due to protecting enzymes or anti-enzymes either actively or passively stimulated, or, in the case of induced infections or toxemia, to the effect of rise in body temperature on enzyme activity.

Organotherapy has been used to some extent in the non-operative treatment of tumors. Thus, the use of thyroid extract has been followed by beneficial results in some cases of cancer. This is interesting from our standpoint, when it is learned that in hyperthyroidism, the catalase activity of the blood is increased, while it is decreased in hypothyroidism, only to be again increased by the feeding of thyroid. Evidently the ductless glands are directly related to the enzyme activities of the body.

Cause of Non-malignant Tumors from an Enzyme Theory Standpoint.—As has been stated before, the theory which explains neoplasia must explain not only the cause of cancer but also the causes of all other tumors, benign and malignant.

According to our theory, the causation of the various tumors is explainable by assuming the action of oxidizing enzymes in concentrated form or accelerated activity to take place on "substrates" in different types of body cells.

We may obtain light on this point by studying the proliferation and regeneration capacities of body cells in comparison with their tendency to form tumors.

The body tissues may be divided into four groups: (1) Epithelial (and glandular); (2) supporting and interstitial (including connective tissue, embryonic and adult, cartilage and bone); (3) muscle; (4) nerve.

The most prolific or rapidly growing tissues of the body, those that are easily and completely regenerated, are epithelium, blood cells, and young connective tissues. They start with more vital force and power and they are undoubtedly richer in intracellular oxidizing enzymes than other cells. Is it to be wondered at that when their oxidations are still further accelerated by catalysis, their increased powers of growth, and energy, and possibly ameboid movement, will result in anything but lawlessness, infiltration, and malignancy? On the other hand, the cells and tissues, such as muscle and nerve, which show slow, or absent, proliferative and regenerative powers, are the ones which give rise to slow growing, benign tumors. Catalytic acceleration in a localized area of their naturally slow oxidations, and reproductions, will result in evident growth increase, but as a rule this increase will be slow and deliberate enough to allow the physical and chemical anti-forces of their own cells and neighboring tissues to hold them in check.

The Predisposing Causes of Cancer in Relation to an Enzyme Theory.—The predisposing causes of cancer may be divided into: (*a*) Hereditary influences. (*b*) Environmental influences, especially as regards chronic irritation and inflammation, either accidental in nature or associated with habits, occupations, etc.

Although hereditary influences are included under predisposing causes, it must be admitted that no definite proof has been found that heredity plays any important part in human cancer. On the other hand evidence[61] is available which points to the probability that cancer in mice is "hereditary in the strict sense." Slye says: "It follows the laws of heredity with an inevitableness which makes it a character that can be manipulated. It can be bred into and out of strains at will. It can be put into a strain where it has never existed before and it can be drawn out in extracted lines which can produce nothing else, and which in turn will carry cancer into any line with which they are hybridized; or it can be bred out of a line one side of which originally carried 100 per cent. cancer. Cancer is not transmitted as such, but rather as a tendency to occur from a given provocation, probably in the form of over-irritation." She says further that "the results obtained from this series of experiments show beyond a doubt that the tendency to produce neoplasms under the right provocation is transmitted from generation to generation with the inevitableness of the transmission of albinism."

Our theory of cancer etiology is not weakened by the fact that cancer may be closely associated with hereditary influences. The influence of heredity upon body color, such as the color of hair and eyes, and the pigmentation of skin (including the phenomenon of albinism) is well recognized. Tower,[62] in a discussion of the color of organisms, says: "In modifications of color we are dealing with superficial chemical processes in the organism—the development of a chromogen and the oxidation of that chromogen by one or more oxidizing enzymes to a state of stability where simpler compounds are produced which are productive of color. In no experiments in the modification of color, especially in colors such as the melanins, etc., has any modification been produced which is not an accentuation or diminution of the oxidative capacity of the organism."

If such enzyme actions and oxidations which have to do with color are hereditary in character, may not cell enzyme activities and oxidations, which lead to cancer, also be dependent, in some instances at least, upon the hereditary influences of "determiners," lack of "determiners," or of "inhibitors"?

In connection with the dependence of animal color on oxidizing enzyme action, and our ideas concerning the influence of oxidizing enzymes, antienzymes, and coenzymes in causing cancer, the work of Lathrop and Loeb on the "Origin of Tumors in Mice"[67] is most interesting. These workers have found that "It is possible to split a strain of mice into certain substrains in which the tumor incidence is in some way linked to the color of the mice. . . . Therefore, certain combinations of factors which determine certain colors of mice determine at the same time the tumor incidence of these strains or substrains."

Concerning environmental influences associated with occupations, it may be said that the very

marked occurrence of cancer in those who work constantly with tar, petroleum, paraffin, aniline, or who wear the hot charcoal Kangri basket, or whose life and work bring them in contact with a large amount of soot, is admitted by all authorities. Even coal is described by some authorities as being an etiological agent in cancer. The writer believes it a very significant fact that all of these agents are closely related hydrocarbons or derivatives of hydrocarbons. The fact that the pigments Scarlet R and Sudan III, which have been used sucessfully in the over-production of epithelial proliferation, are also derivatives of hydrocarbons and closely related to the above agents is of added interest. The power of aniline and other hydrocarbons to paralyze the enzyme catalase has already been mentioned and is worthy of emphasis. Besides their effect on this "protecting" enzyme, hydrocarbons or their derivatives have been shown by Kastle,[13] and by Kastle and Porch,[14] to be powerful accelerators of peroxidase—the most important intracellular oxidizing enzyme found in practically all cells. May not such accelerators act on local cell enzymes, causing new powers of oxidation, growth, and division? By this acceleration of "growth" enzymes and the paralysis, or inhibition, of enzymes and anti-enzymes which control cell oxidations and growth rate—malignancy would be caused.

Symptoms and Signs from the Standpoint of Enzymes and Oxidations.—From the standpoint of our theory of cancer causation, a brief consideration of the most important symptoms and signs of cancer may be of interest. Cancer is usually associated with a rapid loss of weight and strength, and a secondary anemia is generally present. Often an acid intoxication resulting even in a coma similar to that of diabetes is found. The presence of lactic acid in the stomach contents in cancer of the stomach, or in cases of cancer in other parts, is recognized as being an important aid to diagnosis. It is interesting to note that Fletcher and Hopkins[15] found that lactic acid formation is dependent upon the life of the muscles. With normal oxygen supply to the muscles they found no lactic acid formation, oxygen having even a destructive action on lactic acid. They emphasize their finding that lactic acid is not formed in dead muscles, but only in living muscles with reduced or absent oxygen supply. Araki[16] also found that with oxygen starvation some of the lower animals form and eliminate abnormally large amounts of lactic acid. In each instance we believe these symptoms and signs of cancer are due to oxygen starvation of the body tissues in general because of the great demand in, and supply to, the tumor cells whose increased metabolism is using up large quantities of oxygen. The tumor is thriving in its aerobic life while the body is slowly starving because of the induced anaerobic conditions. The so-called avidity or hunger of the tumor cell is probably for increased amounts of oxygen.

Summary.—The writer has endeavored to formulate a new working hypothesis concerning the etiology of tumors in general and of cancer in particular. As stated in a former paper,[2] "the so-called enzyme theory is a compromise between the biochemical and parasitic theories which are in vogue at the present time. Cell or tissue injuries due to physical, chemical, or parasitic agents, or to functional or nutritional disorders are looked upon as essential 'precancerous' agents. While these injuries are potentially 'precancerous' they do not always result in malignancy; furthermore, they are not always apparent.

"The normal inflammatory process resulting from these injuries is the next step towards neoplasia. Thus, tumor formation is looked upon as closely related to normal cell proliferation and regeneration."

Attention is then drawn to the concentration and acceleration of normal intracellular oxidizing enzymes and co-enzymes in these areas of injury and inflammation. The catalytic effect of these enzymes is emphasized, and it is suggested that this "speeding up" of local cell oxidations leads to a marked increase in growth rate and of division rate—upon which the other characteristics of cancer depend. These new enzyme amounts and powers are transmitted naturally to the offspring of the cell or cells in which the change was initiated, and as a consequence, these newly acquired rates of oxidation, growth, and division become permanent, if not checked by the enzymes and anti-enzymes which protect the body against such injurious cell oxidations.

Included in this discussion consideration is given the nature and action of enzymes in general; and their relation to cell respiration, growth, and division is brought out. Finally, the important phenomena associated with cancer are examined from the standpoint of our enzyme theory.

Conclusion.—From theoretical study, and preliminary experiments[2] on white rats, the conclusion is reached (1) that cancer is the result of localized, unchecked over-combustion, or hyperoxidation, in epithelial cells; (2) that this condition is brought about by the concentrated, accelerated, and uninhibited action of intracellular oxidizing enzymes, or their co-enzymes, as a result of various injurious agents. Concerning the ultimate problems in tumors "it is evident that here as elsewhere in pathology we are dealing, not with independent problems, but with specific outlooks only on the wider field of general biology."[17]

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Congenital Tuberculosis.—Péhu and Chalier state that there are only 51 cases of congenital tuberculosis on record. They appear during or at the end of pregnancy when the placental circulation is established, and result from a bacillemia which is usually a terminal event. They should therefore be regarded as examples of transplacental contagion, and not of direct heredity.—*British Journal of Children's Diseases.*

SEQUEL OF A CASE OF TRIGGER FINGER.

By ADONIRAM B. JUDSON, M.D.,
NEW YORK.

THE case of trigger finger which I reported in the MEDICAL RECORD June 13, 1914, progressed favorably to recovery. At the present time, two years and six months after the appearance of symptoms, and eighteen months after the date of the report, the affected joint, the principal joint of the right middle finger, is normal in every way except for a

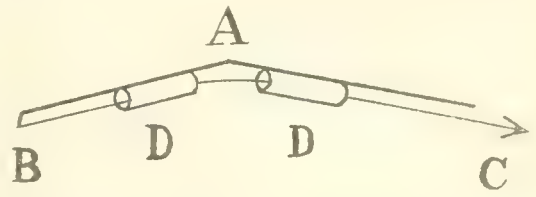

FIG. 1.—A, a digital joint. B C, a tendon having its origin in the distant muscular mass in the fore arm, and its insertion in a phalanx. D D, Cylinders representing the sheaths which confine the tendons to the shafts of the diminutive long bones Fig. 1 shows how in the hand muscular action produces exceptionally great interarticular pressure.

slight enlargement. Soon after the case was reported, however, arthritis appeared in a mild form in both thumbs and the principal joint of the right ring finger. There were characteristic jerks in these joints, especially the ring finger. They were however so slight and interfered so little with function, that if it had not been for the preceding history they would perhaps have passed unnoticed. Each of these digits has in turn recovered, except the ring finger, where the jerks persist, but without pain or inconvenience. This joint, however, is evidently so near entire restoration that the history of the case may be considered as closed.

I have explained the mechanism of this affection by saying that the hitching, corduroy-road action is produced by the presence of arthritic enlargements on the articulating surfaces. It may be said in criticism that other joints are not affected in this way by arthritis irregularities. In reply it may be said that no other joints show the peculiar arrangement of sheaths and tendons which is found in the hand, where the tendons run close to the shafts of diminutive long bones to which they are closely confined by unyielding fibrous sheaths. Here they run parallel with and close to the bones, so that a part of their force is wasted, or at least laid out, in pressing the articulating surfaces to-

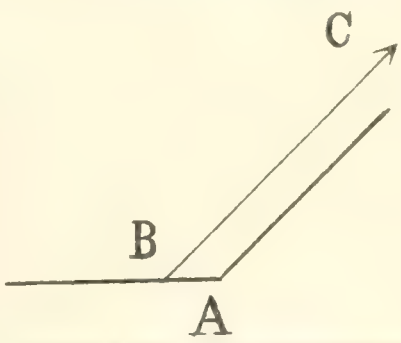

FIG. 2.—A, the elbow joint. B C, the Biceps tendon. Fig. 2 shows how in the elbow, as in other joints as a rule, muscular action produces comparatively little interarticular pressure

gether instead of giving motion to the joint and additional force to the grip. This is shown in Fig. 1. In joints like the elbow the force is chiefly expended in giving motion, with comparatively little interarticular pressure. This is shown in Fig. 2.

In my previous report this peculiar action is compared with that of a jack knife, where the square angle so obvious at the near end of the blade is a very positive irregularity on an articulating surface, while the steel spring concealed in the handle furnishes the powerful interarticular pressure. The result is a halting action, the true counterpart of trigger finger, correctly described as an arrest of motion followed by sudden acceleration.

The mechanism of recovery clearly follows the same lines, the elevation being reduced by absorption following attrition and continued pressure. This process of recovery may be imitated in the knife by filing down the corner of the square angle on the blade, when smoothness of motion takes the place of the jerk which attends opening and shutting a pocket knife.

The patient, the history of whose case is here concluded, continues to take oleum ricini, finding that the bad taste and smell are absent if *expiration* by the nostrils is carefully omitted (by no means an easy thing to do, but of the first importance), while the mouth is gently rinsed with any convenient liquid. It is surmised that by this treatment he may have escaped the digital deformity and disability so common in the aged. In this case however the oil is continued because it is part of the treatment of a disorder, of metabolism, considered incurable, for it is said: "Old age never comes alone."

In my opinion trigger finger not infrequently occurs without being recognized, although a severe case may for a time be attended by the pain and disability incident to arthritis. It may be considered as a curious incident occurring in the course of an arthritis which may or may not be serious. A case excites interest because the peculiar action, when well marked, is easily demonstrated and the deportment of the joint, involuntary and entirely beyond the control of the will, has more or less of the comical element. And when the question of mechanism comes to be considered, speculation and surmise have lead to interesting discussions and differences of opinion. The explanation which I have ventured may or may not be generally accepted.

53 Washington Square.

A SYPHILITIC ROSEOLA LIMITED TO THE SOLES.

By DOUGLASS W. MONTGOMERY, M.D.,

SAN FRANCISCO, CAL.

The roseola is the first and most frequent cutaneous manifestation of constitutional syphilis, and shows itself about forty-five or sixty days after the appearance of the chancre, as small delicately tinted rosy blotches on the sides of the trunk, over the abdomen, and on the flexors of the forearms. This eruption may occur in any situation whatever, but these are the most frequent sites, so frequent, in fact, that a syphilographer, in search of corroborative evidence of the nature of a venereal sore or of other suspicious circumstances, will involuntarily inspect the abdomen, flanks, and forearms. He will almost as involuntarily look at the palms and soles, for while this eruption is not so frequently seen here, when present it is more characteristic, and then usually includes both palms and soles. Years ago I had a striking instance of this in the person of a well known surgeon, who entered my office and asked me abruptly, showing me his palms, if a rosy dotted rash there present could be caused by bichloride of mercury solution. I answered as promptly by requesting to see his soles. As the same eruption was found there, there was no further parley in regard to the nature of the symptom. Although in this case concomitant symptoms were found such as an insignificant chancre, amply justifying the diagnosis, yet the immediately convincing argument for the patient was the presence of this eruption in both situations. In the following case, however, the only situation in which a cutaneous syphilide was present was on the soles, and it was here so characteristic as to admit of no doubt as to its nature. Its value as a symptom was accentuated by the fact that the chancre was in an unusual situation, on the site of the right tonsil.

A friend referred to me for diagnosis a man with a brown dotted eruption on the soles, of recent appearance, free from all desquamation, and giving rise to no subjective symptoms whatever. He had a superficial pustular eruption widely and sparsely scattered over the cutaneous surface, and an inflammation of the lids and of the conjunctiva of the right eye. These two last symptoms were evidently pyogenic.

On examining his throat a fleshy rounded ridge was seen projecting above the level of the base of the tongue on the site of the right tonsil. This ridge was quite firm to the touch. Both tonsils had been removed five weeks previously. There was marked adenopathy on the right side of the neck in the neighborhood of the tonsil, and under the right side of the mandible. There was no adenopathy worth mentioning in the groin, and the epitrochlear lymph nodes were not demonstrable.

His temperature, taken by the mouth in the afternoon when I saw him, was 99° F. and his general health was very good. On this showing of the eruption on the soles, the induration at the site of the removal of the right tonsil, and the regional adenopathy, his physician ordered a Wassermann test, which turned out strongly positive. The further evolution of the eruption in this case was without special interest.

The first time I remember to have had my attention positively drawn to the occurrence of these roseolar eruptions in unusual situations was by Norman Walker, who mentioned a case that he had seen in Unna's clinic in Hamburg, in which the roseola was limited to the space between the shoulderblades. He remarked how easily such an eruption might escape observation—in fact, how difficult it would be to observe it, as the syphilitic roseola is commonly devoid of any subjective symptoms that would attract the patient's attention.

This fortuitous location of the roseolar syphilide is one of the reasons why spotted alopecia occurs only occasionally in early constitutional syphilis. This highly characteristic symptom is present only as a consequence of a foregoing papular or roseolar syphilide of the scalp.

These instances of slight or erratically situated eruptions of early constitutional syphilis are of special interest at the present time, because of the assertion made by some that early lues is so frequently free from manifestations on the skin or mucous membranes, and therefore runs its course as an entirely internal disease. There seems to be no doubt that this is true in some cases, especially in women, with whom the late tertiary lesions are frequently the only cutaneous manifestations observed. That, however, fifty or sixty per cent. of

syphilitic infections run their course without manifestations on the skin and mucous membranes, as reported by Stern, I do not think to be a correct statement of the case.

A word in regard to the time of infection in this case. There seemed no reasonable doubt that it was an instance of chancre of the tonsil. The infection, however, must have occurred previous to the tonsillectomy, which was performed only five weeks before. It is more likely that the chancre was present at the time of operation, and that its nature was misunderstood. In fact, the man had susceptible tonsils, as shown by persistently refractory and deeply eroding mucous patches of the site of the left tonsil, encountered during the course of treatment.

323 Geary Street.

THE MYSTERY OF THE ANTEFLEXED UTERUS.

By G. K. DICKINSON, M.D., F.A.C.S.,

JERSEY CITY, N. J.

Clinical medicine even at present is surcharged with the relics of the past. Whether it be in observation of conditions and theories founded on them, whether it be in the treatment of disease, or even in preventive medicine, there is a great deal that needs to be gone over in the light of scientific knowledge and unbiased judgment in order to come a little closer to actual truth. Careful investigation may present facts and wholesome common sense may prove them, yet reconstruction delays because nothing is more difficult than to rid one's self of the obsessions of the past.

Some see distinctly in the light of the dawn. They are those of broad minds, generally cultured, with many viewpoints, who have developed judicial intellect, while others (and they are in the majority), need the light of noon-day. Their brains move slowly and they feel the necessity of mental companionship, as it were, before acepting as proven changes which appear radical.

All through our medical literature we discover many points of fiction which have descended to us as a kind of sacred dogma, and to attack or alter these gives offense to many.

The topic of anteflexion of the uterus is just one of these bits of fiction. Those who read the literature broadly exploited by numerous writers cannot but be amused by their efforts to straddle two mounts. They attempt to plant one foot on facts and the other on elaborate symptomatology, on truth and fiction neither of which coordinate, and in these writings one invariably finds statements to the effect of a large exploitation of the syndrome that, to a beginner implies a distinctive lesion and a specific condition, with a hint that it is not quite true.

The best two books on gynecology are almost out of print. Emmett, 1884, though he speaks of an extreme degree of anteflexion frequently existing without producing the slightest inconvenience unless the organ becomes enlarged from some obstruction to its circulation and begins to prolapse, and though he says that for many years he has held the opinion that anteversion is not a malposition and that no degree of the same would cause irritation unless the uterus failed to remain in a healthy condition, still goes on to give a symptomatology which he claims is that of an anteflexed uterus.

Skene, a peer in gynecology, 1889, gives eleven pages to anteflexion of the uterus, its cause, symptomatology, and treatment. He prefaces his remarks, however, by saying that he considers anteflexion a deformity, that it is a disease of form rather than one of position. He claims that the physical signs and treatment all differ from those of the other displacements of the uterus and that a clear distinction should be made between the two, that is, the anterior and posterior displacements. Yet he, with others, divides anteflexions into two types; that due to imperfect antenatal development, often malnutrition, and that due to inflammatory lesions. He goes elaborately into the discussion of the symptomatology, that which leads to sterility and that which leads to dysmenorrhea, and suggests that an anteflexed uterus not properly relieved makes the woman liable to diseases of the Fallopian tubes and pelvic peritonitis, that the dysmenorrhea may increase in severity after marriage, the pain becoming intolerable, leading to a resort to opium, and eventually to an undermining of the health and moral tone. How poorly his etiology and pathology fit together!

Pozzi considers anteflexion as an exaggerated condition of the normal forward curve. He states that frequently a uterus in perfect condition is taken for one in a state of pathological anteflexion, and claims it is hard to draw a distinction between the physiological and abnormal position, holding that the abnormal begins when the examining finger perceives the angle as a sharp bend in the axis of the organ. He describes two forms, the congenital and the acquired, and enlarges on the symptomatology and specific treatment.

Bovée, with a larger horizon and with a courage of conviction somewhat unusual in medical literature, particularly in our dignified books, says that anteversion has been stricken from the list of pathological conditions. He gives only a scant dozen lines to the subject.

Webster says it is impossible to determine what is the pathological angle of flexion. Nearly all degrees may be found in conditions of perfect reproductive capability and health. In some cases the most extreme anteflexion may be a congenital condition. Those acquired are most often due to uterosacral cellulitis.

Kelly and Noble, with their usual thoroughness of exposition, consider the matter with all carefulness and lean rather to the tendencies of the gynecologists, describing the position of the fundus and of the cervix, and their relation to each other in very minute detail. The symptomatology is described in full, and flexion, so-called, of the uterus, blamed for the symptoms and conditions coexisting. Dysmenorrhea and sterility are often taken as the distinguishing marks of pathological anteflexion.

Gilliam, a true gynecologist, to whom the uterus is a whole province, suggests that deviations and other conditions tangible to the touch produce genera and species on which to build a special science. His exploitation, with the exception of a change of words, reads as do the other articles in our literature.

In Kelly's Medical Gynecology is an excellent résumé of the same subject, which stands more firmly on the dogma that the flexion is pathological and that its pathology is the cause of the symptoms and conditions.

Crossen shows a still better understanding of the dual position, but more carefully states the etiology and the long-known fact, but not written

in Italics, that the symptoms are not due to the flexion but to complications which may arise, particularly some type of endometritis.

Polak speaks of flexion in the sense of an acquired condition rather than one of morphology. However, he does say that it is of pathological importance only when it causes symptoms of dysmenorrhea and sterility, laying the blame on the anteflexion rather than on the circulatory or inflammatory conditions which may coexist.

From the few writers quoted can it not be discerned that with all endeavor to be scientific, the mind is pinned to that which is most objective—an apparent alteration in the position of the uterus and urgent symptoms? Is not the cart before the horse? Do we not see in all their writings that they comprehend the living pathology of this condition, yet fail to build up their articles, explain symptoms, and deduce treatment on this accurate knowledge of the pathogeny?

Malpositions of the uterus and even anteflexion have been known for many centuries. The Papyrus Ebers, 1550 B.C., makes mention of prolapse of the womb. Hippocrates speaks of the different displacements of the womb that are frequently met besides those imaginary ones, such as fleeing of the uterus to the liver and to the heart.

Soranus, 200 A. D., notes that the ligaments of the uterus are weakened by inflammations and that the organ is then dragged upon and leans to the side, or all the ligaments may become weakened and the organ drop down.

Aetius, 600 A. D., gives an excellent account of anteflexion and other displacements with their symptomatology, and describes methods of treatment, such as the knee-elbow position and the use of sounds.

Their observations were largely anatomical. Dissections of animals more often than of human beings gave them such knowledge as they possessed. And let it not be forgotten that the ancients were as bright, as intelligent, and as keen as the people living to-day, and that they possessed as logical minds and truthful diction as we accredit to ourselves.

In mammals above the monotrems, the ducts of Müller in early embryological life become united about the middle; the lower third forming the tube of the vagina, the middle, the thickened body called the uterus, and the inner or upper third, the Fallopian tubes.

Nature is not always perfect in her work. We have club feet, hare lip, cleft palate, strabismus, etc., etc., so in the womb we may have arrested development in whole or in part. We may have two uteri, or we may have a uterus with a septum, but, more commonly, the anterior portion does not grow as rapidly as the posterior portion, and we have, as a result, an accentuated curve in the uterine canal, so that there is seemingly a kink or an acute bending where the body and the cervix join.

These uteri are generally smaller and have a shorter canal than the norm. There being varying grades in this defect, the condition may demonstrate itself in the extreme in the so-called infantile uterus, and to a less extent in the types of anteflexion.

As the uterus fails to develop and as this malformation is demonstrated, so we have to a greater or lesser degree defect in the development of the other sexual characteristics. Menstruation comes on later in life, is irregular and deficient. The mammary glands may fail to obtain a proper growth, and the whole personale of the individual may be altered.

The uterus, biologically speaking, is a recent organ. Whereas the stomach, the liver and the kidneys come to us from low down in biological life, it is a recent acquisition, and, according to a well-known law, has not the resisting power to disease invasion nor the strong tendency to a perfect development that the older organs possess.

In the fetus and in early infancy the cervix is relatively much developed, while the body is still small and high, so, if the anterior portion of the uterus be retarded in development a seeming angle of acuteness occurs at the junction of the cervix and the body. If the uterus, which on digital examination seems to have this marked anterior curve, be removed and placed on the hand, it will be seen to be straight and without apparent defect.

Looking over the facts presented in this short paper we shall see that there are three periods in the study of the uterus: that of the anatomist who sees no pathology and attempts to describe the normal condition, rarely discovered; that of the gynecologist who does not see beyond his finger tip, and who through specializing narrows his mental horizon and may become a gynecological paranoiac, and that of the abdominal surgeon who has never described anteflexion.

A study of these three periods will explain the mystery of the anteflexed uterus—why it is that that which seemingly is tangible to the senses, particularly to that easily mystified one, the sense of touch, has led to observations, conclusions, and an exclusive dogma from which it is difficult to separate oneself.

We now know that anteflexion is a deformity, that it is not a disease. Its symptomatology as written in the books is the symptomatology of the inflammatory conditions which a poor resisting organ cannot protect itself from, and is apt to be persistent (the same tendency which leads to a salpingitis when we have uterine myomata).

The symptomatology of anteflexion, if it has one, is that of an imperfectly developed sexual characteristic, sterility, delayed and incomplete menstruation, imperfect development of the mammary glands, and the mental and physical states which are brought about by a failure of Nature to round out the female sexual system.

280 Montgomery Street

A CASE OF HERPES ZOSTER PRESENTING MULTIPLE SYMPTOMS AND AT ONE STAGE SIMULATING MASTOIDITIS.

By JOSEPH WEINSTEIN, M.D.,

NEW YORK

THE following report of a case of herpes zoster is submitted with no attempt at classification, but rather to call attention to the multiple symptoms presented:

F. Z.—Female, 20 years of age, single. Jan. 8, 1915, was taken ill about two weeks ago, complaining of malaise, headache, and sore throat. Was up and about all the time; attack gradually subsided and patient felt fairly well up to the date when she began to have chills and fever, general pains in the limbs and back, and severe pains in the head, especially behind the ears.

Examination showed a well nourished and well built girl; face flushed, body warm, skin dry, tongue heavily coated, mouth mucous membrane of good color, throat red, with the appearance of a subsiding inflammation, no follicles; palpation elicited no tenderness

or fluctuating masses on either side; eyes bright, pupils normal; exquisite tenderness and edema over both mastoids. Examination of the lungs, heart, abdomen, and extremities gave negative results. No leucocytosis. T. 102.2°, R. 26, P. 130. (Subsequent Widal, diazo, and blood examinations were negative).

Diagnosis: Subsiding tonsillitis and pharyngitis, with possible bilateral mastoiditis, probably of influenzal nature.

Jan. 9. Edema over mastoids slightly less, tenderness the same. T. 102.8°, R. 24, P. 130. Jan. 10. Complained urgently during the night of pains in the right side of the head over the frontal and mastoid areas. Patient was cared for by the family physician until January 11, when Dr. Reitzfeld referred her to me. I found both drums normal, excluded mastoiditis, and urged expectant plan of treatment. However, I made no diagnosis. January 12. T. 100°, P. 100. Distinct blush over face (supraorbitally located), redness and edema of right eyelid; small cluster of vesicles at edge of blush, another at tip and inside of right nostril. The edema did not pit on pressure and the underlying tissues were only slightly sensitive. Patient complained of burning and itching, but felt generally better. January 13. T. 99°, R. 22, P. 96. The edema has extended to right cheek; frontal area practically free; both lids swollen, lower lid especially so; eye almost closed; tenderness over mastoid has disappeared; blush has disappeared; vesicles are beginning to dry up. Patient still complains of burning and itching. January 14. Patient considerably better; edema of right cheek and lids disappearing; vesicles drying up. Pharynx and throat normal.

The reference below are taken from an exhaustive paper, "A Further Contribution to the Herpetic Inflammations of the Geniculate Ganglion," by Dr. J. Ramsey Hunt (*Am. Jour. Med. Sciences*, August, 1908), and are numbered in order to facilitate reference in summarizing the writer's case.

1. "Herpes zoster is an acute specific infectious disease characterized by an inflammatory reaction in ganglia containing the socalled spinal or unipolar type of cells. Ganglia of this type are the spinal ganglia of the posterior roots, the Gasserian and geniculate ganglia of the cranial nerves. The essential pathological lesion is generally limited to a single ganglion which corresponds to the eruption of zoster.

2. "That more than one ganglion may be involved is shown clinically by the occurrence of double, triple, bilateral, and alternate forms of zona, the eruption appearing in more than one zoster zone. This tendency to involvement of more than one ganglion is especially frequent about the head and neck. I would call special attention to the fact that clinical evidence exists showing that some ganglia may be implicated in zona without the occurrence of an eruption in their respected zones.

3. "In zona the ganglion which corresponds to the eruption is to be regarded as the chief or eruptive focus. The inflammatory reaction is not confined solely to this ganglion, but inflammatory changes of a milder grade may be present in an adjacent ganglion above or below. In other words, there may be serial involvement of ganglia, the extent and intensity of which depends upon the severity of the infection. The Gasserian, geniculate, and upper cervical ganglia may be regarded anatomically as representing a more or less continuous ganglionic chain.

4. "If the Gasserian and geniculate ganglia by virtue of the unipolar cell type belong to that series of ganglia liable to the inflammation of zona, the same would also be true of the ganglia of the glossopharyngeal nerve and of the vagus nerve. These ganglia are also regarded by histologists as belonging to the unipolar or spinal type, and, therefore, cannot be excluded from the realm of herpes zoster.

5. "I regard the Gasserian, geniculate, acoustic, glossopharyngeal, vagus, second, third, and fourth cervical ganglia as representing a continuous ganglionic series or chain, all having the same embryonal origin (neural ridge), and all with the exception of the acoustic ganglia having the same cell type (unipolar), and therefore belonging to the realm of posterior poliomyelitis. A hemorrhagic inflammation in one of these ganglia is followed by the usual manifestation of herpes zoster, an eruption appearing in its respective zone. Depending upon the severity of the infection other ganglia of the group may be the seat of an inflammatory reaction as well, but not sufficient in degree to produce an eruption."

Summary.—In the case under discussion, the first local symptoms were present in the throat. The patient did not seek medical advice during this period. After an interval of two weeks during which the patient was "fairly well," and the "sore throat" had subsided, she began to complain of pain in the head and especially behind the ears. At this stage medical advice was sought and an examination disclosed a subsiding inflammation in the throat, and tenderness and edema over both mastoids followed within forty-eight hours by severe pain in the mastoid and frontal regions. The following day the edema had extended to the frontal region involving both eyelids of the right eye and vesicles appeared in this region.

It is suggested that what appeared when first seen to be a subsiding tonsillitis and pharyngitis may have been a primary involvement of the ganglia of the glossopharyngeal or of the vague nerve. (Ref. 4 and 5 above.) It could not be ascertained whether an eruption of zoster was present at any time during this period. Assuming the infection to have been primary in the ganglia of either of these nerves, it would seem that an infection severe enough to have subsequently involved adjacent ganglia would have caused an eruption in its own area, which may have been the case.

The secondary symptoms appeared in the mastoid region. Whether this indicated an involvement of other ganglia of the chain (geniculate, second, third, or fourth cervical ganglia, Ref. 5) or were simply referred symptoms, the writer is not prepared to say—no eruption appeared in either area. It is to be regretted that owing to the severe illness of the patient no functional tests were made. (Ref. 2.)

Buys (Bull. Soc. Belge d'Otol., de Laryngol. et de Rhinol., 1898) reports a case of a girl, 17 years of age. Onset with vomiting, severe headache, stiffness of the neck, photophobia, no fever or delirium, pulse slow and irregular. Severe pains subsided after the fourth day, and settled in the mastoid region of the right side, which was very tender. Hearing was diminished, vesicles made their appearance on the fifth day on the antitragus, and lobule of the ear. On the sixth day a fresh crop appeared on the mesial surface of the pinna and the lobule. All pain disappeared within a few days' time. Except for the fact that symptoms were early present in the neck in this case and in the "throat," in the writer's case, and in both instances settled in the mastoid region later, there is no similarity between the cases. Hunt, in referring to the above case, says: "The frequent vomiting and slow irregular pulse, in this case, are strongly suggestive of a vagus disturbance. I would also emphasize the area of distribution of the eruption corresponding to the cutaneous filaments of the vagus." With the

appearance of the eruption in the Gasserian region, a first diagnosis of zona was made. That a severe inflammation was present in this region seems indisputable, all of the symptoms of herpes zoster being present.

The possibility of the infection being limited to this ganglia only, the earlier symptoms having no connection, except possibly toxic in nature, also suggests itself to the writer. The case seems of sufficient interest to report and a discussion of it is invited.

261 Central Park West.

PERICYSTITIS COMPLICATING ACUTE APPENDICITIS.

By EUGENE H. EISING, M.D.,

NEW YORK.

Pericystitis is inflammation of the areolar connective tissue surrounding the bladder. This condition is always secondary to some neighboring suppurative focus. The inflammation usually extends from suppuration in the prostatic urethra, the prostate gland or prevesical space. The infection of the bladder wall is marked by sharp symptoms of vesical stranguary which were absent in the parent infection. The process rarely leads to destructive changes in the bladder. Its cure consists in removal of its primary cause.

Among the various manifestations produced by the inflamed appendix is the symptom train of pericystitis, which may be of such severity as to mask entirely the initial disease in the appendix.

Two such cases have been observed by me. The records of the first case are unfortunately no longer at hand.

Case I.—In the first case there was hematuria and cystoscopy revealed an unusual picture that suggested carcinoma. A transperitoneal operation was planned and a gangrenous appendix was found intimately adherent to the posterior wall of the bladder and involved with it in a mass of adhesions. Even at the operating table it was by no means apparent that the primary focus of the disease was in the appendix, and only after considerable dissection did it become evident that the condition of the bladder wall was the result of secondary involvement. The bladder symptoms subsided at once after the removal of the appendix.

Case II.—The second case was seen in May, 1915, through the courtesy of Dr. Morris of Brooklyn. The patient was a man of 23 years, in the third day of his present illness. There had been nine similar attacks between October, 1910, and May, 1915. These attacks lasted from three to ten days, and were characterized by sudden severe abdominal and vesical pain, always provoked by an attempt at urination. The abdominal pain became less intense, but the vesical tenesmus remained severe. In two attacks there was vomiting. Urination was frequent and painful, and several times blood was passed. No pus was ever found in the urine. With rest in bed and medication these attacks had always subsided. During the intervals the patient was entirely well.

The patient was thought to be suffering from calculus either in the lower part of the ureter or in the bladder. Cystoscopy showed an area of about 4 cm. in circumference of intense injection, upon the right side behind the ureter and extending to the median line. This area was studded with small vesicles (bullous edema) containing clear serum. The area of injection faded rapidly toward the periphery. A catheter passed readily into the right ureter and clear urine was obtained. Twice in prevesical abscess I had seen marked bullous edema of the bladder wall underlying the space of Retzius, and in view of these experiences it seemed probable that the source of trouble lay outside of the bladder.

Examination of the right iliac fossa revealed a rigid rectus muscle and a very distinct area of tenderness lay well toward the median line. Although the area of tenderness was not in the usual place for the appendix, it seemed to explain better than any other hypothesis this unusual train of symptoms.

Two days later appendectomy was performed. The *caput coli* seemed congenitally misplaced toward the median line. The appendix was found well down in the pelvis. It was gangrenous and imbedded in a mass of dense adhesions firmly adherent to the posterior wall of the bladder. Convalescence was uneventful. The cystoscopic picture has now returned to the normal, and the patient has since remained free from any of his former symptoms.

These two cases demonstrate a complication of acute appendicitis which if not borne in mind may lead to serious diagnostic error.

35 West Eighty-first Street.

Medicolegal Notes.

Insurance Against Assistant's Mistakes. — An insurance company insured a physician, who had in his employ two younger doctors as assistants, against loss from liability for bodily injuries or death suffered in consequence of error, mistake, or malpractice by any assistant in his employ "while acting under the assured's instructions." One of his assistants made a mistaken diagnosis in an accident case, resulting in a judgment for damages against the physician. The assistant diagnosed and treated the patient without suggestion or aid from the physician, who apparently had no knowledge of the particular case and gave the patient no personal attention; the assistant merely acting according to previous general instructions and the custom which prevailed under the contract between himself and the physician. In an action on the policy it was held that the insurance company was not liable, since the quoted words were intended to qualify its liability, and if they were treated as covering the physician's general instructions, they would neither expand nor restrict the insurer's liability, but would be altogether meaningless.

"In a physician's contract such as the one before us," the court said, "the learning, experience, and ability of the individual insured necessarily and largely enter into the consideration. The risk assumed is the assistant 'while acting under the assured's instructions.' As a safeguard against the error, mistake, or malpractice of the assistant, the insurer stipulates for the instructions of the assured. The insurer, relying on the professional skill of the assured, contracts for his supervision or at least for his instructions. It cannot be held that the insurer by this sort of contract undertakes to answer for the mistakes or malpractice of a doctor's helper acting on his own responsibility, without any advice or directions from the assured; such subordinate being unknown to the insurer, and the policy without provision as to his qualifications. This would be an extraordinary hazard, and not one within the purview of this policy." —Seay v. Georgia Life Ins. Co., Tennessee Supreme Court, 179 S. W. 312.

X-Ray Photographs in Evidence.—In an action for damages for injuries to the plaintiff's neck by falling in front of moving cars, objection was made to the introduction of *x*-ray photographs of the plaintiff's neck and of testimony of a Dr. Gist explaining them. Dr. Vineyard, the owner of the *x*-ray machine, who made the photographs, had testified very fully as to his experience in such work, and it was shown by the witnesses that the photographs correctly represented the condition of the plaintiff's neck. The court thought a sufficient predicate was laid for the introduction of the photographs, and there was no error in admitting them. It saw no objection to the testimony of Dr. Gist in explaining the photographs and showing the bones which were exhibited thereby and in explaining what bones were named in the testimony. It thought it would be an aid to the jury in understanding the testimony of the witnesses as to the bones which were claimed to have been injured by the plaintiff and denied by the defendant. All that is required for the introduction of a photograph of this kind is that preliminary evidence should be given of its correctness.—Pecos & N. T. Ry. Co. v. Winkler, Texas Court of Civil Appeals, 179 S. W. 691.

MEDICAL RECORD.

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REPORT OF THE SURGEON GENERAL OF THE UNITED STATES NAVY.

THE report for the fiscal year 1915 of the Surgeon General of the United States Navy has been issued recently. During the year under review there has been an increase in the admission and death rates over the preceding year. The death rate, however, is still very low, only 4.18 per 1,000, and the admission rate is lower than for the 10-year period 1901 to 1910. The Surgeon General therefore believes that considering these statistics include the time of the Vera Cruz campaign, during which a large proportion of the personnel was occupied in tropical duty, the above result may be pointed out as fully satisfactory and up to the high standard of the past several years. Among the major classified groups of diseases that show an increase in total damage are the following: Diseases of the digestive system, of the ear, of the genitourinary system, of the nervous system, of the respiratory system, diseases of infective type, and wounds of all classes. With regard to typhoid fever the Surgeon General states that he has no hesitation in saying that the practical elimination of typhoid fever from the Navy is due almost entirely to prophylactic inoculation. He further draws attention to the fact that reports from the armies of the contending nations now in the field show remarkable improvement so far as the diminution of typhoid fever is concerned. The Germans, who had provided extensive hospital accommodation for expected or possible incidence of typhoid, measured by standards of previous conflicts, have been able to convert these facilities to other uses owing to the comparatively slight incidence of what was once one of the worst scourges of a military campaign. In the British Expeditionary Force in France during the first ten months of the war the ratio of morbidity was 14 times, and that of mortality 42 times greater among the uninoculated than among the inoculated. The sanitary condition of the French army has been particularly satisfactory. No epidemics have appeared, thanks to the knowledge and strict application of the fixed laws of hygiene. That a few isolated cases of typhoid fever did appear was because those who were attacked had not been protected by vaccination, or had been vaccinated in an unsatisfactory manner as to quantity or method of application. In the early months of the war, when preventive vaccination had not yet been made general, and numerous cases were being received in the infectious hospitals, it was thought that cases of typhoid fever had been found in those who had been vaccinated. This was not so. Those cases were found to be paratyphoid.

As regards the venereal diseases, the bane of all military aggregation, the report states that during the past year the primary admission rate for venereal disease was more than for the year 1913, but below the rates for 1909, 1910, 1911, and 1912. The results of venereal prophylaxis are dealt with, and it is noted that while efforts were made toward the adoption of a system of compulsory prophylactic treatment against venereal disease in 1907, the matter was not generally taken up throughout the Navy until January, 1909. It is difficult to draw conclusions from the figures regarding venereal disease. The tables in the report at first sight do not appear to be in the least encouraging, rather the reverse, but several facts must be taken into consideration. It would seem from a cursory survey of these tables that coincident with the adoption of the system of venereal prophylaxis the admission rate of certain diseases was nearly or more than doubled. It is consequently necessary to explain that in the early part of 1909, a new statistical report was adopted, and this statistical report directed that all cases of venereal disease that appeared for treatment should be admitted to the sick list for purpose of record, even though it was not necessary to excuse the men from duty and admit them to the sick list for treatment. In drawing conclusions from the statistical evidence adduced, as to the value of venereal prophylaxis, it appears proper to point out that failure to prevent the disease is due in most cases to the fact that preventive measures by means of antiseptics are so long delayed that the virus is taken up by the lymphatics and carried beyond the reach of the antiseptic agents by the time they are applied.

Tuberculosis in the Navy has decreased. Malaria, owing to the continued presence of a considerable part of the Navy in Mexican waters, shows an increase of 50 per cent. of admissions over 1913. Sanitary conditions afloat are generally fairly satisfactory. The greatest stumbling block in the way of wholly satisfactory hygienic conditions is efficient ventilation. The ventilation problem is by no means solved ashore, and, of course, on shipboard, and especially on warships, the problem presents itself in its most complicated forms. Notwithstanding the inherent difficulties of the situation, the Bureau of Construction and Repair has achieved excellent results, and the question of an adequate air supply on board war vessels bids fair to reach a solution which will tend to conserve the health of the Navy personnel.

The Surgeon General reiterates his complaint of the previous year that the present size of the Medical Corps is entirely inadequate for service requirements, and should be increased for a peace-time basis. There is also a lamentable shortage of officers in the Medical Reserve Corps and likewise of chief pharmacists and pharmacists in the Hospital

Corps. The report goes to show that the health of the Navy is well cared for, but it also shows that from this standpoint matters would be better if the Medical Corps as a whole was kept up to its full strength. If the efficiency of the Navy is to attain the highest standard, the greatest generosity must be observed in all measures relating to prevention and treatment of disease.

PHYSICAL EXAMINATION OF THE BLOOD SERUM IN CARDIAC AND RENAL DISEASE.

THE present methods of study of renal insufficiency involve metabolism researches that demand much time and ample laboratory equipment and are impossible of routine application under ordinary circumstances. Since the content of protein and salt and water in the blood serum varies in a fairly definite manner, depending upon the action of the heart and kidneys, Butterfield, Erdwurm, and Braddock (*Am. Jour. Med. Sci.*, 1916 cli, 63) were led to use purely physical methods in the study of this fluid in the attempt to detect deviations from the normal. The depression of the freezing point was taken as a measure of the concentration of relatively simple molecules irrespective of their nature; the refractive index was used to detect variations in the protein content, while the specific gravity was of aid in the recognition of hydremic or concentrated sera.

They studied a number of clinically typical cases by these methods and obtained some very interesting results. In normal individuals the figures were found to be quite constant. In cases of cardiac decompensation with edema the findings did not vary beyond the normal limits showing a retention of all the elements of the blood serum and not merely a dilution of the serum. In chronic nephritis with edema the freezing point depression was normal while the refractive index and the specific gravity were both much lower than normal. This indicates a diluted or hydremic serum, the dilution being not with water alone but with salt also. In cases of chronic nephritis with uremia the depression of the freezing point was much greater than normal while the refractive index and specific gravity were but slightly increased. This indicated a concentration of the serum, especially with the simpler molecules. In chronic nephritis with uremia and edema the picture was a composite one showing increased depression of the freezing point and a lowering of the refractive index and the specific gravity. In still another group of cases, those of arteriosclerosis with hypertension, the depression of the freezing point was normal while the refractive index and the specific gravity were both much increased, evidence of a marked concentration in the serum. Ten to 15 c.c. of serum are said to be sufficient for the tests which require but a short time for their performance.

Certainly, in the typical cases reported, the differences are such that a classification is easy on the basis of the figures presented. The authors state that it is necessary to find out how slight a deviation from the normal may be detected by these tests before a full realization of their value can be reached. In the fully developed cases they offer a diagnostic method that should eventually prove of great help in therapeutics. It should be borne in mind that the technique of the tests, while not at all complicated, nevertheless requires a nice attention to detail and adherence to method that is indispensable for accurate work. It is to be hoped that this work will be continued, for it offers much both in the field of diagnosis and in that of therapeutics.

AORTOTOMY IN EMBOLISM OF THE ABDOMINAL AORTA.

NEARLY all the recent books on surgery devote some space to a description and illustration of the technique of removal of emboli from the pulmonary artery, as advocated by Trendelenburg and brought to the attention of American surgeons by Willy Meyer (Trans. Am. Surg. Asso., xxxi, 1913), although the operation has never yet been permanently successful in man. In the operation for pulmonary embolism the necessary compression of the ascending aorta and pulmonary artery must not exceed forty-five seconds and the removal of a large embolus must be accomplished within a very few minutes after its lodgment or the case is absolutely hopeless. In embolism of the abdominal aorta, however, operation has been successful in at least one instance, and the indications are so clear, the point of impaction of the embolus so accessible, the time at the disposal of the surgeon so relatively ample, and the technique so comparatively simple, that the subject deserves attention. The latest report of aortotomy for the removal of an embolus from the abdominal aorta is that by Konjetzny (*Zentralblatt f. Chir.*, No. 42, Oct. 16, 1915). As he says, embolism of the abdominal aorta with wedging of the embolus at its point of division into the iliac arteries is not extremely rare. Suddenly appearing and very severe lancinating pains in both legs, accompanied by loss of motility and sensibility, together with absence of pulsation, pallor, and coldness in both legs constitute the symptom-complex of this easily diagnosticated condition. The course and prognosis are always the same—gangrene of both lower extremities and death sooner or later.

Konjetzny's patient was a shipbuilder, 43 years of age, a well-built, well-nourished man, who previously had apparently always been in good health. In connection with a severe cold which he had contracted three days before, he was suddenly taken with severe lancinating and tearing pains in both legs. These pains were so severe as to be hardly endurable, and at the same time there developed complete loss of sensation and motion in both legs. The legs were at first entirely pallid but after awhile the upper portions of the thighs became bluish. Both legs felt cold from the beginning. Thirty-six hours elapsed before the patient was taken to the surgical clinic. Upon admission, the patient's face was pale, heart sounds very faint but with no murmurs, pulse irregular and weak. Examination of the lungs and abdominal organs showed nothing of especial significance. Both legs were cold as far as the inguinal region, paralysis

was complete, the pulse could not be felt in the femoral or popliteal arteries, and the diagnosis of wedging of an embolus at the bifurcation of the aorta was unquestionable. Since the condition had already existed for thirty-six hours, a favorable result after operation could hardly be hoped for, but because of the otherwise hopeless nature of the case immediate operation was undertaken. After exposure of the affected section of the aorta, palpation disclosed a large plug in this vessel and extending continuously down both iliacs. The aorta was isolated, clamped about 10 cm. above its point of division with a Doyen clamp sheathed in rubber tubing, and an incision about 3.5 cm. long was made in the vessel, running to near its point of bifurcation. The slightly adherent embolus was easily expressed through this incision and was found to be about 5 cm. long and of a brownish red color. To this was joined a dark red coagulum which filled the iliacs and accessible portion of the femoral arteries. After all these coagulated masses were pressed out through the wound in the aorta, this was closed by suture, the clamp removed, the peritoneum sutured over the vessel, and the abdominal wound closed. At this point good pulsation could be noted in both femorals. This good result was, however, only temporary, and a short time after the operation pulsation in the femorals could no longer be felt. The heart became progressively weaker and the patient died three days later. Autopsy showed that there had been an old myocarditis, and that at one portion of the wall of the left ventricle there was a tolerably fresh thrombus, doubtless the source of the embolus. The aortic suture had held completely tight, and there was no thrombus formation at that point nor in the adjacent segments of the common iliacs; whereas the external iliacs and femorals, with their veins, were filled with clotted blood.

In reviewing this case and comparing the history and post-operative course with that operated upon successfully three hours after the onset of symptoms by Bauer (see MEDICAL RECORD, Jan. 17, 1914), it is seen that the symptoms in the two cases were almost absolutely identical, though Konjetzny's patient was in much better general physical condition than Bauer's. It is probable, therefore, that if Konjetzny's patient could have been operated upon within three hours instead of at the end of thirty-six hours he also might have been saved. It is evident that in order to be successful it is essential that operation should be undertaken as soon as possible, before progressive clot formation has taken place or changes have occurred in the intima of the peripheral vessels. The symptom-complex is so pathognomonic that there should be no hesitation in making the diagnosis; and since in this condition medical measures are totally impotent and too much delay means gangrene of the extremities and death, it is apparent that no time should be lost in making the operation. Early operation should save the majority of these patients who, without operation, are doomed.

HAS OUR CONTROL OF SYPHILIS REALLY ADVANCED?

A GENERATION ago we were fairly well pleased with our treatment of syphilis, and were accustomed to rank the latter among the few diseases which we could really control by medication alone. Then in the fulness of time we received the benefits of several startling discoveries, to wit: the spirochete, Wassermann reaction, and salvarsan. Our resources against the disease are multiplied and our control over it is increased many fold. But strangely enough the reactionary now appears and disputes the spirochete etiology, the reliability of the Wassermann reaction, and the value of salvarsan. For him, perhaps, these discoveries have really interfered with the proper development of our knowledge of the disease. In a word, these supposed advances are much too good to be true. While we are not inclined to sympathize with these reactionaries, and rather doubt their sincerity at times, we have to give due heed to certain polemic articles which are put forth in good faith. Professor Bruhns of Charlottenburg (*Berliner klinische Wochenschrift*, October 12) devotes much time to the Wassermann reaction, citing many examples to warn against reposing too much confidence in the finds, when the interval covered is relatively brief. The principle of the reaction is not antagonized but in all negative finds it must be persistently followed up—for years if need be. In the long period of latency between early and late syphilis, a negative reaction means nothing at all. In regard to the efficacy of medication this can be determined, he says, only by decades—not years—of treatment.

TRUE PSORIASIS OF THE BUCCAL MUCOSA.

FOR many decades it was almost an aphorism that psoriasis vulgaris was purely a malady of the integument. Although all rules must apparently have paradoxical exceptions, and although most exanthems and eruptions have, perhaps only in very rare cases, shown participation in some of the mucosæ, psoriasis has been regarded as something so native to the skin that it could not occur in any other locality. Those who describe such a condition as psoriasis linguæ are careful to state that it is not the same affection as psoriasis of the skin. Despite the enormous negative experience of clinicians, positive cases may come along under a great variety of circumstances, and it is often the expert who is unable to place them because he is so unescapably convinced of their non-existence. Apparently psoriatic lesions of the mouth have masqueraded under the general term leucoplakia. At a session of the General Medical Society of Cologne last March (*Münchener medizinische Wochenschrift*, October 19, 1915), Albersheim presented a case in which by exclusion he had arrived at a diagnosis of psoriasis of the buccal mucosa. The young woman patient gave a negative Wassermann reaction. The supposed psoriasis was seated on the mucosa of the left cheek and had every appearance of cutaneoous psoriasis. In discussion, Dreyer, a believer in mucosa psoriasis confirmed the diagnosis, and prophesied that a microscopic section would show the typical histological structure of cutaneous psoriasis.

WAR NEPHRITIS.

THE outbreak of diseases in select material like soldiers should throw light on the same diseases as they attack the underfed, anemic subject in peace times. This should be especially the case when the men are attacked by wholesale. At a session last fall of the Imperial-Royal Medical Society in Vienna (*Berliner klinische Wochenschrift*, No-

vember 15) Klein and Pulay described an outbreak of hemorrhagic nephritis accompanied by mild fever, prostration, and edema. The apparent causes were in part given as angina, mild scarlet fever, and exposure, all well recognized causal agencies. In a study of the urine the *B. coli* was found in pure culture. This organism may cause nephritis by direct extension, or lymphatic or hematogenous infection, but only after a kidney has been previously damaged. In these cases pyelitis may be latent. In several fatal cases the presence of old nephritis explained the situation, although death was not uremic but septic. The authors believe that the *B. coli* was the efficient cause in many, if not most, of the cases.

News of the Week.

Health of the Canal Zone.—The report of the Department of Health of the Panama Canal for the month of November, 1915, begins with the so often repeated statement: "No cases of yellow fever, smallpox, or plague have originated on or were brought to the Isthmus during the month." Among employees, numbering over 34,000, the total number of admissions to hospitals and quarters was 887, a rate of 311.01 per 1,000. As compared with 294.80 for the preceding month, and 298.93 for the corresponding month of last year. The total number of deaths from all causes was 23, of which 17 were due to disease, or 5.96 per 1,000, as compared with 5.39 for the preceding month and 1.61 for the same month of 1914. All the deaths from disease were among the colored employees; four were due to pneumonia and the rest to various chronic ailments. The total admission rates for malaria, hospitals and quarters, was 22.09, as compared with 34.11 for October, and 69.08 for November, 1914. This is the lowest rate ever attained on the Isthmus at any season. There were no cases of typhoid fever during either October or November. For the Canal Zone, the death rate from disease for the month was 11.14 per 1,000, and the birth rate 20.75; for Panama City, the rates were 27.63 and 50.29 respectively; and for Colon 20.87 and 24.55. The sanitary work of the Canal Zone was continued, the heavy rains during the month making it possible to note the points in the drainage systems in the several districts which need additional permanent work. The annual physical examination of school children was made during the month, 1,002 children being examined.

Typhus in Mexico.—A party of American physicians is expected shortly to go into Mexico to study conditions there as regards typhus fever, of which, it is said, there are now at least 100,000 cases. The party will be headed by Dr. Carlos Husk, chief surgeon of the American Smelting and Refining Company, it is reported, and will include, among others, Dr. E. Libman, Dr. Peter Olitsky, and Dr. Bernard S. Denzer, all of Mount Sinai Hospital, New York.

D. D. S. Columbia.—Columbia University has under consideration a project to establish a dental school on a highly scientific and educational plane. The Medical Faculty has already approved of the plan, and it is proposed to ally the new school of dentistry closely to the medical school, requiring the same standard of fitness and previous academic training for admission to both. For the first two years the program of studies in the school of dentistry will be the same as that in the school of medicine, the last two years being devoted entirely to dental practice.

Red Cross Day.—Wednesday, January 27, was designated by President Wilson as a day for special contributions to the Red Cross for the relief of the warring countries of Europe.

State Census.—According to the census taken by the State last June, the population of New York State on July 1, 1915, was 9,687,744, of whom over 52 per cent., or 5,047,221, were in New York City. The number of inhabitants in the State has, according to this estimation, increased 20.86 per cent. during the last ten years, while in the city the increase has been 25.7 per cent. The Federal authorities have, however, declined to use this enumeration, which had already been protested by the City Department of Health, and have informed Commissioner Emerson that in their computations they will use the 1910 census figures by which the estimated population of the city on July 1 was 5,602,841. The police census, taken last fall, resulted in an estimated population of 5,585,772.

City Death Rate High.—During the week ending January 15, there were reported in New York City 1,863 deaths, as compared with 1,612 deaths reported during the corresponding week of last year, making the death rate for the week higher by 1.87 than that for the third week of 1915. The increased mortality was due almost entirely to influenza and pneumonia and to the effect of these two diseases on other causes of death which showed appreciable increases, such as heart disease, pulmonary tuberculosis, and Bright's disease. The acute infectious diseases showed a slight decrease, and there was a marked decrease in the deaths of children under five years of age. Of the respiratory diseases, influenza caused during the week 90 deaths as compared with 10 during the same week of 1915; acute bronchitis, 19 deaths in 1916, and 21 deaths in 1915; bronchopneumonia 109 deaths in 1916, and 122 in 1915, and lobar pneumonia 224 deaths in 1916 and 168 deaths in 1915, making a total of 442 deaths due to these diseases during the week as compared with 321 for the same week of last year. The death rate for the first three weeks of 1916 is 16.64, while for the same period of 1915 it was 15.31.

Decrease in Rabies.—Statistics for the last four years recently made public by the Department of Health show a marked decrease in the occurrence of rabies in New York City. The figures are as follows:

	1912	1913.	1914.	1915.
Total dog bites	4,599	4,592	4,640	3,648
Deaths from dog bites	6	8	8	1
Victims treated at clinics	452	529	509	279
Dogs found with rabies	239	139	318	103

The Health Department feels that if the campaign against the disease can be as vigorously prosecuted and the same rate of progress maintained, rabies in the city will soon be stamped out.

Dies at 103.—Mrs. Hannah M. Towar of Detroit, who celebrated her 103d birthday last November, died of the grip on January 19. She was born in New York but had lived in Detroit for over sixty years.

Tuberculosis Preventorium.—At the annual meeting of the Tuberculosis Preventorium for Children, held on January 18, Dr. Hermann M. Biggs, president of the institution, announced that

during the past year 678 children from four to fourteen years of age were cared for with marked improvement in all cases. All the officers of the society were re-elected.

Trudeau School of Tuberculosis.—It has been decided to offer courses in the advanced study of tuberculosis at Saranac Lake in the Trudeau Sanatorium (Adirondack Cottage Sanitarium) founded by Dr. E. L. Trudeau in 1884, and the nearby New York State Sanatorium at Raybrook, and in association with the Saranac Laboratory, the Reception Hospital and the Sisters' Hospital at Saranac Lake, as well as the Stony Wold Sanatorium at Lake Kushaqua. A prospectus and schedule of the course of study can be obtained from the secretary, Saranac Lake, N. Y.

Personals.—Sir WILFRED GRENFELL, medical missionary in Labrador, is now serving as a major with the Twenty-second British Expeditional Hospital near the front in France.

Dr. RAY LYMAN WILBUR was installed on January 22 as president of the Leland Stanford Junior University, San Francisco. Dr. Wilbur was for several years dean and professor of medicine in the School of Medicine of the University.

New Maternity Department.—At the January meeting of the Board of Managers of the Norwegian Lutheran Deaconesses' Home and Hospital, Brooklyn, N. Y., it was decided to establish a department of obstetrics in which shall be cared for all the hospital cases of childbirth and diseases of pregnancy. The department will be housed in the new addition to the hospital which is practically completed, and it is expected that patients will be received soon after April 1. At the same meeting, Dr. Robert E. Coughlin was appointed attending obstetrician to the hospital.

Letchworth Village Needs.—In the annual report of the Board of Managers of Letchworth Village, the New York State institution in Rockland County for the feeble-minded and epileptic, attention is called to the need for extending the plant by the erection of four additional dormitories to provide for 280 patients, the completion of the "improvable boys' groups," and the building of a storehouse. The inmate population is now 300, and is expected eventually to be nearly 3,000.

Medical Society Elections.—NEW YORK PATHOLOGICAL SOCIETY.—At the anniversary meeting of the society, held on January 12, Dr. Francis C. Wood was elected president and Dr. J. Gardner Hopkins, secretary and editor of the Proceedings.

AMERICAN ASSOCIATION OF ANATOMISTS.—The following officers were elected at the New Haven meeting held recently: *President,* Dr. Henry H. Donaldson, Wistar Institute: *Vice-President,* Prof. Clarence M. Jackson, University of Minnesota; *Members of the Executive Committee,* Prof. Eliot R. Clark, University of Missouri, and Prof. Reuben M. Strong, University of Mississippi. Prof. C. R. Stockard, Cornell Medical School, New York City, remains secretary of the association.

Health of New York Police.—The annual report of the chief surgeon of the New York Police Department shows that the sick rate of the force for 1915 was the lowest in the history of the department, having been 21.60 per 1,000; for 1914, the rate was 22.40 per 1,000. These figures represent a saving of 5,050 days of sick leave, equivalent to 13.08 men for active performance of duty each day. During the year there were 61 deaths among the members of the force, as compared with 79 during 1914, giving a death rate of 5.06 per 1,000. The chief surgeon attributes the reduction in the sick list to the improvements made in the station houses following the sanitary inspection of all the houses in 1914, the cooperation of commanding officers in enforcing better ventilation in dormitories, and education along the lines of health extension.

Changes in the Sanitary Code.—A number of changes and additions have recently been made in the sanitary code and in the regulations of the Department of Health, among the most important being the following: Section 61, relating to water tanks on roofs of buildings, was amended to provide that every such tank shall be kept completely covered with a tight fitting cover and that every tank from which water for drinking or domestic water is furnished shall be emptied and the inside thoroughly cleansed at least once a year. Originally, this section provided that these tanks should be properly ventilated, but it was found that compliance with this provision resulted in providing openings through which mosquitoes gained access, so that the tanks were converted into breeding places. Section 128 was added to the code to regulate the sale and distribution of hair dyes and toilet preparations, since investigation had shown that the use of certain hair dyes and other toilet preparations had resulted in symptoms of poisoning, both local and general. Section 327, also a new section, which permits the slaughtering of horses and the sale of horse flesh as food, has already been mentioned.

Food and Drug Act Constitutional.—The Supreme Court of the United State on January 9 rendered a decision upholding unanimously the constitutionality of the amended food and drugs act, in the case of "Eckman's Alterative." Some years ago, in the "Dr. Johnson Cancer Cure" case, the court held that labels were "false and fraudulent" within the meaning of the act, as it then stood, only when they misstated the ingredients of the compound. In 1912 therefore, Congress passed the Sherley amendment, which provided that a shipment was misbranded "if its package or label shall bear any statement, design, or device regarding the curative or therapeutic effect of such article or substances contained therein, which is false and fraudulent." This amendment was particularly at issue in the case just decided, the containers of "Eckman's Alterative" having inclosed pamphlets in which the preparation was described as "effective as a preventive of pneumonia," with the further statement, "We know that it has cured and will cure tuberculosis." The company sending out the preparation contended that the pamphlet was not a label within the meaning of the law and that the law itself was an infringement of the police powers of the State and not properly a regulation of interstate commerce, all of which contentions were denied by the court.

Obituary Notes.—Dr. J. LEE MORRILL of New York, a graduate of the College of Physicians and Surgeons, New York, in 1869, and a member of the American Medical Association, the New York State and County Medical Societies, the New York Obstetrical Society, the Greater New York Medical Association, and the Lenore Medical and Surgical Society, died at his home, after a nervous breakdown, on January 9, aged 68 years.

Dr. LEROY DWIGHT FARNHAM of Binghamton, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1878, a member of the

American Medical Association, the Medical Society of the State of New York, the Broome County Medical Society, and the Binghamton Academy of Medicine, and consulting surgeon to the Binghamton City Hospital, died suddenly, from cerebral hemorrhage, on January 3, in Baltimore, while en route for Florida, aged 65 years.

Dr. DAVID J. HAMBURG of New York, a graduate of the College of Physicians and Surgeons, New York, in 1894, and a member of the New York State and County Medical Societies, the Harlem Medical Association, and the Alumni Association of the Lying-In Hospital, died at his home, from pneumonia, after a short illness, on January 21,

Dr. ROYAL LANGDON of Nutley, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1896, and president of the Nutley Board of Health, died at his home suddenly, from heart disease, on January 22, aged 45 years.

Dr. CHARLES STANLEY CRANE of Grand Forks, N. D., a graduate of the University of Michigan, department of medicine and surgery, Ann Arbor, in 1889, and a member of the American Medical Association, the North Dakota Medical Association, and the Grand Forks County Medical Society, died at his home, after a long illness, on December 31, aged 53 years.

Dr. WILLIAM J. TEAHAN of Holyoke, Mass., a graduate of the College of Physicians and Surgeons, New York, in 1901, medical examiner for the third Hampden District, chief of staff at the House of Providence Hospital, and a member of the Massachusetts Medical Society and the Hampden District Medical Society, died at his home from pneumonia, after a short illness, on January 11, aged 37 years.

Dr. CHARLES HEADY BEARD of Chicago, a graduate of the medical department of the University of Louisville, Ky., in 1877, and a member of the American Medical Association, the Illinois State and Cook County Medical Societies, the American Ophthalmological Society, the Chicago Ophthalmological Society, and the Chicago Neurological Society, died at his home, on January 3, aged 60 years.

Dr. JOSIAH SWETT of New Hartford, Conn., a graduate of the University of Vermont, College of Medicine, Burlington, in 1878, for many years coroner of the towns of New Hartford and Barkhamsted, and a member of the American Medical Association and the Connecticut State and Litchfield County Medical Societies, died at his home, from pneumonia, on January 13, aged 60 years.

Dr. CHARLES M. HOLLOPETER of Portland, Ore., a graduate of the State University of Iowa, College of Homeopathic Medicine, Iowa City, in 1890, died at his home from paralysis, on December 30, aged 64 years.

Dr. JOHN H. MAXWELL, formerly of Greenville, S. C., a graduate of the Jefferson Medical College, Philadelphia, in 1854, died at the residence of his nephew in Atlanta, Ga., on December 31, aged 84 years.

Dr. JAMES C. DOUGHERTY, United States Army Transport Service, a graduate of the Baltimore University School of Medicine, in 1898, died at his home in San Francisco, Cal., on January 4.

Dr. WILLIAM BARRY BURNELL of Norwalk, Conn., a graduate of the George Washington University, department of medicine, Washington, in 1906, died at the Westport Sanatorium, on January 14, aged 34 years.

Dr. FREDERICK D. SHEPARD, a medical missionary to Aintab, Turkey, for over thirty years, died there recently from typhoid fever. Dr. Shepard was a graduate of Cornell University and of the University of Michigan, department of medicine and surgery, Ann Arbor.

Dr. EDWIN BRIGGS WHEELER died at Philadelphia, on January 11, at the age of 64 years. He was graduated from Bellevue Hospital Medical College in the class of 1873. He was a member of the Philadelphia County Medical Society, of the Philadelphia Medicolegal Society, and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. CHARLES MONROE THOMAS died at East Goshen Township, near West Chester, Pa., on January 14, at the age of 67 years. He was graduated from Hahnemann Hospital and Medical College in the class of 1871. He was for a time demonstrator of surgery, later professor of operative surgery and of otology and ophthalmology, and for a period dean of his alma mater. He was a member of the American Institute of Homeopathy and of the Philadelphia County and Pennsylvania State Homeopathic Societies.

Dr. HENRY GENET TAYLOR died at Camden, N. J., on January 14, at the age of 79 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1860. He served as assistant surgeon in the Eighth New Jersey Volunteers during the Civil War, rendering service in twenty-five battles, and he was in later life surgeon to the Sixth Regiment of the National Guard of New Jersey. He was a member of the Camden County Medical Society and of the New Jersey State Medical Society, and a Fellow of the American Medical Association.

Dr. WILLIAM CLIFTON DREIN died at Philadelphia, on January 1, at the age of 40 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1899.

Dr. MICHAEL B. GARVER died at Ephrata, Pa., on January 3, at the age of 72 years. He was graduated from the Cleveland University of Medicine and Surgery in the class of 1871. He was a veteran of the Civil War.

Dr. RICHARD G. STRETCH died, on January 3, at the German Hospital, Philadelphia, in the sequence of an operation for appendicitis, at the age of 70 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1869.

Dr. CHARLES ZIEGLER WEBER died of pneumonia at Norristown, Pa., on January 3, at the age of 60 years. He was graduated from Jefferson Medical College in the class of 1882. He was at one time physician to the Montgomery County Prison and to the Norristown Hospital. He was a member of the Montgomery County Medical Society and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. HOWARD G. BONWILL died at Camden, N. J., on January 3, at the age of 54 years, following an operation upon his throat. He was graduated from Jefferson Medical College of Philadelphia in the class of 1886.

Dr. JAMES B. GREEN died of pneumonia at Merchantville, Pa., on January 4, at the age of 84 years. He was a graduate of the medical department of the University of Pennsylvania.

Dr. JAMES S. SPANGLER was killed at a railroad crossing at Huntingdon, Pa., on January 7, at the age of 55 years.

Correspondence.

OUR LONDON LETTER

(From Our Regular Correspondent.)

MEASLES AND GERMAN MEASLES—SUPPLY OF MEDICAL STUDENTS—ADVISORY BOARD FOR THE ARMY MEDICAL SERVICE—LORD MAYOR'S APPEAL—RED CROSS AND ORDER OF ST. JOHN SOCIETIES—OBITUARY.

LONDON, Dec. 31, 1915.

THE Local Government Board has issued an order applying a system of notification of measles and German measles throughout the country and enabling local authorities to undertake the care of patients suffering from these diseases with a view of restricting their spread, and more especially of reducing their mortality. The order with an explanatory circular and a memorandum on measles by the medical officer of the board have been posted to all local authorities, and as soon as it comes into operation cases are to be reported in the same way as now are those of other notifiable infectious diseases. Medical practitioners, parents or guardians or any one having charge of a case must report the fact to the medical officer of health at once, and the duties of these officers and the local authorities concerned are distinctly laid down. The memorandum shows that on an average about 11,000 deaths from measles occur annually in England and Wales, and besides these there are numerous deaths attributed to other causes, such as bronchitis and pneumonia, but to a large extent due to measles. Thus in the three years, 1911-13, measles caused 33,475 deaths at ages under five years, and at the same ages 83,650 by bronchitis and pneumonia—doubtless many of these were the terminal stage of an attack of measles, which is not stated in the certificate of death. It is further noteworthy that during the same three years all the notifiable diseases (smallpox, scarlet fever, enteric fever, diphtheria, puerperal fever, and erysipelas) were responsible for only 31,641 deaths at all ages, as compared with the 36,627 from measles. Measles is specially fatal in rickety children. In some outbreaks many children die from convulsions at the onset, in others pneumonia of a severe type sets in simultaneously with the fever. Other complications are chronic bronchitis, collapse of lung, dilatation of bronchi, pleurisy, empyema, pyemia, noma; these cause prolonged disablement where they are not fatal. Retarded growth, delicate condition, deafness, and other defects often follow an attack.

It is difficult to control the spread of measles, because it is infectious before a definite diagnosis can be settled. Moreover, it is so commonly regarded as only a minor complaint, which is almost a necessary one. As a cause of death it is mostly confined to young children (under five), and great care is required to prevent exposure to contagion at this age. Notification will enable segregation to be applied at an early period, which, with other measures, gives some promise of reducing the mortality.

We have been having a good deal of desultory talk about the supply of medical students, some of the papers predicting a shortage, and others starting from this point offering pictures of what would be the consequences of a diminished number of doctors. Even medical circles have talked seriously of the so-called danger, although there have long been so many complaints of over-crowding in the profession that one might rather have expected a satisfied tone in the anticipation of a different condition. It has been asserted that students of the first and second years, and even some more advanced, have been practically compelled by pressure of military authorities to take up combatant posts, and that such a policy is so short-sighted as to threaten grave danger both to the naval and military forces and to the civil population. It is further urged that these students should not only complete their curriculum, but that they might receive special training so that in a short time they would form a valuable reserve force to the the R. A. M. C. in case of ultimate need. It is pointed out that they might be placed in a group of men to be called up for service so late that only in the direct need would they discontinue their medical studies. Yet certain groups have been called upon which include a majority of these students, and there is a danger that instead of there being from 500 to 700 men left there may be not more than 100, and these a number under-aged and medically unfit. Not a few leading physicians and surgeons have taken up R. A. M. C. work for a time, and therefore may not discuss such questions. It is for medical councils and other officials to represent the case to the military authorities, and it is to be hoped they will not neglect to do so. The R. A. M. C. is under the supervision of the "Advisory Board for Army Medical Service," the chairman of which is the Director-General of the Department, and it includes two civilian physicians and two civilian surgeons appointed by the crown with an annual honorarium of £200. This advisory board ought to consider the question of medical students but it has held no meeting since the outbreak of the war, although one of its "regulations" is that it shall meet at fortnightly intervals and the necessary quorum for the transaction of business shall be . . . and shall report to the Secretary of State upon all matters concerned with medicine, surgery, sanitation, and epidemic diseases as they affect the military services. Though the board has not met the salaries continue to be paid and some people are asking "what for?" All questions relating to the medical organization in connection with the enormous armies in the field, whether to do with the regular R. A. M. C. staff, or civilian surgeons, all descriptions of hospitals and their supplies, whether at home or abroad, are under the control of the Director-General to whom any medical question is referred if brought before the Government. He can carry out his own views without submitting them to any other authority.

It is being asked whether any one person can do justice to himself or to the great interests involved by attempting to cope with such extensive duties. Some are very confident that he cannot and insist on the necessity of supplementing his authority by the corporate judgment of men who have time for reflection and possess the data in connection with hospitals and other institutions to enable them to meet their requirements. They hold that to induce medical students to pass to the combatant ranks is unwise and might lead to disaster. Only until the most absolute necessity demands should the scalpel be exchanged for the sword.

Responding to an appeal by the Lord Mayor several of the city companies have given sums of 100 to 500 guineas toward the Red Cross Society and the Order of St. John of Jerusalem (joint war committee). The Serbian Relief Fund has received £2,800 from New South Wales and £750 from Southport's Fund for Homeless Refugees. The em-

ployees in Devonport dockyard have sent £26 which is the sixty-fifth consecutive weekly contribution of those workmen to this fund. At a meeting of the Red Cross Society and the Order of St. John contributions to "Our Day Fund" of £800,000 were announced, of which £371,502 came from overseas. Her Majesty the Queen visited the Central Workrooms of the Red Cross Society at the Royal Academy and expressed satisfaction at the output of 10,000 garments and surgical requisites in five weeks. The Red Cross Society has been promised by the Cannock Chase Coal Owners' & Miners' Association an ambulance convoy of ten cars, costing £6000.

Dr. George Oliver, who for 35 years practised at Harrogate, has died at the age of 74. He was M. D. London and gold medallist in 1873 and Fellow of the Royal College of Physicians, where he was the Croonian lecturer in 1896 and Olive-Sharpey lecturer in 1904. He was author of "Blood and Bloodpressure" as well as of "Studies in Bloodpressure," which reached a third edition.

Dr. George Allan Heron, Consulting Physician of the Hospital for Diseases of the Chest, died on the 10th inst. He had been for some 30 years prominently associated with this and allied institutions.

LETTER FROM ALASKA.

(From Our Special Correspondent.)

CLIMATE OF NORTHERN ALASKA—NATIVE HYGIENE—EPIDEMIC OF MEASLES—A SPASMODIC CASE OF DIPHTHERIA—"A MAN OF HIS WORD."

St. Michael, Alaska, Nov. 30, 1915.

THERE is no record of diphtheria ever having occurred at St. Michael, Alaska, before the fall of 1915. The town of St. Michael has about 150 white people, also about the same number of native Eskimos and is located on an island of the same name, which island is formed by two mouths of the Yukon river as they empty into Bering Sea. It is located at 162 west longitude and 63½ deg. north latitude.

In order to understand thoroughly what an epidemic means in such a locality as this, it is necessary to know something about these people and the conditions under which they live. The summers last about four months, during which time the snow and ice melt but the soil remains frozen about two feet below the surface. Blankets and fires are used even during these months. There are about eighteen hours of daylight out of the twenty-four and on June 22 this is truly "The Land of the Midnight Sun" with daylight during the entire twenty-four hours. Winter begins with October and lasts about eight months, the thermometer ranging from 25° above to 40° below zero. All exposed water freezes. A little snow falls every few days, and the wind, which at times assumes the character of a hurricane, blows continuously. The daylight becomes shorter and shorter until December 21, when it is necessary to light the lamps very soon after noon.

From the beginning of the freeze in October until summer, water is obtained by melting ice for drinking and for all other purposes. By November every house or shack has a large pile of ice for this purpose. Building material is extremely scarce here; there is not a tree within 200 miles, and the soil or tundra is probably of glacial origin, rolling in contour, frozen in winter and a huge swamp in summer. As a result of these conditions the native lives in small shacks (made as nearly air-tight as he can make them) with very low ceilings, one or two small windows, and a storm door entrance. He dresses in fur boots or muclucs, fur gloves, such clothing for trousers or coat as he can get, and over all a parka made of fur which covers the head as well as the body. These fur goods are made of local furs, usually reindeer, and are tanned by the native. The tanning is crude and a part of the process is accomplished by rubbing the skin with urine. Some of the sewing is done with fibrous tissue which has been soaked in the mouth until pliable. As would be expected, these finished products have a very strong and disagreeable odor, even in cold weather. To add another aroma to the person and surroundings the natives eat and rub themselves with seal oil which has been collected possibly many months before and kept standing in an open vessel around the house. However, the principal component of their diet is dried salmon and their persons and shacks always have a strong and disagreeable odor of this. These fish are caught in summer, stripped, and hung up in the sun to dry, then covered with seal oil and tied up in bundles of convenient size in which form they are sold to the natives and stored in their houses. They sometimes cook these, but usually eat them raw.

Water is scarce and the native rarely bathes. Heat is expensive and hard to get so there is usually one room in the house and the entire family lives in that, covering themselves with poorly tanned furs or dirty blankets and closing every possible opening through which the wind could come. Bearing in mind the above, it is not surprising that tuberculosis is very common among the Eskimo and that an epidemic spreads like wild-fire among them. Their resistance is low and there seems to be little or no immunity to disease among the natives of this section of Alaska, as they contract readily and in a large percentage all communicable disease to which they are exposed.

In 1900 an epidemic of measles occurred in the native village at St. Michael and it is said that fully one-half of the native population died of it; in some instances whole families were found dead in their shacks. This epidemic was stopped after a most vigorous quarantine was established, segregating the sick, exposed, and those who had not been exposed. The native as a rule does not believe in medicine and has his own medicine man who treats him by "medicine songs" and other such methods. As they are uneducated and superstitious an effective quarantine is difficult. However, a few, and especially the "squaw men" (white men who have married native women) and sometimes their families, do believe in medicine to a certain extent.

On October 12, 1915, a "squaw man" came to me and said "I have been spitting up chunks of something from my throat." On examination a grayish membrane was seen covering his right tonsil, pillars, right side of the uvula, and adjacent parts of the hard palate and pharynx. Smears were made immediately and the Klebs-Loeffler bacillus found in them, this being afterward proved by cultures. The man was given 3,000 units of antitoxin subcutaneously before leaving the room. We repaired to the native school house and got his only child, a boy of ten years, took him to his house, and gave the child 500 units and the wife 500 units of antitoxin as an immunizing dose. Cultures were made from the throats of the child and wife, the former were negative and the latter positive for the bacillus of diphtheria. These people live in a native shack about twenty-five yards from the nearest building.

The writer realized the importance of an effective quarantine and the question "How can this be done?" at once arose. The entire island is under the control of military authorities and such civilian authority as exists is subordinate thereto. The civilian authorities consist of a U. S. deputy marshal, probate judge, and a jailer who handle only trivial cases, and the question of a quarantine had never been put up to them before, so it required some time to determine whether or not they could manage the case. In the meantime, the commanding officer of the military was asked to put a guard over the house to prevent any one leaving or entering it. This he immediately did. The weather was very cold and the wind blowing hard; everything that could freeze was frozen, even the sea five miles out from shore. The deputy marshal finally found a provision of the law by which he could serve a notice on this patient whereby he might be imprisoned sixty days and fined $50 if he broke his quarantine. The guard was removed, notice served, and a sign "Diphtheria" was placed on the house.

This man is a Laplander by birth, fifty years of age, and has lived in Alaska for more than twenty years. He married an Eskimo fifteen years ago and has lived in St. Michael ever since. He was very indignant when the soldier was placed over his house and asked to have him removed saying, "I give you my word of honor that no one will leave or enter this house until you say so." As the notice was not read to him, he did not realize what its contents were and neither the deputy marshal nor the writer knew that the patient did not understand. However, after being in quarantine ten days he became familiar with the true nature of the legal paper and at once became very indignant, making various threats even against the deputy marshal for having doubted his word. This was smoothed over by telling him that it was required by law to serve the notice. A close watch was kept on this house and a survey made of the village daily, but no new cases developed.

It may seem strange how this case was contracted! And here is the explanation. St. Michael is the terminus of the Yukon river boats on which many tourists and others come from and go to the various river points and Southeastern Alaska, a distance of over 2,000 miles. At this place they have to wait from a few days to several weeks until an ocean vessel arrives from Nome en route to Seattle or San Francisco. On October 7 and 8, this squaw man was intimately thrown with the passengers and the crew of one of these vessels. Three days after the sailing of the ship he was taken sick and there is every reason to believe that he contracted diphtheria from a carrier among the passengers or crew, and the quarantine officer at Seattle, Wash., was so notified by wire. This marks the first case of diphtheria reported from this part of Alaska and it is felt that a great victory was gained in taking this man as "a man of his word" and not antagonizing ignorant suspicious people.

Tracheal Casts in Diphtheria.—W. Fedorovsky states that expulsion of a membranous cast of the trachea after tracheotomy through the tube is not infrequent, but spontaneous expulsion through the mouth is rare. He reports a fatal case in a soldier, age 29 years, secondary to typhoid fever, and has collected 7 other cases from the literature, 2 in adults, ages 19 and 33, the rest in children, ages from 4 to 11.—*British Journal of Children's Diseases.*

Progress of Medical Science.

The Boston Medical and Surgical Journal.

January 13, 1916.

1. Gunshot Fractures of the Extremities. Robert B. Greenough, Robert B. Osgood and Beth Vincent.
2. Simulation of Esophageal Stenosis by Extensive Carcinosis of the Lesser Curvature of the Stomach. A. Everett Austin.
3. A Note on the Simulation of Diabetes Mellitus. George Blumer.
4. Notes on a Conference on the Medical and Social Aspects of Syphilis of the Nervous System. (Continued.) The Development of the Gold Sol "Paretic" Reaction as Compared with the "Cerebrospinal Syphilitic" Type. H. C. Solomon and E. S. Welles.
5. Syphilis and the Psychopatchic Hospital. E. E. Southard.

1. Gunshot Fractures of the Extremities.—Robert B. Greenough, Robert B. Osgood, and Beth Vincent state that during a three months' service, from April 1 to July 1, 1915, in the University Service of the American Ambulance, at Neuilly-sur-Seine, France, 132 patients, or about one-third of the total number of admissions, presented one or more fractures of the extremities. In 16 cases more than one of the long bones was broken, so that data on 148 fractures are available for study. There were 129 compound fractures and 19 closed, or simple fractures. Of the 129 compound fractures 8 were incomplete, and the bone was merely grazed or grooved by the bullet, without solution of continuity or abnormal mobility. Among the complications sepsis was the most to be feared. Infections from gas-producing organisms were not unusual. Secondary hemorrhage was not an unusual complication of gun-shot fractures. Where sepsis continued for a long time bone fragments became devitalized and were sequestrated. Delayed union and non-union were complications to be feared. Following long fixation of joints and lack of use, it was to be expected that many cases of ankylosis and contracture would occur. In summarizing they state that early and thorough operative treatment is indicated in gun-shot fractures received under the conditions of trench warfare; that the removal of missiles, foreign bodies, and detached bone fragments, and thorough drainage are important; that complete immobilization in extension is as a rule best obtained in a base hospital by plaster dressigs, put on under an anesthetic; that frequent and painstaking dressings, with or without irrigation, and the maintenance of free drainage are of great importance in overcoming sepsis; that prophylaxis is better than corrective treatment in the avoidance of ankylosis of joints, and contractures of muscles and tendons.

2. Simulation of Esophageal Stenosis by Extensive Carcinosis of the Lesser Curvature of the Stomach.—A. Everett Austin says that, in a classical description of a typical esophageal stenosis, the symptoms are always described with such accuracy that it would appear that there would be no difficulty in diagnosing such a form of disease. Experience has taught that there are forms of carcinosis of the stomach which are not so clearly defined as those of which the classic symptoms have been given; in other words, they lie upon the border line between these two forms, and often require a great deal of ingenuity in order to differentiate them. The deglutition sounds, in his hands, have proven very unsatisfactory. In one case reported special reference was made to the difficulty of deglutition, apparently one of the earlier symptoms. No blood was produced by the introduction of a tube against the growth. A residue, shown by the *x*-ray examination, twenty-four hours after the ingestion of bismuth is extremely rare. The question may arise whether one is really within the stomach itself, or is in a pouch. The answer to this question can usually be determined by the presence of rennin which is, of course, a feature of gastric secre-

tion, and usually persists in the cancerous stomach, long after the hydrochloric acid is eliminated. A second case he reports had two noticeable peculiarities, the short duration and the apparent absence of great emaciation. He concludes that the actual cause of the obstruction in these two cases is not due to cardiospasm, nor to true malignant stenosis, but is due to an edema which occurs wherever there is a widespread carcinosis of the lesser curvature, which approaches the cardia. As in a long continued dysphagia, existing in one instance under his observation for twenty years, the conclusion must be that it is not malignant, but is due to spasmodic constriction or to a diverticulum.

3. **A Note on the Simulation of Diabetes Mellitus.**—George Blumer says that simulation of diabetes mellitus is probably not of very frequent occurrence and hence he reports in detail a case that came under his observation. The simulation of the disease may take three forms: (1) addition to the urine of sucrose; (2) the addition to the urine of glucose; and (3) the production of an artificial glycosuria by the consumption of phloridzin or phloroglucin. Simulation of diabetes mellitus is easier than that of many other diseases because of the lack of objective physical phenomena in mild and uncomplicated cases, and because the urine in such cases presents no characteristic chemical abnormalities aside from the presence of sugar. The detection of sucrosuria is simple if certain precautions in the care of the urine are observed. Failure to observe these is what has led to failure to detect the imposture.

New York Medical Journal.

January 15, 1916.

1. Increasing Mortality in the United States. Eugene Lyman Fisk.
2. The Facial and Trifacial Nerves. Samuel Horton Brown.
3. Diet in Chronic Heart Disease. Robert Abrahams.
4. The Diagnostic Value of Records of Breathing and Speech. Otto Glogau.
5. Percussion Technic and Theory. B. A. Fedde.
6. Spinal Anesthesia with Stovaine. J. Sturdivant Read.
7. Urinary Disturbances in the Male. Clarence Martin.
8. Mother's Milk for Mother's Baby. William W. Riha.
9. Discharging Mastoid Sinuses. A. Noah Schiller.

1. **Increasing Mortality in the United States.**—Eugene Lyman Fisk has made a study of the mortality statistics of the registration area of the United States and, as Director of Hygiene of the Life Extension Institute, has examined large numbers of people throughout the country. He states that the widespread premature physical decay, which is suggested by our vital statistics, is to a considerable degree confirmed by actual examination of large groups of supposedly healthy young people. Thousands of people are slowly and inevitably preparing for physical breakdown or premature death and there can be no more important work for modern medicine than to bring such cases as early as possible under proper hygienic or medical guidance. There is probably some particular influence at work causing the upward trend in mortality from organic diseases. This may be found in our rapid industrial and social evolution, bringing about a condition of widespread prosperity and lavish expenditure, which relatively extends to the comparatively small wage earner. A natural adjustment to these conditions may ultimately come about, but we cannot rely upon this vague prospect and should bend our energies to the utilization of all the resources of science to check this rising death rate in middle life. To this end the lines that offer promise are eugenics, periodical physical examination for the purpose of detecting physical impairment, which may suggest important modifications of occupation or living habits, and the application of principles of personal hygiene.

2. **The Facial and Trifacial Nerves.**—Samuel Horton Brown reports the case of a man, who, during a routine examination of the refraction for the relief of asthenopia, mentioned that he was subject to profuse lacrymation and blinking every time he chewed. A careful examination to determine the cause of this condition showed that there was no inflammation except the slight chronic catarrhal condition so frequently seen in patients when they present themselves for a change of lenses. The entire lachrymal apparatus appeared to be normal. The facial expression seemed to be normal, but inspection on several occasions showed that the left lower lid was not so tonic as the right. This case history is offered as a possible explanation of some of the associated jaw and lid reflex. The epiphora is taken to be the result of the physical condition caused by the drawing down of the facial tissues when the lower jaw is moved. It is questionable if there is any reflex in this case, except that which follows after the eye is exposed by drawing the lid away from the globe.

3. **Diet in Chronic Heart Disease.**—Robert Abrahams says that in the management of chronic heart disease it is essential, first and foremost, to ascertain to what extent the heart is in difficulty, and to what degree its action is embarrassed. A patient with mitral or aortic disease, enjoying good compensation, need fear nothing except overindulgence in any diet. A patient with valvular disease and partial broken compensation may with impunity partake of any diet, but, instead of taking three big meals a day, it is better that he takes six small ones. The diet of a patient afflicted with valvular lesions and complete loss of compensation, must be in the main liquid, and his feeding hours frequent. The same applies to the victims of myocardial degeneration. Valvular lesions minus myocarditis, differ from myocarditis in relation to diet. Valvular disease alone has periods of perfect compensation and no venous stasis, while chronic myocarditis always has imperfect compensation, hence the ever-present congestion and the necessary caution in the selection of food. A gouty heart emphatically forbids the use of meat. Cardiac disease associated with chronic kidney trouble requires a diet more adapted to the renal condition than to the defective heart. A lesion of the heart which is preceded or followed by arteriosclerosis puts a veto on a proteid diet. Sufferers from chronic heart disease should scrupulously avoid overeating and should be cautioned against the use of copious drafts of water, particularly at meals.

6. **Spinal Anesthesia with Stovaine.**—J. Sturdivant Read has used spinal anesthesia with stovaine in a series of fifty cases of genitourinary surgery. The solution used is that devised by Babcock, stovaine 0.08, lactic acid, 0.002, alcohol 0.2, and distilled water 1.8. For urological operations the third or second lumbar interspace is selected, as complete anesthesia is secured and the danger of depressing the cardiac and respiratory centers is considerably increased when injections are made in the higher spaces. This particular preparation has a lighter specific gravity than the spinal fluid, consequently the needle having been quickly withdrawn, the patient is laid flat on the table and the head and shoulders are lowered to prevent blocking of the upper nerve roots, and sometimes interference with the respiratory and cardiac centers. In this series of fifty cases no symptoms of severe cardiac or respiratory depression occurred. The rapidity with which anesthesia may be obtained by this method and the small degree of post-operative shock and discomfort make this the method of choice in many cases. In cases of phthisis, or other pneumonic involvement, and in the presence of kidneys which are damaged or not functioning freely, it is of great advantage.

Journal of the American Medical Association.

January 15, 1916.

1. Vesiculotomy and Vesiculectomy. Louis E. Schmidt.
2. The Signs and Symptoms of Impending Death. Thomas F. Reilly.
3. Resuscitation by Means of Preserved Living Erythrocytes in Experimental Illuminating Gas Asphyxia. W. H. Burmeister.
4. Food Poisoning by the Bacillus Paratyphosus B. An Epidemic Due to the Organism Isolated from Pie. Harry S. Bernstein and Ezra S. Fish.
5. Multiple Metastatic Sarcomas of the Lungs; with Report of a Case. Oliver P. Holt and Helena T. Ratterman.
6. Creeping Eruption (Larva Migrans) of the Skin, Particularly in Regard to Its Histological Features, Including the Demonstration of the Burrow and the Larva in the Epidermis. Frank Crozer Knowles.
7. Transplantation of Bone for Nonregeneration of the Tibial Shaft. Melvin S. Henderson.
8. Has Secretin a Therapeutic Value? A. J. Carlson, J. E. Lebensohn and S. J. Pearlman.
9. Trichokyptomania. Richard L. Sutton.
10. Limited Pulmonary Expansion in Apical Involvement. Its Accurate Mensuration with the Thoracimeter, a New Device. M. J. Fine.
11. A Practical Device for Using the Safety Razor Blade to Cut Celloidin Sections. O. T. Manley and David Marine.
12. An Electric Furnace for Sterilizing Inoculating Loops. H. J. Corper.
13. An Automatic Spinning Device for the Harvard Kymograph. G. Bachmann.
14. A Direct Route for Drainage of the Pancreatic Area Walter D. Wise.

1. Vesiculotomy and Vesiculectomy. — Louis E. Schmidt discusses the indications for the different operations, the symptomatology of seminal vesiculitis, the classification of cases, the methods of procedure, and the anatomy and surgery of the vesicles, and describes the technique of operative interference that has given the greatest degree of success in his hands. He believes that if a patient has an involvement of one or both vesicles which does not result in a spontaneous cure, he should receive a surgical consideration. The most essential point in the technique of operation is that the patient should be placed in the extreme lithotomy, position, as this permits of accurate incisions into the vesicles or their removal under direct observation. The patient should also be immobilized. The skin incision should be either the semi-lunar or the inverted V-incision, practically extending from tuberosity to tuberosity. Other incisions may be made provided good access can be attained. The median tendon should be exposed and divided. With blunt dissection the fossa either side should be opened and then the urethrorectal muscle divided. This then permits of exposure of the prostate and vesicles which are hidden by the fascia of Dénonvillier. The writer has practically always found that when this procedure was followed surgical interference to the vesicles could be carried out. There were additional devices that might be resorted to, however, for bringing the floor of the bladder with the vesicles covered with fascia into view.

2. Signs of Death.—Thomas F. Reilly says there are a few single symptoms pathognomonic of death, but a combination of two or more symptoms will often lead us to make a positive statement as to its approach. It is well never to give an absolutely fatal prognosis in typhoid fever or cholera so long as there is life left in the body. Except in heart block a pulse under 80 in an adult means that death in any event is probably at least more than twelve hours off. This is not true of the aged. In old persons a pulse of 140 means death within a few hours at most. Even in coma a pulse of 100 usually means that death is at least eight or ten hours off. Cases of auricular flutter are very deceptive; those with gallop rhythm, not associated with rheumatic carditis, are always fatal. A very high blood pressure, say 230, which suddenly falls below 100 without signs of hemorrhage usually indicates a fatal issue. Cheynes-Stokes phenomenon, excepting in auricular fibrillation, is always a fatal sign. A marked disproportion in length of inspiration and expiration is suggestive of danger. In any disease the presentiment of a fatal issue by the patient at the onset is a bad omen. Coma is the commonest form of death, about 60 per cent. of patients die in coma. The author considers the significance of eye signs and other signs, such as the facies, hematogenous jaundice following fever, loss of sphincter control, persistent and uncontrollable hiccough, loss of more than half the body weight, convulsions lasting four days, disappearance of peripheral reflexes, and edema of the glottis in patients over 45 years of age. With a lowered blood pressure, accompanied by increased rapidity of the heart followed by marked tympanities and the appearances of profound shock; these signs followed by irregular pulse, delirium, restlessness and hallucinations, and later by stupor and coma invariably presage death. Less often one sees another form of death in acute disease. The patient is cyanotic, there is great dyspnea, the jugulars are full and pulsating, often there is marked pulsation over the right heart. The heart dulness is increased to the right and the lower dulness increases downward. Rarely is such a patient saved.

3. Resuscitation by Means of Preserved Living Erythrocytes in Experimental Illuminating Gas Asphyxia.— W. H. Burmeister reviews the theories with reference to the causes of death in carbon monoxide poisoning and describes his attempts at resuscitation in rabbits and dogs by means of transfusion with erythrocytes preserved from three to seventeen days. He concludes that the erythrocytes of some animals can be preserved intact over extended periods of time. These corpuscles can again assume their physiological function in another animal of the same species, and can successfully prevent death in carbon monoxide, asphyxiation of this second animal, in about 75 per cent. of all cases in which direct infusion is begun while cardiac contractions can still be elicited. The establishment of emergency stations where human erythrocytes could be obtained, just as pulmotor stations were now being maintained, should prove of invaluable service in saving human beings who were the victims of illuminating gas asphyxiation.

4. Food Poisoning by B. Paratyphosus B.—Harry S. Bernstein and Ezra S. Fish describe an epidemic of food poisoning which occurred at Westerly, R. I., characterized by symptoms of acute gastroenteritis, in which it is estimated that sixty persons were made seriously ill and four died. All of those who were ill traced their symptoms to pie eaten at a restaurant. Bacteriological and feeding experiments demonstrated the presence of *B. paratyphosus* B in specimens of the pie. The presence of the organisms in the pie could not be accounted for; the theory advanced that a carrier was responsible could not be proven, as the personnel of the restaurant had not undergone any change in several months and these cases all occurred within a few hours from the time the patients had eaten of one particular batch of pies. This occurrence points to the possibility that even cooked or baked foods may contain living pathogenic organisms and emphasizes the necessity of protecting public food supplies more carefully from "disease carriers."

14. A Direct Route for Drainage of the Pancreatic Area.—Walter D. Wise reports a case of acute pancreatitis, diagnosed as appendicitis, in which the McBurney incision was made. The appendix not being at fault, a high right rectus incision determined the diagnosis. Drainage was provided through the foramen of Winslow also through the McBurney incision. The lower incision was chiefly depended on for the drainage, as it could be seen that this line was very direct, the pancreas being exposed by lifting the great omentum and transverse colon. The writer recommends this procedure for conditions of the pancreas demanding drainage.

The Lancet.

January 1, 1916.

1. A Lecture on the Treatment of Dysentery. Ronald Ross.
2. Penetrative Wounds of the Abdomen. List of the First Fifty Consecutive Cases Operated upon at the 17th Casualty Clearing Station in the Field, Flanders. W. C. B. Meyer, D. C. Taylor, and Anthony Bowlby.
3. The Treatment of "Concussion Blindness." Arthur F. Hertz and Arthur W. Ormund.
4. A Note on Widal's Reaction with Standardized Agglutinable Cultures, together with Remarks on the Importance of Method in Relation to Agglutination Tests. E. W. Ainsley Walker.
5. An Outbreak of Anthrax Conveyed by Infected Shaving Brushes. Reginald R. Elworthy.
6. The Diagnosis of So-called Tuberculous Meningitis. Retention of Urine in the Adult Male, without any Apparent Cause, as a New Pathognomonic Sign. D. W. Keiller Moody.
7. A Fatal Case of "Dope Poisoning." W. E. Lee.
8. An Interrupted Hammock Bed in the Treatment of Compound Fractures of the Hip and Thigh. C. W. G. Bryan.
9. Sanitation in Billets and Camps. (To be concluded.) Adam White.

1. The Treatment of Dysentery.—Ronald Ross writes this article because medical men in England have not had the opportunity of collecting experiences in the treatment of amebic dysentery as have those in warm climates. He relates the history of the treatment of dysentery in the past and the methods used at the present time and calls attention to the fact that the large number of troops come from Britain, Australia, and New Zealand and are therefore men who have never had amebic dysentery before. Many of the cases are at first exceedingly grave, as grave in fact as any that the writer has seen among European troops freshly arrived in India. Many of them die before reaching the base hospital, and those that survive have frequently reached the condition of "running dysentery," which always suggests that a large proportion of the mucosa is already destroyed. On the other hand, it was remarkable that among the Indian troops who are exposed to amebic dysentery from childhood there was not nearly the frequency of severe cases. The method of treatment that they are using is the administration of one grain doses of emetine hydrochloride daily, given either in one subcutaneous injection or in two doses morning and evening. In one hospital the method of three days on and three days off was used and in another five days on and five days off. In India emetine was frequently given daily not only for weeks but even for months. Sulphates of sodium and magnesium also played an invaluable part in the treatment of amebic dysentery. The author also calls attention to a means of diagnosing dysenteric ulcerations with the *x*-ray which was worked out by Lieutenant Glasson in one of the Alexandrian hospitals.

2. Penetrative Wounds of the Abdomen.—W. B. C. Meyer and D. C. Taylor and Anthony Bowlby publish the results obtained by laparotomy for penetrative wounds of the abdomen in the first 50 cases operated upon at the 17th Casualty Clearing Station near Flanders. They have also observed 41 cases which were not operated upon, 17 because they were beyond help and the remaining 24 because it was not necessary. All of the latter recovered. This fact they state demonstrated that selection is justifiable. In 34 out of the 50 cases operated upon the intestines or stomach were wounded. Twenty-one of these patients recovered in spite of multiple perforations in many cases and serious injury to other viscera. Resection appears at first sight to be much more fatal than suture, but it must be remembered that the wounds that necessitated resection were also much more severe and the patients far more ill. The essentials for success in operations upon gunshot wounds of the abdomen were briefly as follows: 1. Rapid transport to hospital. 2. Suitable aseptic and antiseptic conditions for operation. 3. Good nursing and suitable feeding. 4. Opportunity for retaining the patient for at least a week or ten days before evacuation. In a note added by Sir Anthony Bowlby he says that it has been his advice that all wounds without exception be subjected to an exploratory operation, and that a laparotomy should be done if the peritoneum is found to be involved. Operation should also be done in all those wounds of the gluteal and lumbar regions where the symptoms point to a visceral lesion. He does not advise operation in the epigastric or hepatic region, especially in antero-posterior wounds if there are no definite symptoms. The same holds good of the renal and splenic regions.

4. Widal's Reaction with Agglutinable Cultures.—E. W. Ainsley Walker states that since the early summer of 1915 standardized agglutinable cultures of *B. typhosus*, *B. paratyphosus* (A), *and B. paratyphosus* (B), and standard agglutinating serums for these microorganisms have been made widely available by the Medical Research Committee on whose behalf they are issued (with directions for use and diagnostic data). For the individual worker these preparations offer the advantage that they are always ready, there is no making of cultures in advance or preparing emulsions, and they are absolutely sterile and require no expert knowledge in handling. The readings are quite clear and definite and are quickly made. The standardized agglutinable cultures are highly sensitive to agglutination, and they can be kept unchanged for a year or longer. The employment of an accurate quantitative method of carrying out agglutination tests possesses special value in the diagnosis of the presence or absence of active typhoid or paratyphoid infection in typhoid inoculated persons.

British Medical Journal.

January 1, 1916.

1. On the General Treatment of Infected "Gunshot Wounds" from a Clinical Point of View. H. M. W. Gray.
2. Sensitized Shiga and Flexner Vaccines in the Treatment of Chronic Bacillary Dysentery. Leonard Rogers.
3. A Case of Cholo-Hemothorax. T. R. Eliott and Herbert G. M. Henry.
4. An Improved Method of Lifting Patients on to Hospital Ships from Barges and Boats. A. W. Mayo-Robson.
5. On the Use of Solutions of Quinine as a Dressing for Infected Wounds. John Tweedy.
6. Traumatic Implantation of Epidermis in Tract of Gunshot Wound. G. H. Edington.
7. Gunshot Wound of the Superior Longitudinal Sinus. A. W. Nuthall.
8. A Note on Wick Drains. G. H. Colt.
9. Local Treatment of Suppurating Skin Lesions and Infections. George Home.

1. On the General Treatment of Infected "Gunshot Wounds" from a Clinical Point of View.—H. M. W. Gray says that since the war began they have been compelled to acknowledge the inefficiency of antiseptics in badly infected lacerated wounds. He points out the disadvantages of the hypochlorite treatment of infected wounds and states that the saline treatment of septic wounds has stood the test of time. As the claims of the saline treatment have been urged chiefly by laboratory workers the writer, in July, 1915, sent out a list of questions to twenty-two hospitals in the vicinity of Rouen for the purpose of collecting evidence as to the clinical results of this treatment. From the replies it seems that the general opinion is that the hypertonic treatment is so satisfactory that it is unnecessary to add antiseptics and that the treatment may be discontinued when the wound is clean and covered with granulations. The answers brought out clearly that the method of application must vary with the type and situation of the wound, with the condition of the wound, and the length of time since it was inflicted. The baths were most popular and were practically always used in wounds of distal parts of the extremities. Continuous irrigation was mostly used after flapless amputations; simple soaks were used for lacerated shal-

low wounds, especially when they had begun to clean. Tablet and gauze packs were judged to be best for deep and fairly recent wounds, and drainage tubes were recommended for long tracks and recesses. An extraordinary variety of opinion was expressed with reference to the amount of pain occasioned by the saline treatment. It was brought out that warming the dressings, as with a hot water bottle, greatly increases the lymph flow. The majority of the replies brought out the fact that hydrogen peroxide was used, but mainly for its mechanical effect in loosening dressings.

2. Vaccine Treatment of Chronic Bacillary Dysentery.—Leonard Rogers reports 11 cases of bacillary dysentery treated with sensitized vaccines. In none of them was there anything beyond a moderate degree of reaction at the seat of the injection, while there was never any increase of the bowel symptoms or other toxic signs for a single day. The sensitization appeared therefore to have fulfilled the expectation which led the author to employ it. Considering that the majority of the patients were sent from various parts of India, after the failure of prolonged treatment of different kinds, and that the doses used were always small, probably much less than might be used with advantage in patients resisting the treatment, the results might be considered as affording good ground for hoping that, with further experience, this line of treatment would prove to be an important advance in dealing with intractable cases of chronic bacillary dysentery. Sensitized vaccines also appeared worthy of cautious trial in quite small doses, but with shorter intervals, even in the more acute stages of the disease.

6. Traumatic Implantation of Epidermis in Tract of Gunshot Wound.—G. H. Edington reports this case and says that theoretically there is no reason why the carrying in of one or more fragments of living epidermis should not occur in a certain percentage of gunshot wounds. This case presented certain features not usually seen in the cases occurring in civil life. It appears that in civil life such implantation followed by the formation of a "dermoid" is usually the result of a trifling injury. It would also be expected that the thicker the epidermis the greater would be the likelihood of its being carried into the deeper tissues. This condition occurs in the palmer surfaces of the hands and fingers and there is no part of the body more subject to trifling injuries and at the same time more likely to be the seat of "implantation dermoids." It is therefore interesting to note the occurrence of implantation in this case in which the part struck was the back, where the epidermis is much thinner than in the palm, and the injury was by no means trifling or unheeded.

Berliner klinische Wochenschrift.

November 29, 1915.

Functional Tests of the Heart.—Rehfisch states that the present war gives us new cardiac affections. The older literature of soldier's heart is very meager, and the author finds but one monograph on the subject, to wit, Da Costa's "Irritable Heart" (1871) which deals with the troops in the American Civil War. The author now has notes of 800 cases of heart troubles in soldiers, and would emphasize that we have not a single test to discriminate between an efficient and inefficient heart. Three separate components are present, the myocardium, vascular system, and innervation. The author first gives the auscultatory criteria of a sound heart. The "ten genuflexions" test sends extra venous blood into the right heart and if the latter is healthy it readily adapts itself to this excess and propels it at once through the pulmonary circulation to the left heart, and so on. The second aortic sound should still be louder than the second pulmonal. But if the left ventricle is inefficient, it gives somewhat, the blood pressure is lowered and the accentuation of the second aortic sound is less marked. In hundreds of cases—70% of all tested—Katzenstein's method of compressing both femoral arteries has brought out an insufficience of the left ventricle, as shown by a fall of blood pressure and a weakening of the second aortic sound. The insufficience of the right heart is determined according to the same principles, but is a more serious condition and means actual disease of the myocardium. The author as a result of repeated autopsies on soldiers has learned that in over 43% of subjects betwen 20 and 30 arteriosclerosis was present, with especial reference to the aorta and left coronary. This condition is clearly acquired as a result of military hardships.

A Year's Treatment of Pneumonia with Ethylhydrocuprein. — Silbergleit has treated forty-nine cases of pneumonia with this alleged chemotherapeutic remedy and lost five of them (10.2%). Before this period he had treated forty-five consecutive cases without this medicament and had lost four or ten per cent. In the latter series all of the decedents had been interned on the first day of the disease, which was not the case with the ethylhydrocuprein series, only one of the five decedents having been interned the first day, the others all arriving late or about the time the crisis was due. These figures show a slight advantage in favor of the new remedy. In regard to the date of defervescence there was likewise an advantage, but it is safe to say that this quinine derivative has no specific power over pneumonia which is at all comparable with that of quinine over malaria. The number of complications in the series of forty-nine was but one (empyema), with one relapse. There was also an impression in the mind of the medical attendant that the patient was not so very ill. The influence of the new remedy may be compared with that exerted by a good antipyretic, which keeps down the fever and its attendant ills without injury to the patient. The drug is no cardiac roborant, despite the finds of others. It has a bad taste and sometimes causes nausea and tinnitus severe enough to demand the suspension of the treatment. There was a single case of amaurosis. The author believes the remedy a desirable one if it can be begun on the first day of the disease.

Münchener medizinische Wochenschrift.

November 30, 1915.

Gas Gangrene and the Rauschbrand of Sheep.—Steinbrück, a veterinary, sees a close connection if not a possible identity between a certain affection which attacks sheep, goats, and swine and the gas gangrene of wounded soldiers. The term Rausch as here employed indicates the peculiar crackling or crepitus obtained on passing the fingers over the affected area, and which has always been regarded as present in all spreading gangrene as a result of the formation of gases of putrefaction. The Rausch brand occurs in particular geographical areas and is not contagious. After a very brief incubation period swelling appears about the throat, jaws, and shoulders or perhaps on the limbs. These lesions appear, at least in many cases, to represent metastases from a primary focus. Fever does not develop. The animals refuse food and perish as a rule in from 12 to 40 hours. The swellings, at first warm and painful, soon become cold and insensitive. Autopsy shows that the muscles are permeated with a gas which gives off the odor of butyric acid. The affected parts are also saturated with hemorrhagic serum, and the latter is

present in the large serous cavities. From lesions visible in the liver, it seems probable that small, dry foci, of ocher color and honey-comb texture, as large as a pea or bean, are characteristic of the malady. The cause of the latter is known—an anaerobe bacillus of definite characteristics. It enters the skin or mucous membrane, preferably if a pocket-like defect is present, and as a rule in the gums during the change of dentition. It is unfortunate that war conditions make it impossible to investigate satisfactorily the relationship between the animal and human diseases.

Insipid Diabetes and the Hypophysis.—Hoppe-Seyler states that much remains to be cleared up concerning our knowledge of diabetes insipidus. It has been seriously regarded as a hydromania—an insane desire to drink water with resulting polyuria; but this affection should be termed a polydipsia such as may accompany various psychoses. Genuine diabetes insipidus is first of all a polyuria, which calls for water to replace the loss; if this is not forthcoming the body fluids tend to dry up and a uremic condition is the result. In this form of diabetes symptoms point to an intracranial mischief, originating about the region of the fourth ventricle. Various mechanical results as wounds, tumors, etc., in this vicinity can bring about insipid diabetes. In regard to the hypophysis the disease in question appears to be a deficiency symptom, and injections of hypophysis extract have power over the polyuria. The author recently had under his charge a typical case of insipid diabetes. There were no symptoms wich pointed to intracranial mischief. Under hypophysis extract a notable improvement appeared in the urine without the ill consequences. On stopping the extract the urine again became copious and of very low density and the intensity of the polyuria caused rapid loss of weight. The return to the extract again caused a reversal of symptoms. Given by the mouth no improvement resulted. The extract is able to hold the disease in check, but no cure follows. An *x*-ray showed a normal sella turcica, and the cause of the polyuria could only be reached if at all by exclusion. Several suspicious factors were present, such as increased tension of the cerebrospinal fluid.

Deutsche medizinische Wochenschrift.

December 9, 1915.

Military Surgical Experiences to Date.—Matti concludes an article on this subject, having outlined an account of the leading methods tested in both Germany and Allied armies. He is committed to some form of antisepsis. As a dependable application under various circumstances he recommends iodine tincture 10 per cent. in alcohol. A leading indication is superficial wounds. Here the iodine combines with the tissue albumins and incidentally, through its oxidizing power destroys the anærobes. In large, deep wounds there is present the danger of iodine intoxication. Nevertheless it is a known preventive of tetanus infection, and from its power over anaerobes in general is indicated with precautions. Peroxide of hydrogen has lost none of its good repute as a war antiseptic, and is especially indicated for irrigation of irregular wounds. In putrid wounds, phlegmons, infected joints, etc., carbolic acid solutions—from ½ per cent. up—are recommended, while another old standby, Balsam of Peru, is still in favor. Iodoform and camphor are regarded more as cell proliferants than antiseptics and are added to iodine at times. In discharging wounds where wet dressings are in order, boric acid and salicylic acid solutions give good results. But chemical antisepsis cannot be carried out until mechanical and physical antisepsis have first been employed.

Treatment of Meningitis with Silver Preparations.—Wolff calls renewed attention to the close resemblance to the meningococcus and gonococcus, the latter being sensitive toward silver salts. The gonococcus, even in rare instances, can cause spinal meningitis. *In vitro* the meningococcus is equally vulnerable to silver, and recently weak protargol solutions have been injected into the spinal cord in cases of meningitis, and the author, using a most elaborate technique, has sought to perfect this method of treatment. Much pains were taken to prevent pain and irritation and other drawbacks. The therapeutic injection was preceded by lumbal analgesia, which was designed to prevent irritation by the silver and was not always successful. In any case the irritative effects of the silver were not prohibitive, and the salt appeared to diffuse rapidly through the cerebrospinal fluid. The patients, who of course were suffering from meningitis, found the injections burdensome, but this counted for little in so deadly a disease. There were two possibilities, viz.: death of the meningococci and arrest of its proliferation. The author treated in all five cases of a disease of which the normal mortality is from thirty to 70 per cent., and in all cases ended in recovery. Four cases were of medium severity and one of extreme gravity. Apparently no serum was given. The author's theory was as follows: epidemic cerebrospinal meningitis is above all a local infection. In this respect it is radically different from certain hematogenous forms (tuberculous, pneumococcic). The germ reaches the cerebrospinal fluid by means of the lymphatic connections between the nasopharynx and the meningeal sac. Only in very rare exceptions do we find cocci in the blood (meningococcus sepsis) with secondary implication of the meninges. The use of protargol in this connection is based solely upon the analogy of the gonococcus with the meningococcus, so that it is not impossible that a better bactericide may be discovered in time.

Rickets a Deficiency Disease.—H. L. Watson-Wemyss says the following facts speak in favor of the theory that rachitis is due to a lack of vitamines in the child's diet: (1) Rickets is less frequent and milder in breast-fed children; healthy breast milk always contains vitamines. (2) Breast feeding has a favorable effect on rickety children. (3) The nourishment of nursing women is often totally inadequate, and this may lead to deficiency of vitamines in their milk. (4) During the winter months the food supply of cows is often inferior, this leading to an inferior quality of milk. (5) The harmful effect produced on the vitamines of milk by prolonged boiling. (6) The harmful results of feeding children with starchy foods, which are poor in vitamines. (7) The beneficial effect of cod-liver oil, which contains vitamines, and also apparently a substance which aids the metabolism of lime salts in rickety children.—*Edinburgh Medical Journal.*

Horny Growth on Arm.—W. Knowsley Sibley reports the case of a healthy married woman, aged 60, who presented on the anterior surface of the left arm just above the bend of the elbow a horny growth, which measured 1½ inches in length and was slightly curved, pointed and shaped like a bird's beak. It was hard and horny in consistence, and dark brown to black in color, but had a fleshy base, and was stated to have commenced some six months ago as a moist wart to which the patient had applied caustic. It was growing entirely upon the soft tissue and was not situate over a bony surface, as is usually the case with such growths.—*Proceedings of the Royal Society of Medicine.*

Book Reviews.

OXFORD WAR SERIES. NERVE INJURIES AND SHOCK. By WILFRED HARRIS, M.D. (Cantab.), F.R.C.P. (London), Physician to St. Mary's Hospital, London, and to the Hospital for Epilepsy and Paralysis, Maida Vale, Capt. R.A.M.C. (I.), 3d London General Hospital.

SURGERY OF THE HEAD. By L. BATHE RAWLING, M.B., B.C. (Cantab.), F.R.C.S. (Eng.), Surgeon and Senior Demonstrator of Operative Surgery, St. Bartholomew's Hospital; Major R.A.M.C. (T.F.).

ABDOMINAL INJURIES. By RUTHERFORD MORISON, Professor of Surgery, Durham University; Senior Surgeon Northumberland War Hospital; and W. G. RICHARDSON, M.B., F.R.C.S., Lt.-Col. R.A.M.C., 1st Northern General Hospital and Surgeon Royal Victoria Infirmary, Newcastle-on-Tyne.

GUNSHOT INJURIES OF BONES. By ERNEST W. HEY GROVES, M.D., M.S. (London), F.R.C.S. (Eng.); Surgeon to the Bristol General Hospital, Consulting Surgeon to the Cossham Hospital; Capt. R.A.M.C (I.).

INJURIES OF JOINTS. By ROBERT JONES, Ch.M., F.R.C.S. (E. and I.); Director of Military Orthopedic Hospital, Liverpool; Consulting Surgeon to Queen Mary's Convalescent Auxiliary Hospital (T.F.), Major R.A.M.C.

WOUNDS OF THE THORAX IN WAR. By J. KEOGH MURPHY, M.C. (Cantab.), F.R.C.S.; Surgeon to the Miller General Hospital for Southeast London; Surgeon to Paddington Green Children's Hospital Staff Surgeon, R.U.V.R. Late of H.M. Hospital Ship *Soudan* No. 1.

MEDICAL HINTS FOR THE USE OF MEDICAL OFFICERS TEMPORARILY EMPLOYED WITH TROOPS. By J. EDWARD SQUIRE, M.D. (Lond.), F.R.C.P., D.P.H. (Camb.); Companion of the Order of the Bath; Knight of Grace of the Order of St. John of Jerusalem; Lt.-Col. (Hon. Col.) late R.A.M.C. (V.); Consulting Physician Mount Vernon Hospital for Diseases of the Chest, etc.

SANITATION IN WAR. By Major P. S. LELEAN, F.R.C.S., D.P.H., R.A.M.C., Asst. Professor of Hygiene Royal Army Medical College, with an introduction by Surgeon General Sir ALFRED KEOGH, K.C.B., M.D., F.R.C.P. With 39 illustrations.

INJURIES OF THE EYES, NOSE, THROAT, AND EARS. By ANDREW MAITLAND RAMSAY, M.D., F.R.F.P.S. (Glasgow); Ophthalmic Surgeon, Royal Infirmary (Glasgow, Major R.A.M.C. (T.P.); J. DUNDAS GRANT, M.D., F.R.C.S. (Eng.); Late Major R.A.M.C. (Post-office Volunteers), King George Hospital, London; Lord Kuntsford's Special Hospital for Officers; H. LAWSON WHALE, M.D. (Camb.), F.R.C.S. (Eng.); Capt. R.A.M.C. (T.P.), formerly No. 13 General Hospital, British Expeditionary Force Overseas; The County of London War Hospital, Epson; and CHARLES ERNEST WEST, F.R.C.S. (Eng.); Aural Surgeon to and Lecturer in Aural Surgery at St. Bartholomew's Hospital; Capt. R.A.M.C. (T.P.). Price of each volume in the series, $1.00. London: Henry Frowde, Oxford University Press; Hodder and Stoughton; New York: The Oxford University Press, American Branch, 1915.

THESE remarkably handy little volumes, known as Oxford War Primers, are of course, an outcome of the war. The present war has not only closely engaged the attention of surgeons from the fact that an immense number of men have been and are being seriously injured but also because many new problems in surgery have been presented.

The books in the series under notice have been compiled by specialists who in the numerous campaigns now being undertaken, are rendered capable of speaking with the authority of recent experience.

Not all the volumes, however, deal with the surgical aspects of war; one is devoted to the situation from a medical angle, and one is given up to a consideration of perhaps the most important problem of any, that of sanitation in war. It would be invidious where all are excellent to select one or some for especial commendation. The volume on sanitation in war will possibly prove of the greatest interest to the general practitioner. It is pointed out that antityphoid inoculation has conclusively proven its value and the British Government is somewhat sharply criticised for not making that precautionary measure compulsory in the army and navy. The rôle of insects in war, and especially of flies, is discussed in an interesting manner. The medical hints are extremely good and cannot but prove most useful to the hundreds of British practitioners who have left the quiet paths of private practice for the more eventful career of military surgery.

Very valuable advice is given by Morison and Richardson with regard to the treatment of abdominal injuries. An outstanding feature of the casualties in the present war is the very large number of cases of nervous exhaustion and functional paralyses of various kinds, which are being met with as the result of shell explosions, etc. This subject is adequately dealt with. The series will undoubtedly be largely read by English speaking practitioners with much benefit to themselves. They should prove useful to officers of the Medical Reserve Corps in this country.

THE TREATMENT OF GONORRHEA AND ITS COMPLICATIONS IN MEN AND WOMEN. For the General Practitioner. By WILLIAM J. ROBINSON, M.D., Chief of the Department of Genito-Urinary Diseases and Dermatology, Bronx Hospital and Dispensary; Editor, *The American Journal of Urology, Venereal and Sexual Diseases;* Editor of *The Critic and Guide;* Author of Treatment of Sexual Impotence and Other Sexual Disorders in Men and Women; Sexual Problems of To-day; Never Told Tales; Practical Eugenics, etc. President of the American Society of Medical Sociology; Ex-president of the Berlin Anglo-American Medical Society; Fellow of the New York Academy of Medicine; Member of American Medical Editors' Association; American Medical Association; New York State Medical Society; Internationale Gesellschaft für Sexualforschung; American Urological Association, etc. Price, $2.50. New York: Critic and Guide Company, 1915.

THIS volume is written by a genitourinary specialist with the two-fold purpose of providing a serviceable work for the general practitioner and of stating his own methods and ideas on the subject of gonorrhea and its complications. The book differs from most other works of the kind in that it does not represent, except incidentally, the views of other writers. The author has produced a book which is unusually readable and which will form a serviceable addition to the works on genitourinary diseases in the library of any practitioner. We do not like the word "urethrites" as used by the author (on pages 18 and 19) for various forms of urethritis; urethritides is the correct form. Two chapters are of more than ordinary interest and value. One of these is the chapter on "Prevention of gonorrhea," which contains information not to be found in most of the text books. "Vulvovaginitis in little girls" is also discussed in a separate chapter, and treats of a quite common affection in an admirable manner; this, too, is a topic either entirely ignored or most inadequately handled by most of our writers. The last forty pages of the book are taken up with a brief discussion of the various remedies, antiseptics, anesthetics, lubricants, etc., used in genitourinary work; these chapters form a fitting conclusion to a work of real merit. We note an omission on the title page; the author neglected to inform his readers that he was a member of the Medical Society of the County of New York. This was probably covered by the "etc.," but in the interests of completeness it should have been stated.

THE INTERVERTEBRAL FORAMINA IN MAN. The Morphology of the Intervertebral Foramina in Man, Including a description of their Contents and Adjacent Parts with Special Reference to the Nervous Structures. (Supplement to "The Intervertebral Foramen"), by HAROLD SWANBERG, Member American Association for the Advancement of Science. With an Introductory note by Prof. HARRIS E. SANTEE. From the Anatomical Laboratory, Chicago College of Medicine and Surgery. Illustrated by eleven original full-page plates. Price, $1.75. Chicago: Chicago Scientific Publishing Co., 1915.

THE author's valuable anatomical studies on the intervertebral foramina of the lower animals is supplemented in this volume which describes the intervertebral foramina in the human being. There is presented a detailed description of these structures and of their contents and immediately adjacent parts. This monograph, the original of which appeared in an article by the author in the MEDICAL RECORD, is an important contribution to the science of anatomy. It is of particular interest to those who have studied the therapeutic possibilities of spinal manipulation.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting Held December 16, 1915.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THIS meeting was held under the auspices of the Section on Otology.

Orientation and Equilibrium; A Study on the Sense of Position and Movement; Dependence on the Vestibular Apparatus and Importance in the Whole Field of Medicine.—Dr. Albert B. Duel presented this communication. After referring to the vast amount of literature that had accumulated with reference to our knowledge of position in space and adjustment to it, he spoke briefly of the work of Flourens, in 1828, who first demonstrated that the semicircular canals were definitely connected with the movements of the head; of Schrader's experiments on frogs, and of Professor Lee's experiments on sharks, which hardly left any doubt as to the participation of the semicircular canals and the labyrinth in the equilibration process. These and other physiologists had given added proof that the vestibular apparatus was a special sense organ, solely concerned with orientation and equilibration, and that its physiological connection with the auditory apparatus was practically nothing compared with its intimate connection with other special senses, such as sight, the kinesthetic sense (muscle-joint), and the sense of touch. Hence the main object of this paper was to bring out this fact which was not generally appreciated, namely, that the eighth nerve, the auditory, should be described in anatomy and physiology as the nerve of hearing only, with its end organ, the cochlea, the so-called vestibular branch should be given a place by itself, and should be described as the nerve of orientation only, with its end organ, the vestibule, and the semicircular canals. So far as the anatomical evidence in the matter was concerned it might be observed that the distribution of the vestibular and auditory fibers was to entirely different centers. One had but to contemplate for a few moments the various precise poises of the body in space, together with the adjustments of the limbs and other parts to the accurate localization required in daily existence, to be deeply impressed with the nicety of the mechanism which controlled them. The development of these adjustments to meet the demands of increasing activities was very rapid. A normal child of seven or eight years had unconsciously acquired a sense of orientation, by an adjustment of muscles and joints, which in magnitude far exceeded that acquired in later years by practice and training for the most difficult pursuits. This particular function of orientation was more important than any other in the struggle for existence. Its evolution might be traced from the stiffened tentacle of the jelly-fish, through the calcareous particles of the higher forms to the more elaborate vestibular apparatus of the vertebrates in which it became most important in all the acts of the individual. As the higher order of beings was reached the sense of position was safeguarded and augmented by intimate association with other sensations, sight, the kinesthetic sense, hearing, touch, smell, etc. In the perfectly normal individual the conception of position was the result of the harmonious assembling of all these afferent impulses. Loss or imperfect action of any of them produced a disharmony which if not corrected resulted in a misconception varying to the degree of the upset. There might be simply a slight uneasiness or uncertainty at the mere thought of some daring act of equilibrium, or some previous experience, like looking from a dizzy height, a rough sea voyage, a ride on a merry-go-round, or other psychic illusory idea. Again, there might be a varying degree of vertigo resulting from the actual experiences, the thought of which might cause the psychic vertigo, and on to the more violent manifestations of vertigo accompanied by nausea, vomiting, loss of equilbrium, and ataxia. Through all this one should not lose sight of the fact that the vestibular apparatus was the most essential factor in the sense of orientation, the only source of such afferent impulses as had to do with that sense alone. The phylla deprived of its stiffened tentacle, the higher forms deprived of their otoliths, completely lost their sense of position and could not maintain existence. In the human, in whom the struggle for existence was the fiercest, it was quite natural that the compensatory factors for the loss of this sense of position furnished by the vestibular apparatus should be more complex. A man deprived of one vestibular apparatus was temporarily greatly upset in his sense of position; as a result he had violent vertigo, which his other senses made frantic efforts to correct. The violent effort to correct a change of position which was not actual, resulted in loss of equilibrium. These efforts to compensate for the loss of a vestibular apparatus succeeded with varying rapidity. The more violent manifestations subsided in a few days, and in a few weeks the ordinary acts were performed with apparent ease. However, in such a case the orientation could not be said to have become perfect again, but the individual had simply adjusted himself to the loss. Perfect orientation required angulation; impressions must come from the two different vestibular apparatuses at the same time, and the individual had learned the trick of moving his head or eye to get a point of view from two slightly different angles at practically the same instant. The deaf mute born without vestibular apparatus, did many acts of equilibration with perfect ease and might miss many of the upsets of life which those with perfect orientation might have. He might never experience the throes of mal de mer. The loss of both static labyrinths was a great catastrophe. While the first symptoms might not be violent, the task of learning to orient without the aid of organs specially designed for it was much like a blind person learning to read from the sense of touch, of the deaf one interpreting the movements of the lips from the sense of sight, and often the results were quite imperfect.

To appreciate this one had only to try any of the more difficult acts of equilibration on such a patient. For instance, he might be asked to try to stand on one leg, with the eyes closed, to walk forward or backward with the eyes closed, or an act of walking or turning in the dark. The normal individual might have the illusion when sitting in a train at a station that the train was moving, when, in reality, it was a train by his side that was coming in or going out of the station. This optical illusion was quickly corrected by the normal individual by looking at some upright portion of his own car which was not moving, or by closing his eyes, when the optical illusion was corrected by the static labyrinth. If a congenital deafmute were to have this illusion it would have to be corrected by the sense of sight. If he closed his eyes the illusion would remain, particularly if there were no vibration which would upset his tactile sense. The essayist stated that in having introduced this subject in a somewhat desultory manner he hoped he had succeeded in showing how orientation might be upset by misinformation from many sources; how impulses from the static labyrinth were so powerful to correct the misinformation, and, on the other hand, how misinformation from the static labyrinth itself was corrected with comparatively great difficulty by other afferent impulses. He would leave it to those who followed to point out the methods of fixing the cause of disequilibrium on peripheral or central organs; on functional or organic disturbance; on lesions of the different afferent sources of information; the cerebellum, or the cerebrum, which after all must be the source of our consciousness or position as well as that from which we voluntarily changed it.

Dr. F. H. PIKE confessed to a certain hesitancy in speaking of anything so apparently well known as the otic labyrinth to such an audience. The subject was so well known that the man in the street immediately associated the otic labyrinth and the cerebellum with the maintenance of equilibrium. So firmly was the belief that the cerebellum was the great central mechanism for the maintenance of equilibrium fixed in the mind that there was a strong tendency in some quarters to assert that the disturbance following lesions of the labyrinth and lesions of the cerebellum were essentially similar. If one was to distinguish between these lesions it was more important to point out certain constant differences in the effects rather than to dwell so strongly upon the resemblances. The difficulty of limiting the effects of a pathological lesion to the area primarily involved was rather great. One might have first the effects of pressure resulting from intracranial growth and also the increased secretion of cerebrospinal fluid which usually accompanied an intracranial tumor. In the case of intracranial or mastoid abscesses there was the spread of toxins and other effects upon remote parts of the nervous system, and there was the difficulty of getting human material for post-mortem examination at the time when such examination was most desirable for the pathologist. It seemed to the speaker that their clinical observations should be supplemented by experimental work, since by the experimental method one

could avoid the effects of intracranial pressure and bacterial toxins upon other parts of the nervous system, and one could control both the primary and the associated experimental lesions within certain limits. Dr. Pike showed lantern slides illustrating the effects of a lesion of the labyrinth and of the cerebellum upon a considerable number of animals. These figures, for the most part, had been published in the Philosophical Transactions of the Royal Society of London, 1912, Series B, Vol. 203, pp. 127, and in the Supplement to the Transactions of the American Otological Society, 1914, Vol. XIII, part II, by Prof. J. Gordon Wilson, and himself. In all the animals so far studied the effects of experimental lesions of the labyrinth resulted in torsion of the head to the injured side. Immediately after the operation the animal might turn and roll over to the injured side. When both labyrinths were removed at once, the animal might refuse to stand unassisted, but would lie with the limbs and head as close to the floor as it could get them. The animal learned to stand after a few days, and to walk about without falling. But even for months afterwards it would be unable to jump even from a moderate height without falling in a heap. This observation was originally due to Schiff and they had repeated it many times. There were always certain deficiencies of this kind which might be discovered by careful examination of animals from which the otic labyrinth had been removed. Looking at the nervous system from the point of view of its evolution, it was seen that in the lower forms of vertebrates the cerebral hemispheres formed a very inconsiderable portion of the whole nervous system. But as successively higher animals were taken it was found that the anterior end of the nervous axis, that was the cerebrum, showed a greater and greater degree of development. Experimental findings agreed very closely with the anatomical development, and all the facts so far gathered pointed to the increased importance of the cerebrum in the daily life of the animal. On the basis of the anatomical development and of a considerable number of experimental facts, it was his belief that one must look more and more to the cerebrum as the great central mechanism for orientation in space rather than to the cerebellum.

Dr. Arnold Knapp spoke of the rôle of the eyes in equilibrium and orientation. Among the nervous impulses which acted in preserving equilibrium, those obtained from the eyes were mentioned as important and, according to Gowers, the knowledge of the relation of external objects to the body gained from the contraction of the muscles of the eyeball was one of the most important sources of guidance to the centers that regulated the muscular contractions for maintaining bodily equilibrium. There was a close association between the eyes and the labyrinth but not directly connected with equilibration; it had a different purpose, as shown in the following: The posterior longitudinal muscle which connected the various nuclei of the ocular muscles was in close relationship with the vestibular nerve. This nerve, thereby, was closely associated with the ocular muscles, just as it was with all the muscles of the body. It served the purpose of maintaining the muscles in a state of tonic contraction. If this nerve was divided on one side, it would result in a complete loss of tone of the muscles of the body of the opposite side and in nystagmus. The vestibular apparatus was also in close relationship with the cerebellum, by means of Deiter's nucleus, so that the cerebellum was a further factor in the regulation of their ocular movements. Bing called it a reflex apparatus serving for the preservation of equilibrium, not only for the muscles of the body, but for the eyes. It received centripetal impulses from the static labyrinth and from the ocular muscles by means of Deiter's nucleus, which assisted in its regulating activity. On the other hand, it sent forth centrifugal impulses through this same nucleus which preserved the position of equilibrium and control of the ocular movements. In certain animals the position of the eyes and their movements were governed nearly exclusively by the ear. The eyes in these animals, if the head was not moved, were practically motionless. As the head moved, the eyes made a compensatory movement in the opposite direction, which originated in the labyrinth. There was a constant action of the labyrinth on the ocular muscles. It held the ocular muscles in check, gave them a definite tone, so that a lesion of one labyrinth caused a preponderance of the action of the opposite side. In man this association between the eyes and the labyrinth also worked for producing compensatory movements, though these were not as important as in the lower animals. The purposes of these compensatory movements, according to Sherrington, were presumably for maintaining the normal relation of the eyes to the horizontal. These movements, Wilson and Pike had shown, were a direct reflex response, independent of the cerebellum, to insure that the retinal images should not be disturbed by each motion of the head. It was well known that if both labyrinths were destroyed, these compensatory movements were abolished. The chief symptom, so far as the eyes were concerned, which resulted from a lesion of the labyrinth, was nystagmus; this, however, was a symptom which did not disturb their sense of equilibrium. In other words, those suffering from nystagmus did not complain of vertigo unless there were other agencies which affected the center of equilibrium. Ocular vertigo was a very unusual symptom and was difficult to explain. Vertigo occurred, unquestionably, in ocular paralysis, owing to the confusion resulting from false projection; this, however, was a symptom which was surprisingly frequently absent. Muscular anomalies, such as insufficiencies of the ocular muscles, were practically never accountable for vertigo. The term dizziness, as used by patients, embraced many conditions and symptoms which had but little to do with vertigo; it was often impossible to analyze these symptoms or to explain their relation to an ocular defect, particularly when other factors which cause vertigo could not be excluded.

Dr. J. Ramsey Hunt discussed the importance of the vestibular mechanism in neurology and said that the otic labyrinth was of great importance neurologically as it was the terminal end organ of an extensive sensory mechanism which had connections with many portions of the central nervous system. This mechanism was frequently involved in affections of the nervous system, organic, functional and psychic, and when the seat of pathological disturbances produced symptoms which were essentially neurological in character a knowledge of the functions and relations of the vestibular nerve was essential to a proper understanding of vertigo, equilibrium and orientation, nystagmus, and cerebellar localization. The otic labyrinth might be regarded as a highly specialized end organ of the vestibular division of the eighth cranial nerve. Dr. Hunt roughly represented the course and termination of this nerve which was, so to speak, the anatomical basis of vertigo. It was bilateral mechanism and for its proper function a strictly harmonious action was required from each side simultaneously. If by reason of irritation or paralysis of the end organ on one side only, an asymmetrical stimulation resulted with the production of true labyrinthine vertigo. The nystagmus of vestibular origin was rhythmical in character and consisted of two components, a slow movement followed by a rapid return movement. The direction of the nystagmus always referred to the direction of the rapid movement. It was always more manifest when the eyes were turned in the direction of the rapid nystagmus; it was diminished or suppressed in the direction of the slower component. Vertigo might result from labyrinthine disturbances, disease or injury of the vestibular nerve in the internal auditory canal and at the base of the brain, and affections of the central nervous system, more especially of the brain stem and cerebellum. Organic brain disease was one of the most important and most frequent causes of vertigo. In regard to the treatment of labyrinthine vertigo, Dr. Hunt said he wished to emphasize the good results which had occasionally been obtained by lumbar puncture.

Dr. Lewis F. Frissell said that the rôle of the general practitioner in discussing the subject of vertigo, especially after listening to the brilliant expositions from the special points of view of aurist, physiologist, ophthalmologist, and neurologist, was a trifle difficult. Why was he here at all? The answer seemed to be that as ancient Rome gave her successful general a triumph with captives at his chariot wheels, so our first consul had consented to accentuate the papers of the evening by insisting on the violent contrast of an internist discussing the specialist's pet field. The general man was, however, deeply concerned in that to his inexperienced hand came the patient seeking relief from real symptoms, and here came both his perplexity and his duty—to which branch of the dazzling array of specialists should the patient be referred? Was it a case of labyrinthine vertigo and was the aurist to be called upon, or was muscular weakness of the eye the predominant factor? Was it a cerebellar tumor or a disease of the central nervous system which demanded the special

attention of the neurologist? Or, more difficult still, was it one of those threshold cases on the borderland of epilepsy simulating labyrinthine disease, so admirably described by Gowers? Fortunately, the dissensions of the internal groups somewhat helped the perplexed practitioner. Ménière's original description of auditory vertigo was of a symptom complex, of sudden vertigo asociated with nausea, vomiting, and deafness on the affected side; in other words, a disease showing the same symptoms as our experimental animals in which the semicircular canals of one side had been extirpated, the reasons for which had been so admirably described by his predecessors. But gradually it was found that all cases did not have either the classical symptoms of Ménière's disease, or the classical cause—destruction of the labyrinth, but varied in intensity from slight tinnitus with vertigo to the severe type originally described. So arose the classification into Ménière's disease and pseudo-Ménière's, the former having as its pathological base the destruction of the labyrinth, while the latter was attributed to slighter forms of disease such as otitis media, changes in pressure of the endolymph, cerumen in the external meatus, disturbances in the vestibular nerve in its course to the central nuclei, or even more remotely to tabetic changes and the functional explosive irritation of the higher centers in the epileptic aura and attack. But if vertigo might be attributed to so many diverse sources in which the ear was affected directly or indirectly, what of those cases in which muscular incoordination in the eye produced diplopia and a false and uncorrected concept in the brain, the vertigo of multiple sclerosis—that psychic type caused by looking down from a height in one unaccustomed to mountaineering; the common incoordination of acute alcoholism, and that distressing form met with in "mal de mer?" Must the general practitioner be relegated to the undignified position of "Mother Sill" and be altogether eliminated from the diagnosis and treatment of this common malady? In its ultimate analysis, the causes of these symptoms constituted in many, if not in most cases, a distinctly medical affliction, as syphilis, arteriosclerosis, aortic insufficiency, the various types of anemias, diseases of the gastrointestinal tract, which were directly responsible not only for the appearance of the symptoms, but in many cases for the pathological base of the symptom complex, the latter forming only a localizing symptom of a constitional disease. One must conceive it to be the duty, then, of the general practitioner in the presence of vertigo, by careful examination of his patient, including particularly blood, urine, blood pressure, and serological examinations, first to determine the presence or absence of underlying constitutional disease; and secondly, by careful examination of the eye, ear, and nervous system to determine in which special field the immediate defect causing vertigo lay. If, as was probably the case, he was himself unable to apply the more complicated rotation and caloric tests in the ear or make a thorough examination for muscular strain or defective vision in the eye, he should refer such a case to the better trained specialist for a more thorough examination. But with his broader field of vision, he should be able to coordinate the examinations of his technically more skilled confrères and would often be enabled to arrive at a more correct diagnosis in a difficult case. In treatment, too, where a cure might not be obtained by a correction of muscle palsy, a regulation of pressure in the labyrinth or by operative precedure, his handling of the hypertensive and anemic conditions might greatly improve, or in syphilis brilliantly cure, the underlying conditions. Therefore, the internist's plea was that even in this field he might be allowed some slight recognition from his more skilled brethren and might be able to retain his place in the care of so obscure and puzzling a condition.

Dr. A. Jacobi wished to make a contribution from his own experience, for digestion by the specialists. He himself was subject to one particular kind of vertigo which he always experienced whenever he was on the second story of a building looking out of a window for just a few seconds. There was very little vertigo in his head, but a great deal in his feet and legs; they began to tingle, and the feeling crept up over the knees. A little cerebral vertigo was connected with the sensation. He would be very glad to have this explained, and explained soon, for he was believed to be an old man and would like to be able to understand it soon. All his life he had been perfectly healthy, so far as he knew; he had had no brain disease, no tuberculosis, no syphilis, but just fifty years ago he had typhus. It might be that he had something in his brain that gave him this peculiar vertigo or unsteadiness when he looked out of a window. He would like to know what it meant, for nothing of the kind had been mentioned this evening, and it might be that in this only respect he was quite unique. He was sure he had it when he was thirty-five years of age. He did not remember having experienced it before his typhus, but he had had it ever since.

Dr. Joseph Byrne said that distinction should be made between equilibrium and orientation. Equilibrium was a means of orientation, but must not be considered as the equivalent of orientation. Orientation in general might be said to be the *perception* of one's relations to the environment. An old definition of truth was that it was conformity between thought and thing. Orientation might be defined as conformity between the immediate testimony of our senses anent our relations in space and our conception of what those relations were or ought to be. They had, then, in orientation two fundamental elements, viz., (1) the immediate testimony of our senses, and (2) our conception, based on education and experience, of what our relations in space under any given set of circumstances ought to be. It was evident that the second elemnt was mainly psychological and formed the background for the interpretation and evaluation of the first element, *i.e.* of present incoming sensory impulses from all sources. In so far as element number one was in accord with element number two in so far were we oriented. Conflict to a certain degree between these elements caused disorientation, *i.e.* uncertainty of one's relations with consequent sense of insecurity, fear, etc. The labyrinth was no more the organ of orientation than many other sensory mechanisms, *e.g.* kinesthetic, visuoocular, tactual, etc., which informed us immediately of the actual relations of our bodies in space. But information from these sources had to be interpreted and evalued against the background of experience before they entered into the mechanism of orientation. Absence of element number two did not cause disorientation, but simply absence of orientation, or ignorance of one's relations in space, that was like a child before it had learned through the different senses its relations in space. The importance of element number two would be apparent from the consideration of a few examples. When a person with eyes closed, seated upright in a swing, feet off the ground was rotated about the long axis of the trunk in the direction of the hands of a watch, there was a primary horizontal nystagmus in the direction in which the subject was actually moving. If the swing be allowed to slow down gradually there would come a time when the nystagmus became reversed (secondary nystagmus) *i.e.* horizontal against the hands of the watch. At this moment, if the eyes be kept closed and the feet off the ground, the subject would believe his body had reversed its direction and was now turning against the watch, *i.e.* in the opposite direction to that in which it might be actually turning. If the feet were put on the ground the eyes still being closed, the subject at once was disillusioned. The conditions of this experiment were so unusual that there was little or no background against which to interpret the incoming sensory impressions. The only experience the normal individual had of impressions from violent horizontal nystagmus was that associated with active turning of his body about the long axis. In the experiment, this *plus* the impressions from the nystagmus constituted element number two and the testimony of all the remaining senses under the circumstances offered no conflict, hence there was no disorientation, but merely an illusion. One more example: An individual, absorbed in thought, standing on a ferry boat before the latter was loosed from its moorings, allowed his eyes to rest on the water streaming past. Presently he believed his boat was moving. Here the background consisted largely of a state of expectation that his boat was about to move and the testimony of the senses, so long as his eyes saw only the moving water, offering no conflict, an illusion was begotten, namely, that the boat was moving. A new psychological background was then formed, based on the illusory motion of the boat. Now when the eyes turned from the moving water and rested on stationary objects, the testimony of the senses, element number one, came into conflict, not with the testimony of the other senses as so many authors claimed, but with element number two, which at that moment was a false conception, namely, that the boat was moving. A revulsion of feeling followed coupled with uncertainty and insecurity which was called disorientation. Examples might be multiplied

indefinitely, but enough had been said to show that the psychological element or background was a fundamental factor in orientation and that disorientation did not consist in conflict between the immediate testimony of the senses, but between the latter and number two, or the background derived from education and experience.

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventy-fourth Meeting, Held Friday, Dec. 3, 1915.

DR. JOHN S. THACHER, PRESIDING.

Extensive Keloid of Face after Treatment.—Dr. ROBERT ABBE showed this patient. The young man had been presented two years before to the Society. His face had been badly burned with acids, causing loss of one eye and immense keloid formation, as hard as leather covered wood, all over the face. The keloids had been largely removed by radium applications. The case was so much improved that it had reached a point where plastic repair could be done by the surgeon and the nostrils and eyelid could be improved. This case had taken a long time and very slow and careful work was necessary in such a condition.

Nevus of the Face.—Dr. ABBE also presented a case of nevus of the face in a child, who on account of the extensive cavernous type of the lesion had not been weaned until it was two years old. There had been nevoid degeneration in the throat, causing the child great difficulty in swallowing and giving a croupy cough. By thorough application of radium the outside nevus had been obliterated and the great purple mass had been reduced to the normal color of the skin. With the disappearance of the external development the nevoid growth in the throat had yielded. The child who had choked all the time had recovered its voice and was enabled to swallow perfectly. Attention should be called to the healthy color of the skin. The application consisted of 25 mg. of radium, once a week, for half an hour. This treatment had extended over two or three months.

A third case presented was one of nevus on a girl's face, the recent photograph of which showed an almost normal condition. Dr. Abbe added that in cases of spontaneous keloids between the breasts in girls, and such a case as was shown, where a girl had been scalded by burning soup, radium caused disappearance and levelling of the masses. The photograph showed the condition.

Dr. THACHER asked how many applications had been used in the case of the child. In regard to the other case he asked if the picture was taken by the lumiere process. He asked if the treatment of hemorrhages from fibroids with radium was successful and also if the action of radium produced an obliterative endarteritis.

Dr. JAMES asked what could be the cause of keloids on the chest. He wanted to know if certain people were not predisposed to keloids. He said he had seen negroes with keloid formation wherever a scar had occurred. He thought they were predisposed. One man developed a keloid wherever he had been cut.

Dr. THACHER said negroes were predisposed to keloids.

Dr. A. A. SMITH asked how often it was desirable to apply radium, and if the treatment was attended with any pain.

Dr. JAMES asked if malignancy could develop through the action of radium, as with that of the *x*-ray.

Dr. PARK said he understood it would have the reverse effect.

Dr. PECK asked if radium was successful in the case of larger fibromata.

Dr. KNAPP said he remembered a case of angioma of the orbit in a child, which produced exophthalmos. Dr. Abbe had kindly suggested making an incision in the upper lid and inserting a radium tube which was left in the orbit for half an hour. This was done nine months ago. The tumor at present was very much reduced in size and there was now practically no exophthalmos. The cutaneous (nevus) condition had, of course, not changed.

Dr. THACHER asked if it had been used for intracranial angioma.

Dr. ABBE said he had not seen anyone with that condition.

Dr. M. A. STARR said it had failed in a case of glioma.

Dr. ABBE said in reply to Dr. Starr that they had had to make many trials and some failures had occurred. To Dr. James he said that the causes of keloids on the chest were various. He had five cases. In one a dermatologist had used the electric needle. In one a keloid had followed pricking a pimple. A true keloid was usually made worse by surgery. He said he had views upon the question of predisposition to keloids, which he had not had time to work out. He thought that probably in those cases it was not so much idiosyncrasy as infection. To Dr. Thacher he said the treatment of hemorrhage from fibroids was one of the advances of modern surgery. The overgrown myomatous tissue was absorbed after the use of radium. The radium produced a retrograde action of the tissues and it was now not necessary to use the knife in the treatment of myomata. To Dr. Smith he answered that the treatment was used once or twice and it was attended with no pain whatever. To Dr. James and Dr. Park he said that malignancy could not develop. The action of the radium ray was quite different from that of the *x*-ray. It caused an atrophic condition. To Dr. Peck he said that in regard to the larger fibromata he had treated one, one foot in diameter. The hemorrhages were entirely stopped and the patient was now in perfect health.

Myxoma of the Lung.—Dr. J. C. ROPER presented a man of fifty-three years, an Austrian, a carpenter by trade, who was admitted to the New York Hospital, Sept. 27, 1915, complaining of pain in the chest and cough. The family history was negative. No previous illness was noted. He was moderately alcoholic and used much tobacco. Four years ago a painless swelling appeared on the lower part of the left calf. This had remained practically unchanged and was not troublesome except for an occasional slight stabbing pain. His present complaint was of pain in the chest, dyspnoea and much cough with profuse expectoration. These had developed five months before admission and had persisted with slight variation. His bowels were constipated. The pain was augmented with deep breathing. On admission the white cell count was 48,000; polynuclear cells, 90 per cent. The Wassermann was negative. On physical examination in addition to the tumor of the calf, referred to above, a small tumor was found in the left popliteal space. There was distinct enlargement of the glands at the left femoral ring, one being estimated as 3×1.2cm. The left chest gave signs over the lower portion of fluid, or new growth. The pain was referred to the upper abdomen, but *x*-ray bismuth pictures failed to show any lesion in the intestinal tract. The tumor was then removed from the leg and proved to be a myxoma. The chest was aspirated on several occasions and a small amount of tissue was obtained, the appearance of which justified an attempt to obtain a better specimen. A puncture was then done with a large needle and considerable suction. A specimen of tissue showing the structure of a myxoma was obtained. Myxomatous tumors of the viscera were very uncommon. Dr. Roper said it had been quite interesting to be able to make the diagnosis during life. The question had been raised as to whether the tumor was in the pleura or the lung. This could not be definitely decided, but the *x*-ray plates suggested the lung as the probable site.

Dr. THACHER said the case was most unusual. He asked if it was purely myxomatous; if there were any sarcomatous elements or any signs of fluid. He said these tumors tended to develop into sarcomata.

Dr. ABBE asked if there was any weakness of the ribs. Did Dr. Roper think that the tumor was metastatic? He said he had had a case of the same type. In his patient, a young man of fine build, the tumor had appeared on the back, between the shoulder blades. The patient had had twelve operations in one year. The growth recurred. He had gone to the Mayo Clinic but they could do nothing. Finally, he came back to Dr. Abbe and Dr. Coley. Dr. Coley used toxins and Dr. Abbe used radium. The tumor was now beginning to shrink. Whether the improvement would be permanent he could not say. There was serious involvement of the intercostal muscles and pleura, and perhaps the lung itself. There was no known remedy for such a serious condition.

Dr. ROPER said in answer to the questions of Drs. Thacher and Abbe, that sections showed no evidence of sarcoma, although mixed tumors were common, as far as observed these particular tumors were purely myxomatous. There was no involvement of the ribs.

This type of tumor did not tend to form metastases, but did tend to recur locally if not completely removed. As the tissue of these tumors was so preeminently of an embryonic character, it was probable that the different tumors developed from preëxisting embryonic deposits, rather than from metastases.

The Tobacco Habit.—Dr. ROBERT ABBE read this paper (see page 177).

Dr. GILMAN THOMPSON said that he had been interested lately in the biographies of centenarians and there were a large number of smokers among them. He was interested to hear Dr. Abbe state that cigarettes were less harmful than other forms of tobacco. That had not been his experience. Among cases of the so-called "tobacco fiends" he had seen a predominence of cigarette smokers. The cigarette smoker took a number of smokes all through the day. The cigar smoker generally took his smoke after meals or exclusively in the evening, but the cigarette smoker did not confine the habit to post-prandial indulgence and was more constantly under the influence of tobacco. In cigarettes also one got paper smoke, and cigarette smokers suffered much from bronchial irritation and chronic pharyngitis and laryngitis. Another point that Dr. Abbe had not touched upon was the possible effect, in so-called chronic smokers, of tobacco on arterial pressure. He had had the impression that if a man smoked a great deal it would raise his blood pressure. Dr. Thompson took this up with his Chief of Clinic, Dr. W. H. Sheldon, who had made observations on over sixty patients who were smokers. The patients sat in a small closed room where they smoked cigars for an hour or two. The blood pressure was taken before and after. The results averaged nearly even on either side of the normal arterial pressure. In some the blood pressure fell about 10 mm. In some it was raised in a like degree. In a few cases the blood pressure rose 15 to 20 mm. The results seemed to depend on temperament and habit. In neurotic patients there was a slight elevation. Phlegmatic workmen, used to smoking a clay pipe, would have a slight fall in pressure, following the soothing effect of the smoke. Dr. Sheldon was going to publish the results in tabulated form. The personal equation entered largely into this question. Some persons ought never to smoke and some persons were not injured in the least by the habit. It depended on the mode of use and also on the constitution of the smoker. The habit was certainly unnecessary as the world got along very well without it for very many centuries.

Dr. GORHAM BACON said he saw many cases of chronic catarrhal deafness which were undoubtedly made worse by excessive smoking. He always advised these patients to smoke very moderately. Noises in the ears were often caused by excessive smoking. One man who went on a "tobacco debauch" would come to him to have his ears blown out and was advised to cut down his tobacco, and he always improved when he smoked less. Dr. Bacon said that if he smoked too much himself his ears began to ring.

Dr. VIRGIL P. GIBNEY said he had had no practical experience in this subject, but it had been a matter of common observation with him for a number of years that periodic alcoholics had smoked cigarettes most intemperately just prior to an outbreak.

Dr. WALTER P. JAMES said there seemed to be very little accurate scientific knowledge of tobacco and its effects. He confessed that he had not considered that the paper in cigarettes had anything to do with irritation. He supposed burning paper smoke was just burning cellulose, different only from tobacco smoke in that the latter contained nicotine. He thought the injury from cigarette smoking came from smoking all the time and on an empty stomach. Many smoked in bed and started again the first thing in the morning. If smoked in moderation cigarettes should be less harmful than other forms of tobacco. Dr. James said he thought a good many men could smoke Porto Rico or domestic cigars who could not smoke the strong Cuban cigar. He knew of one man who could get along comfortably smoking domestic cigars until some kind friend sent him Havanna cigars, which he could not resist, and he immediately suffered from the poisonous effect. Dr. James had noticed another point and wondered if any of the clinicians present had noted it. This was that a sensitiveness to tobacco often came on at the age of 50 or 55 in some smokers. Suddenly they found tobacco disagreed and they complained to the tobacco dealer that their old brand of cigars was deteriorating. In some people this sensitiveness seemed almost like anaphylaxis. They felt depressed and got a bad taste after smoking. Some had to stop entirely. Another point was that if a man smoked right along and then stopped smoking for 3 or 4 months and then began again, he suffered from sensitiveness. In another way tobacco seemed to be an unsual drug. A boy suffered very much from his first smoke, or a man might vomit from the effect of his first cigar, but after that he could smoke without feeling it. What other drug was there that gave such a marked effect the first time and then no effect at all later?

Dr. JOHN W. BRANNAN said that he thought that the first part of Dr. James' statement was true, but he was not sure as to the latter part.

Dr. CLEVELAND said that at ten years of age he was ill for twenty-four hours from the effect of a cheap cigar. He did not smoke again until he went to college.

Dr. M. ALLEN STARR said that in two nervous diseases it had been demonstrated that the use of tobacco greatly affected the patient. One was the ordinary hereditary tremor which passed from generation to generation. This often began about forty-five years of age, with a fine tremor of the hands and perhaps of the head. He had watched four families through three generations, with this disease. One patient said the tremor so much increased by using tobacco that he could not write or sign a check after smoking. He, however, always took his cigar. Patients suffering from melancholia were always distinctly worse after tobacco. He had always advised these patients to stop smoking. In painful nervous affections, each as neuritis and locomotor ataxia, the pain was sure to be increased by smoking.

Dr. THACHER asked Dr. Starr if there were any of these individuals who found tobacco soothing.

Dr. STARR said that tremors and pains were not soothed by it.

Dr. PARK asked if the irritative effects of tobacco had any rôle in producing pulmonary effects. Was there ever a sort of immunity gained by smoking?

Dr. GILMAN THOMPSON said that tobacco smoking helped to break up some types of asthmatic attacks, just as did strong coffee.

Dr. PARK asked if any relation had been traced between tobacco users and pneumonia.

Dr. KNAPP said that tobacco had a peculiar selective action on the ganglion cells of the retina and on certain fibers of the optic nerve. At the same time, most cases of toxic amblyopia (retrobulbar neuritis) were due to the combined poisons of tobacco and alcohol. Instances in which this optic nerve lesion had been due to tobacco only were very unusual. This was further shown by the experience that toxic optic neuritis practically never occurred in Cuba or in Turkey, countries in which, as was well known, a great deal of tobacco was consumed. Dr. Knapp was interested in what Dr. Thompson had said in regard to tobacco not affecting blood pressure, and would like to ask Dr. Thompson whether he permitted his patients with arteriosclerosis to use tobacco.

Dr. THOMPSON replied that he tried to keep such patients within bounds. He did not think two or three mild cigars a day did them any harm. He agreed with what Dr. James had said as to intermittent use. A cigarette smoker kept himself constantly stimulated. His system was never free from nicotine. An intermittent user was free of nicotine between whiles.

Dr. JAMES said it was important to know definitely whether a cigarette was more pernicious than a cigar. His view was that the cigarette was better because there was less of it. In other words the difference was quantitative, not qualitative.

Dr. CLEVELAND said he believed the cigar did more harm because of the quantity.

Dr. A. A. SMITH thought that the cigarette smoker kept the mucous membrane constantly irritated by inhalations of the smoke.

Dr. J. C. ROPER said that the whole matter of toxicity had been investigated in the *Lancet* and that cigarette smoking had been found least harmful. The pipe had been condemned as holding the most nicotine.

Dr. JAMES asked was that observation founded on clinical experience?

Dr. ROPER said he was not sure of the exact details.

Dr. JOHN W. BRANNAN said that he remembered very well the report of the *Lancet* Commission referred to by Dr. Roper. The investigation and conclusions of the Commission were discussed at length in an editorial in the *New York Medical Journal*. Dr. Frank Foster was the Editor of the *Journal* at that time, about fif-

teen years ago, and was, as many members of the Society would remember, an habitual smoker of cigarettes, which he rolled himself. He noted with great satisfaction that the Commission found the cigarettes contained no injurious ingredients other than nicotine and that such nicotine as reached the mouth came principally, if not entirely, from the moistened tobacco in contact with the lips, which was undoubtedly greater in the cigar than in the cigarette. Foster stated that in his own experience and judgment injurious effects did not follow generally the moderate smoking of tobacco, whether as cigarettes or otherwise. Excess was bad, as in use of all other things. He believed that cigarettes *per se* were not more injurious than any other form of smoking, and, in his opinion, not so injurious as cigars, as they contained less tobacco. The only especial danger inherent in cigarettes was the temptation to a more continuous use and to the practice of inhalation. Dr. Brannan had noticed that evening, as often on other occasions, that there were more condemnations of cigarettes by cigar smokers, than by men who did not smoke at all. He did not think it mattered what was smoked if the amount of tobacco was kept within bounds. Their were patients who smoked cigars to excess—10 to 12 a day; that was more harmful then 12 to 20 cigarettes. If men would bear in mind the possibly injurious effects of inhalation less harm would be caused by the cigarettes. He believed that the practice of inhalaton was much less common than formerly. Certainly he saw little of it among men of mature years.

Dr. BACON said he had understood Dr. James to say earlier in the evening that a man was much affected by his first smoke, and not at all later. In his own case he had still to be careful to choose a mild cigar, and could not stand a strong cigar at all.

Dr. JAMES asked if anyone had notided that hypersensitiveness to tobacco went with a predisposition to seasickness.

Dr. THACHER said that was not so in his case. He did not get seasick but he could not stand tobacco.

Dr. THOMPSON said he would defend pipe smoking as usually an out-door form of smoking, and therefore less injurious.

Dr. KNAPP said he wanted to know what was the form of tonic treatment Dr. Abbe had alluded to for "cigarette fiends" in the West.

Dr. ABBE said he did not know definitely, but he thought the throat was swabbed with nitrate of silver, a mouth wash was given, and some tonic was administered.

Dr. THACHER asked whether this treatment worked in the same way as washing a child's mouth with soap, which tended to prevent bad language.

Dr. PECK said that in studying his cases of duodenal ulcer, he had come to recognize a group of habitual cigarette smokers, who were not especially alcoholic, as subject to this disease. They were generally young adults, foreign born or of foreign parentage, who habitually smoked from 20 to 40 cigarettes or more a day. Whether this lesion depended on digestive disturbances, which made the gastric secretions and contents more irritating and caustic, or lowered the resistance of the tissues, he could not say. The frequency of the lesion in this group of cases was striking enough to be comparable to ulcer in alcoholics, especially those who were addicted to whiskey and hard liquors in concentrated form. In this latter class of cases the local chemical irritant effect of the stomach contents was undoubtedly an important etiological factor, as the ulcer almost invariably occurred at the point on the duodenal wall against which the chyme was projected in spurts as it passed the pylorus.

Dr. M. A. STARR said that nothing had been said in regard to the literature. Professor Fraenkl-Hochwart of Vienna, in the *Deutsche Zeitschrift für Nervenheilkunde*, Vol. 47, p. 128, had an interesting article on the effects of tobacco on various organs of the body.

Dr. THACHER said, in regard to differences between different brands of cigarettes, that in Paris, a few years ago, he met one of the prominent neurologists at a luncheon. This physician had recently been called to Canstantinople to advise regarding the long ago deposed sultan. This sultan was a neurotic and not thought fit to head the government. The government, however, were anxious to do what they could for his health and comfort. The patient was an excessive cigarette smoker. The government wanted to know if any form of cigarettes was less injurious than others and if so, which, and asked that no pains nor expense be spared to advise them on the question. On returning to Paris, the neurologist had investigations, chiefly chemical, made on the different types of cigarettes. The chemist reported varying proportions of nicotine and the presence of opium in every brand of cigarette except one certain kind, which contained very little nicotine and no opium. The host then said that he could smoke this brand without experiencing the ill effects which he experienced from other kinds. In regard to another of the stimulants which had been mentioned in this group, an English physician had published a monograph to show that since the introduction of tea into England the English people had shown marked intellectual improvement.

Dr. ABBE said his attention had been called to the subject by the increase of mouth cancers in immoderate smokers. In these persons 9 cancers out of 10 were caused by tobacco. It was not seen in moderate smokers. He always persuaded the patients to give up tobacco, saying that he could do nothing for them if they persisted in smoking. In leukoplakia, a precancerous condition, he made the patients give up smoking. They always agreed to give it up instantly.

Dr. JAMES said that Dr. Abbe had the threat of cancer to hold over his patients; that was more powerful than merely threatening digestive disturbance. Speaking of snuff, Dr. James said he had heard that the capital of the American Snuff Company was 60 million dollars. It seemed incredible that people should take snuff to that amount.

Dr. ABBE said that in the South "dipping" was common.

Dr. A. A. SMITH asked Dr. Abbe if he had any observations of cancer of the mouth in women, since the custom of women smoking had become so prevalent.

Dr. ABBE said that he had seen cases of cancer of the lip or gum from cigarette smoking. Cancers did not occur in moderate smokers, but frequently in excessive smokers. In all cancerous conditions Dr. Abbe said he stopped the patient smoking, as the circulation of nicotine in the blood caused irritation and might hasten cell growth.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

THE TEXAS STATE BOARD OF MEDICAL EXAMINERS.

June 22, 23, *and* 24, 1915.

(*Concluded from page* 134.)

PATHOLOGY.

1. What is a tumor (new growth)? (*a*) Classify tumors as to the tissues from which they arise. (*b*) Give examples.
2. What constitutes malignancy? (*a*) By what channels are metastases carried?
3. Describe the stages of simple inflammation.
4. Describe the pathological process leading to destruction of the valve in mitral insufficiency.
5. Give in detail the blood picture of pernicious anemia.
6. What systemic pathological changes are usually associated with contracted kidney? (Interstitial nephritis.)
7. Give the pathological changes in the intestines in typhoid.
8. Describe the gross and microscopical appearance of a gumma of the liver.
9. Describe in detail the pulmonary changes in the various stages of croupous pneumonia.
10. Give pathological changes in amebic dysentery.

PHYSICAL DIAGNOSIS.

1. What are the methods of physical diagnosis?
2. By what symptoms would you diagnose Pott's disease (of spine)?
3. Give use of sphygmomanometer. (*b*) What is blood pressure?
4. State in what diseases we would most likely observe hypertension and hypotension.
5. Describe the characteristics and significance of the several kinds of arterial pulse.
6. Differentiate organic and functional heart murmur.
7. What are the normal sounds obtained by percussion on the thorax?
8. In what diseases can we employ the microscope as an aid in diagnosis?

9. What are the physical signs of sciatica?
10. What are the physical signs of pellagra?

SURGERY.

1. Difference between acute abscess and carbuncle; organisms usually present in both.
2. Preparation of patient for abdominal section beginning thirty-six hours beforehand. Give after-treatment.
3. Define acute osteomyelitis—give treatment and differential diagnosis between it and acute rheumatism.
4. Treatment of simple fracture at junction of upper with middle third of femur.
5. Diagnosis of chronic duodenal ulcer.
6. What surgical complications may arise in typhoid fever?
7. Differential diagnosis between tuberculous kidney and stone in kidney.
8. How would you put an old man in best physical condition for removal of prostate?
9. Treatment of penetrating wound of right chest.
10. A man receives a blow on top of head; you are called in and observe him unconscious, and with a scalp wound; how would you handle the case?

MEDICAL JURISPRUDENCE.

1. Define rigor mortis; say where it commences, how long it lasts, and its importance from medicolegal standpoint.
2. Differentiate the male and female skeleton.
3. How would you determine whether a stab wound on dead body was made before or after death?
4. What points would help to determine whether a gunshot wound was self-inflicted?
5. Under what conditions may pregnancy become a subject of medicolegal inquiry?
6. Under what conditions is the destruction of a living fetus not considered murder?
7. Give the classifications of insanity.
8. In suspected infanticide how would you determine that the child was born alive?
9. In case of doubtful paternity what points would help to fix the responsibility?
10. Upon what evidence could you sustain a charge of recent abortion?

HYGIENE.

1. Name some of the diseases believed to be acquired by inhalation of microorganisms from the air.
2. How much O does an adult human being at rest ordinarily take from the air and how much CO_2 does he add to it in twenty-four hours? (*a*) How would you arrange for natural ventilation of a schoolroom during cold weather?
3. What quantity of water should be supplied per capita daily by towns and cities for all purposes? (*a*) Mention some diseases that are frequently transmitted by water.
4. What is the probable significance of nitrites or nitrates in water?
5. How is milk most frequently adulterated, and what is the greatest danger in such adulteration?
6. What conditions may render meat unfit for food?
7. Of what disease or diseases is the house-fly a carrier?
8. What precaution should be taken in locating the well or cistern for drinking water on a farm?
9. What precautions should be taken in the handling of a case of typhoid to prevent the infection of others? (Explain fully.)
10. Describe a reliable method for the disinfection of a room which has been occupied by an infectious patient.

ANSWERS.

PATHOLOGY.

1. A *tumor* is a pathological new growth which tends to persist independently of the structures in which it lies, and which performs no physiological function. *Tumors may be classified as follows:*

I. Those derived from the mesoblast:
   (*a*) *Benign:* Lipoma (from fat tissue), fibroma (from fibrous tissue), chondroma (from cartilage), osteoma (from bone), myoma (from muscle), neuroma (from nerve tissue), glioma (from neuroglia), angioma (from vessels).
   (*b*) *Malignant:* Sarcoma (from connective tissues).

II. Those derived from the epiblast or hypoblast:
   (*a*) *Benign:* Adenoma (from gland tissue), papilloma (from papillæ of skin or mucous membrane).
   (*b*) *Malignant:* Carcinoma (from epithelial tissues).

2. *Malignant tumors* are not encapsulated, tend to infiltrate the surrounding tissues, give rise to metastatic growths, have a tendency to recur after removal, give a cachexia, have a fatal tendency.

Metastases are carried by the lymphatics and by the blood vessels.

3. The phenomena of inflammation are dilatation of the arterioles, capillaries, and small veins. At first the blood current is quickened, then retardation occurs, and may progress to stasis and thrombosis. During this time exudation of plasma and white corpuscles from the small veins, and perhaps the capillaries, is going on. The fate of the white cell may be either to break up and set free prothrombin, or to act as food for connective tissue cells, or to act as a phagocyte and be transformed into a pus corpuscle. Red corpuscles may be exuded and broken up, setting free their coloring matter. The prothrombin of the white cells unites with the calcium chloride of the plasma and forms thrombin, or fibrin ferment, which acts upon the fibrinogen of plasma to form fibrin.

The tissues are thus invaded with numbers of leucocytes. In bacterial inflammation a varying portion of the tissues is killed by the toxins produced, and is either replaced by a mass of small round cells, or liquefied into pus. In the latter case it is surrounded by a ring of small round cells. The connective tissue cells absorb the leucocytes, and new vessels are formed, thus constituting repair. In nonbacterial inflammation, exudation may separate layers of cells to a large extent and form blebs. In chronic inflammation the formation of new fibrous tissue is the chief part of the process.—(From *Aids to Surgery.*)

4. *Pathological processes leading to destruction of valve in mitral insufficiency:* "In those cases not directly attributable to acute endocarditis, the changes briefly are: (1) Formation of small nodular prominences, with thickening of the valve. (2) Formation of yellowish, opaque fatty patches. (3) Great increase of fibrous tissue, which subsequently contracts, producing much deformity. The cusps become rigid, curled, and may cause great obstruction to the onward flow of blood, and at the same time fail accurately to close together when required. (4) Great narrowing of the valvular orifice. (5) Shortening of the chordæ tendineæ and papillary muscles. Frequently fusion of the chordæ tendineæ (adhesions). (6) Calcification of the fibrosed portion."—(Wheeler & Jack's *Handbook of Medicine.*)

5. In *pernicious anemia* the blood would show: (1) A diminution in the number of red corpuscles; (2) a relative increase in the amount of hemoglobin; (3) poikilocytosis; (4) the presence of nucleated red cells; (5) variation in the size of the red cells; (6) the leucocytes *may be* diminished.

6. The systemic pathological changes usually associated with contracted kidney are: "The left side of the heart is hypertrophied, and there is also hypertrophy of the muscular fiber of the arterioles throughout the body; if the case is protracted, the hypertrophied tissues undergo fatty degeneration. Cardiac degeneration with arteriocapillary sclerosis or fibrosis is associated with advanced nephritis. The changes in the arterial walls lead to apoplexy, albuminuric retinitis, and fatty degeneration and atrophy of the ganglionic centers."—(Hughes' *Practice of Medicine.*)

7. In the first stage of typhoid fever Peyer's patches become swollen, hyperemic, and reddened; a few days later they appear as whitish or gray elevations, and the hyperemia has disappeared; the surface of the patch is smooth and its edge is sharply defined; after the first week necrosis may occur; the center of the patch becomes softer, more yellow, or sometimes even red from the absorption of blood pigment. The necrotic portion falls off, leaving an irregular ulcer, with necrotic and undermined edges. These ulcers are elongated, with the long axis parallel with that of the intestine, and a smooth floor. The ulcers may heal or go on to perforation.

8. *Gumma of the liver:* "The gummata range in size from a pea to an orange. When small they are pale and gray; the larger ones present yellowish centers; but later there is a 'pale, yellowish, cheese-like nodule of irregular outline, surrounded by a fibrous

zone, the outer edge of which loses itself in the lobular tissue, the lobules dwindling gradually in its grasp. This fibrous zone is never very broad, the cheesy center varies in consistence from a gristle-like toughness to a pulpy softness; it is sometimes mortar-like, from cretaceous change' (Wilks). They may be felt as large as an orange beneath the skin in the epigastrium and they may disappear with the same extraordinary rapidity as the subcutaneous or periosteal gumma. Microscopically they may indeed at first look like massive cancer. Extensive caseation, softening, and calcification may occur. The syphilitic scars are usually linear or star shaped. They may be very numerous and divide the liver into small sections. The syphilitic cirrhosis is usually combined with gummata, or with marked scarring in the portal canal, leading to lobulation of the organ, but the ordinary multilobular cir-

9. ACUTE LOBAR PNEUMONIA. "It is convenient to describe four stages, those, namely, of (1) hyperemia or engorgement, (2) red hepatization, (3) gray hepatization, and (4) resolution. *First stage or splenization.*—The lung is injected, dark red, and heavy, and pits under the finger; on pressure, there exudes a frothy serum tinged with blood and slightly aërated. The lung still floats in water. *Second stage or red hepatization.*—The part involved is solid and friable, presents a granular or red granite appearance, and sinks in water. The alveoli are filled with a coagulated exudation, which shows under the microscope fibrin, leucocytes, red corpuscles, proliferated alveolar epithelium, and pneumococci. *Third stage or gray hepatization.*—The lobe has now the appearance of gray granite, the lung substance is softer and more friable; on pressure, a dirty purulent fluid exudes. The gray appearance is due to four factors: (1) Decolorization of the red blood corpuscles; (2) obliteration of the alveolar blood vessels from pressure; (3) fatty degeneration of the coagulated material; (4) great infiltration of leucocytes. A more advanced stage, in which the lung tissue is bathed in purulent fluid, is known as purulent infiltration. It is probably inconsistent with life. *Fourth stage or resolution.*—Resolution of the inflammatory exudation is brought about principally by absorption (autolysis), but partly by liquefaction and expectoration. Pneumonia may affect a lobe, or the whole of a lung, or it may attack both lungs. Double pneumonia occurs in about 10 per cent. of cases. Different parts of the same lung may at the same time show different stages. There is always some degree of pleural inflammation over the affected area. Modern enlargement of the spleen is very common."—(Wheeler and Jack's *Practice of Medicine.*)

10. "In *amebic dysentery* the lesions are situated in the colon, but may be found in the ileum. Ulceration, involving the mucosa and submucosa, is the characteristic structural change. This process is preceded by the infiltration of the mucous and submucous coats with a grayish, gelatinous substance, the exfoliation of which produces the ulcer. In the early stages these local infiltrations appear as hemispherical elevations, the mucous membrane covering which is soon cast off to be followed by sloughing of the submucous coat and its infiltrate. The microorganisms are present in the necrotic tissue and by their migration not infrequently (20 per cent.) produce abscess of the liver."—(Hughes' *Practice of Medicine.*)

PHYSICAL DIAGNOSIS.

1. Methods of physical diagnosis are: Inspection, palpation, percussion, auscultation, mensuration, and weighing. *Inspection* shows the shape, size, symmetry, movements, and color of the chest. *Palpation* confirms and adds to what is learned by inspection, shows areas of tenderness, condition of chest walls, presence of tumors, action of heart, and the existence and character of fremitus. *Percussion* shows the composition of structures or tissues, the resistance or elasticity of certain organs, and resonance of lungs. *Auscultation* enables one to study the condition of the heart and lungs.

2. *Pott's disease of the spine may be diagnosed* by: The local pain or ache at the site of the disease; it is made worse by jarring, or pressure on the head; girdle-pain or stomach-ache may be present; muscular rigidity; angular displacement at the site of the disease; abscess; and, sometimes, paraplegia.

3. The use of the *sphygmomanometer* is to estimate the blood pressure of a patient. *Blood pressure* is the pressure exerted by the blood against the wall of the vessel in which it is contained.

4. *Hypertension* may be observed in: Chronic interstitial nephritis, arteriosclerosis, uremia, gout, lead poisoning, cerebral hemorrhage.

Hypotension may be observed in: Shock, collapse, concealed hemorrhage, anemia, acute infectious diseases.

5. (1) *Frequent pulse:* In fevers, exophthalmic goiter, early phthisis, heart disease, anemia, chlorosis, locomotor ataxia, abuse of alcohol, tea, coffee. (2) *Slow pulse:* In cardiac disease, cerebral tumor or hemorrhage, meningitis, myxedema, epilepsy, some poisons, digestive disorders. (3) *Intermittent pulse:* In cardiac disease, fevers, poisons, neurasthenia, cerebral troubles, digestive disturbances. (4) *High tension pulse:* In arteriosclerosis, gout, diabetes, contracted kidney. (5) *Low tension pulse:* In fevers, anemia.

6. *Organic murmurs* are due to stenosis or incompetency of one or more of the valves of the heart.

Functional murmurs are not due to valvular disease.

Organic murmurs may be systolic or diastolic; may be accompanied by marked dilatation or hypertrophy, and there will probably be a history of rheumatism or of some other disease capable of producing endocarditis. Whereas a murmur, usually systolic, soft, and blowing, heard best over the pulmonic area, associated with evidences of chlorosis or anemia, and affected by the position of the patient, is a *hemic* or *functional* murmur, and denotes as a rule an impoverished condition of the blood.

7. *Normal percussion notes:* "The apices yield normally a resonant note, clear but not intense and tending to rise in pitch (dullness) as the plexímeter finger approaches the vertebral line posteriorly, or the trachea, anteriorly. The infraclavicular space is typically resonant, and the pitch of the percussion note is slightly higher upon the right than upon the left side. Any tendency to approach the region of a primary bronchus results in a note of heightened pitch, increased resistance, and shortened duration (dullness). Below the right second rib anteriorly there is increased resonance until the fifth rib is reached, when the pitch rises because of the underlying solid tissue of the liver. At the sixth rib resonance ceases and a line of absolute dullness marks the lower limit of the lung and the upper border of the uncovered surface of the liver. In the axillary region typical pulmonary resonance persists until the eighth rib is reached. The cardiac area markedly modifies the percussion note of the left chest anteriorly from the lower border of the third rib downward within the nipple line; anteriorly along the whole internal boundary of the lung the note rises as one approaches the sternum."—(Greene's *Medical Diagnosis.*)

8. The microscope may be employed as an aid to diagnosis in: Typhoid fever, malaria, cholera, tuberculosis, amebic dysentery, diphtheria, anemia, chlorosis, leukemia, various forms of intestinal parasites, gonorrhea, influenza, tetanus, asthma, pneumonia, trichinosis, anthrax, actinomycosis, Bright's disease, syphilis.

9. *Symptoms of sciatica:* "Onset usually sudden, with pain in the back of the thigh, running down the course of the nerve. It may extend up into the lumbar region, but is most marked in the thigh. Motion increases it, and consequently the pelvis tilts up toward the sound side and the trunk leans over toward the affected side (sciatic scoliosis). The pain is dull and almost continuous, with paroxysms in which it is sharp, lancinating, burning, and of great severity. There may be sensations of tingling, numbness, and a sense of weight and coldness in the affected limb. There are tender points at the sciatic notch, the middle of the hip, behind the knee, in the middle of the calf, behind the external malleolus, and on the back of the foot. Rarely there is anesthesia along the course of the nerve. There may be weakness and muscular atrophy in chronic cases, and occasionally a partial De R. The duration of the disease is usually 2 or 3 months, although it may last for a year or more."—(Butler's *Diagnostics of Internal Medicine.*)

10. In *pellagra* "the symptoms develop insidiously, the earliest manifestations usually being gastro-intestinal—anorexia, stomatitis, salivation, epigastric pain or distress, diarrhea, and a gradually increasing anemia, disinclination to exertion, and psychic depression. The fully developed disease is characterized by cutaneous, digestive, and nervous symptoms. There is at first a characteristic pellagrous erythema that usually comes on first in the spring, tends to subside

and recur (in the fall and spring). It develops bilaterally especially on the exposed surfaces, the hands, arms, face, and neck; that is, it seems to be related to the action of the actinic rays of the sun; it may be dry (usually early) or wet; the lesions become pigmented (liver yellow or chocolate color) and usually progress to desquamation, exfoliation, and gangrene of the skin, which are followed by cicatrization. The characteristic digestive symptoms consist of stomatitis, the cardinal red tongue, the bald tongue, or the stippled, bluish black tongue; salivation, pyrosis, and diarrhea (fetid, slimy, greenish stools), sometimes bloody stools, may occur. The nervous symptoms consist of neuromuscular pains in the back and legs, spinal tenderness, headache, vertigo, unilateral or bilateral mydriasis, muscular spasms, exaggerated reflexes, later paralysis with lessened or absent reflexes, mental depression, delusions, hallucinations, melancholia, and insanity. Mild cases may be afebrile, but fever (102° to 105° or more) is not uncommon. Improvement may occur after the lapse of several months, but recurrences especially in the fall and spring are common."—(Kelly's *Practice of Medicine.*)

SURGERY.

1. "A *carbuncle* is a localized inflammation of the subcutaneous tissue, which goes on to sloughing, and is of a more extensive character than a boil. Staphylococci are the common exciting cause, while the predisposing causes are lowered vitality from diabetes, albuminuria, or after infective fevers. Inoculation is by autoinfection or directly from the surface. *Signs:* The disease begins as an infiltration of a patch of subcutaneous tissue, which is hard, painful, and tender, and the skin over it is red and hot. The infiltration may extend till it is the size of a dinner-plate, and the inflammation ends in sloughing and suppuration, not only of the subcutaneous tissues, but of small areas of the skin over it, so that openings develop in the skin, and allow of the exit of pus and sloughs. The openings extend, the sloughs separate, and the wound heals by granulation. The back is a common situation. Sometimes the face is affected, and there is then a danger of thrombosis extending to the cavernous sinus and producing pyemia."—(*Aids to Surgery.*)

An *abscess* is a localized collection of pus in a cavity of new formation. It is, therefore, walled off; if near the surface it fluctuates; it may occur at any period of life, whereas the carbuncle commonly occurs after forty years of age; the abscess may be caused by staphylococci, streptococci, or any other pus-producing organism; abscess does not cause the severe constitutional symptoms which may be observed in carbuncle.

2. *Preparation of patient for abdominal section.*—"If possible, the patient should be under observation for at least 24 hours prior to the operation. During this time a careful study is made of the urine and the condition of the heart and lungs, and necessary treatment instituted. The diet should be restricted, and a purgative given the night before, followed by an enema on the morning of the operation. No breakfast, or merely a cup of beef-tea, should be given on the day of the op ration. The abdomen should be shaved and scrubbed thoroughly with tincture of green soap and sterile water for at least 10 minutes on the night before the operation. A general bath should then be taken, giving special attention to the inside surfaces of the thighs and to the umbilicus. A soap poultice is applied to the abdomen and allowed to remain for several hours; this is removed, and the abdomen is scrubbed with alcohol and washed with mercuric chloride solution (1:1000). A towel wet with this solution is placed over the abdomen, and a binder is applied.

"If any operation is to be done that will involve opening the vagina—such as total extirpation of uterus—the patient, after being anesthetized, should be placed upon the perineal pad, and the vagina should be thoroughly scrubbed with a piece of gauze held in a dressing forceps, previously dipped in green soap. After the scrubbing the soap should be washed out and the vagina syringed with a 1:2000 sublimate solution. If there is any septic material coming from the uterus, as in cancer of the body, the uterus should be first thoroughly curetted and packed with iodoform gauze. A cancerous cervix should also be curetted, disinfected, and the vagina lightly packed with iodoform gauze.

"All water, basins, trays, aprons, gowns, sheets, sponges, pads, drains, dressings, and everything with which the abdominal wall or the surgeon comes in contact should be carefully sterilized."

After-treatment: "The patient is placed in bed, and care is taken to prevent shock by the application of artificial heat. Nothing but water should be given by the mouth for 24 hours. Pain is relieved by morphine, gr. ¼, hypodermically. Liquid diet is preferred for the first week, at the end of which the stitches are removed. The bowels are opened upon the third day by fractional doses of calomel, followed in 12 hours by a saline laxative and an enema. The patient should remain in bed for from 2 to 3 weeks."—(*Pocket Cyclopedia.*)

3. *Osteomyelitis* is inflammation of the bone and marrow; the term is often used now for inflammation of bone. The *treatment* consists in relieving the constitutional symptoms and preventing the bone from necrosing. An incision down to the bone is made; if pus is beneath the periosteum, the latter is also incised; a piece of bone is removed by chisel or trephine, pus is removed, the endosteum is hurt as little as possible, the wound is irrigated with hot bichloride solution and packed with gauze; the soft parts are closed and the wound well drained. In case this fails, amputation may be necessary.

Symptoms: Sudden onset; pain, tenderness, fever, chills, swelling of soft parts; sometimes the joint can be moved gently without pain; septicemia or pyemia may be present.

It is to be *diagnosed* from *Rheumatism,* in which more than one joint is affected and the tenderness is *in* the joint, and not *near* it.

4. Treatment of simple fracture at junction of upper with middle third of femur: First of all, prevent the fracture from becoming compound; then reduce it; coapt the edges of the broken bone; immobilize the parts, and attend to the general condition of the patient. Splints and weight extensions may be required.

5. In *ulcer of the duodenum* the symptoms are very similar to those found in ulcer of the stomach; but in the former condition there is less tendency to vomit, the pain does not come on till some time after food has been swallowed (and has had time to pass the pylorus), and blood in the stools is more common. All of these points are due to physiological and anatomical reasons based on the relative position of the stomach and duodenum. A special sign of duodenal ulceration is the so-called "hunger pain" which occurs at the end of digestion, when the unmixed acid of the gastric juice is passing into the duodenum. This pain is relieved by taking food, for when this occurs the pylorus closes, and the gastric juice is for the time retained in the stomach to be mixed with the food, while the alkaline duodenal and pancreatic secretions are stimulated.

6. The surgical complications which may arise in typhoid fever, are: Perforation of the intestine, internal hemorrhage, peritonitis, and cholecystitis.

7. *The diagnostic symptoms of tuberculous kidneys* are: Frequent micturition, with pus, and sometimes blood in the urine; pain and tenderness over the kidneys, enlargement of kidney; chills, fever, and sweats; tubercle bacilli may be found in the urine; the cystoscope will show a retracted ureteral meatus on the affected side; the symptoms are not made worse by movement or improved by rest.

Stone in kidney: Symptoms consist of pain in the loins, markedly increased by exercise, especially on jolting. The pain may be referred to the thigh, groin or testicle. The colic is associated with hematuria, and often pyuria exists with frequency of micturition. The kidney may be enlarged, and tender on pressure. A large stone may exist without any symptom whatever, The most typical symptom consists in a sudden attack of excruciating and paroxysmal pain shooting down the loin to the bladder and testis. The attack is accompanied by vomiting, faintness, and collapse. Frequent efforts to pass urine are made, but only a scanty amount of blood-stained urine is passed. The pain ceases suddenly when the calculus slips back into the pelvis or reaches the bladder.

8. "If possible the patient should be kept at rest for three or four days before the operation, the bowels should be opened daily, and an enema given early on the morning of the operation, so that the rectum may be quite empty. Any bronchitis that may be present should be attended to, or in some cases which do not call urgently for relief, the operation should be delayed until the pulmonary symptoms have abated. In cases of cystitis, the bladder should, if practicable, be washed out once every day with a solution of silver nitrate 1:5000, followed by boracic lotion toward the end of the irrigation. If cystitis be absent, lavage is

neither necessary nor wise. For cystitis, certain drugs may be given with the object of lessening the alkalinity of the urine, and of making the interior of the bladder less septic."—(Jacobson's *Operations of Surgery.*)

9. *Penetrating wounds of right chest:* The treatment in the absence of serious hemorrhage or the lodgment of a foreign body, is disinfection and suture of the external wound and immobilization of the affected side of the chest. Hemorrhage from the internal mammary or intercostal artery may be controlled by ligation, or by pushing a gauze sac between the ribs and filling the inner end of the sac with gauze so that when drawn upon it will make pressure from within outward. Excepting extensive wounds, bleeding from the lung is rarely fatal, as the bleeding is checked by collapse of the lung. In the absence of external hemorrhage serious loss of blood is diagnosticated by the constitutional signs of acute anemia and a rapidly accumulating hemothorax. Cases of this sort have been treated by the introduction of a drainage tube in order to admit air and favor collapse of the lung, but in the presence of serious symptoms one or more ribs should be resected, and the wounded lung dealt with directly by sutures or gauze packing. Hemothorax of lesser degree, or that form due to hemorrhagic pleurisy or tumors of the lung or pleura, does not require special surgical treatment unless it causes pressure symptoms or becomes infected; in the former case aspiration, and in the latter resection of a rib and drainage would be indicated. Foreign bodies should be removed if easily accessible, and the same rules as to the examination of the vulnerating instrument, the clothing, etc., apply here as elsewhere. If the foreign body is not easily found, it should be allowed to remain, unless it gives rise to subsequent trouble, when it may be definitely localized by the *x*-ray and its removal effected, if such be deemed advisable. With the exception of pneumocele, the complications of injuries to the chest are inflammatory in nature, viz., cellulitis, pleurisy, empyema, pneumonia, abscess or gangrene of the lung, mediastinal abscess, and peri-, myo- or endocarditis."—(Stewart's *Manual of Surgery.*)

10. "The treatment during the stage of collapse is the application of external heat and the administration of stimulants as in shock. Alcohol, however, should not be given, because of its exciting effect on the brain, and care should be taken not to overstimulate. When reaction has been obtained, the patient should be kept in bed in a quiet room, an ice bag placed on the head, the bowels opened with a purge, and the catheter used if there is retention of urine. The diet should be fluid, and sedatives used if necessary. If unconsciousness is prolonged, a suspicion of greater injury than concussion should always be entertained. After severe concussion the patient should avoid mental exertion for a number of weeks or months."—(Stewart's *Manual of Surgery.*)

MEDICAL JURISPRUDENCE.

1. *Rigor mortis* is the condition of rigidity or contraction into which the muscles of the body pass after death. It begins at a period varying from about fifteen minutes to about six hours. It usually begins in the muscles of the eye, neck, and jaw; then the muscles of the chest and upper extremity, and last of all those of the abdomen and lower extremity are affected. It passes off in the same order in about twenty-four hours. It is said to be due to the coagulation of the muscle plasma.

Medicolegally, it is a sign of death, and an indication of the length of time that has elapsed since death occurred.

2. The *features of the bony skeleton which characize sex,* are: (1) In the male the bones are, as a rule, stronger, larger and heavier, and the prominences, ridges, and lines are more distinct; (2) the skull in the male looks more mature, and less like that of a child, and the glabella is more prominent; (3) in the female the sternum is shorter, the capacity of the thorax is less, and the upper ribs are more movable; (4) in the female the clavicle is shorter, thinner, smoother, and less curved; (5) in the female the sacrum is relatively wider, less curved, and is directed more obliquely backwards; (6) in the female the pelvis is wider, shallower, has an oval inlet, has a larger subpubic angle, the obturator foramen is triangular (oval, in the male), the tuberosities of the ischia are everted; (7) the inclination of the shafts of the femora from the pelvis to the knee is greater in the female.

3. In a *stab wound inflicted before death,* there will be retraction of the skin and muscles, arterial hemorrhage; the wound will have everted edges; large blood clots may be present; signs of repair or of inflammation may be present.

In a *stab wound inflicted after death,* there will be no retraction of skin or muscles, and no eversion of the edges (unless from putrefaction); the hemorrhage will be venous; blood clots are small; and there are no signs of repair or inflammation.

4. *Points which help to determine whether a gunshot wound was self-inflicted:* The location of the wound; the distance at which the shot was fired; the character of the wound; the burning of clothing, skin or hair; the embedding of grains of gunpowder; the presence or absence of the weapon; the position of the body when the wound was received; and certain surrounding circumstances which may have a bearing on the case.

5. "The occasions in which pregnancy becomes the subject of medico-legal inquiry are the following: (1) A woman may declare herself pregnant with an heir to an estate, for the purpose of defrauding other heirs at law; (2) for the purpose of extorting money from a seducer or paramour; (3) to stay the infliction of capital punishment until after delivery; (4) the plea of pregnancy may be set up as an excuse for non-attendance at a trial, to awaken sympathy, etc.; (5) an accusation of pregnancy may be made against a single woman, or one living apart from her husband, which may result in an action for damages for slander; (6) accusations of malpractice may be made against a medical man for error in diagnosis of pregnancy, or an attempt to bring on an abortion. On the other hand, pregnancy may be concealed (1) in order to procure abortion or infanticide; (2) in order to avoid disgrace."—(Reese's *Medical Jurisprudence.*)

6. When abortion is undertaken by properly qualified physicians after due consultation with other physicians, and for the purpose of saving the life or health of the mother, it is *justifiable;* under all other circumstances it is *criminal.* The former is a perfectly lawful medical procedure; the latter is illegal.

7. *Insanity* is "that state of disordered mind in which a person loses the power of regulating his actions or conduct according to the ordinary rules of society."—(Taylor.)

"*The best classification for legal purposes*"; (1) Idiocy; (2) imbecility; (3) mania; (4) melancholia; (5) monomania; (6) general paralysis of the insane; (7) dementia; 8) certain forms of mania without distinct etiological relations.—(Dwight's *Medical Jurisprudence.*)

8. *Application of hydrostatic test, to determine whether a dead infant was born alive:* "Having opened chest, note *position* of lungs (*before* respiration they occupy a small space at upper and posterior parts of thorax); their *volume* (of course increased after breathing); their *shape* (before respiration, borders sharp or pointed; after it, rounded); their *color* (before breathing, brownish-red; after it, pale red or pink); their *appearance* as regards disease and putrefaction; and whether they *crepitate* on pressure (as they will *after* respiration). Take out lungs with heart attached, and place them in pure water having temperature of surrounding air. Note whether they float (high or low), or sink (slowly or rapidly). Separate them from the heart and weigh them accurately; then place them in water again, and note sinking or floating, as before. Subject each lung to pressure with the hand, and note sinking or floating again. Cut each lung in pieces and test floating again. Take out each piece, wrap it in a cloth, and compress with fingers as hard as possible, and test floating, etc., as before. The crucial test of *perfect respiration* is each piece floating after the most vigorous compression."—(King's *Manual of Obstetrics.*)

9. In case of doubtful maternity, the following points might help to fix the responsibility: Resemblance of face, features, voice, gesture, attitude, habits, deformities; absence of one of the "claimants" beyond the seas for a much longer period than that of the particular gestation.

10. It may be impossible to prove the fact of an abortion. The evidence will depend on the signs of a recent delivery and examination of the product of conception. If the case is a criminal one, and was carelessly performed, there may be evidence of the use of instruments, sepsis, etc.

Signs of recent delivery.—In the living: Woman is

more or less weak, and incapable of exertion; pallor; soft abdomen with relaxed skin, and lineæ albicantes; breasts, full, tumid, and secreting milk; presence of colostrum corpuscles in the milk; secondary areola; external genitals relaxed and tumefied; os uteri swollen and dilated; fundus hard and globular; lochial discharge; absence of fourchette; lacerated cervix. *In the dead:* Uterus enlarged, thick and soft; uterus contains blood, clots, and debris of decidua; tubes and ovaries congested.

HYGIENE.

1. Diseases believed to be acquired by inhalation of microorganisms from the air: Tuberculosis, pneumonia, diphtheria, measles, scarlet fever, whooping cough, erysipelas, influenza.

2. An adult, at rest, takes about sixteen respirations a minute; the tidal air is about 500 c.c. Therefore 500 × 16 = 8000 c.c. of air are respired in a minute. Inspired air contains 21 per cent. of oxygen; therefore 80 × 21 = 1680 c.c. inspired per minute, or 1680 × 60 × 24, or 2,419,200 c.c. inspired per day. By the same method it may be calculated that an adult expires 352 × 60 × 24, or 5,068,800 c.c. of carbon dioxide a day (4.4 per cent. of expired air being carbon dioxide).

Ventilation: "The principal means of ventilation are the windows, doors, and the artificial openings especially made for the purpose. The occasional opening of doors and the opening of windows greatly assist the exchange of air in ordinary dwellings, with not too many persons in the rooms and with but ordinary illumination and heating. When the number of persons in rooms is large and the number of lights increased, the windows and doors may not be sufficient for adequate ventilation, and special artificial openings may be needed. The number and character of such openings vary in size, location, shape, character, etc. The openings may be in the shape of tubes or boxes placed within the windows, the sashes, the panes, the walls at different points, the ceilings, or the floors. All such openings communicate with the external air, and serve as air inlets, or outlets, and may also be provided with adjustable gates, so that they may be closed up when not wanted. The number of ventilating devices is very large; their value depends on their location and size and character. Where local heating is used within the house, ventilation is aided by the necessary chimney and fire openings, and by the use of grates and stoves. The advantages of mechanical ventilation are the constancy of the exchange of air, the independence from any other means, the perfect control of the velocity and volume of the supplied air, the possibility to accurately regulate the temperature, quantity, moisture, and purity of the incoming air. Mechanical ventilation is, as a rule, carried on from a central point, and is of three kinds: *plenum*, or propulsion method, in which pure air is driven into the house from outside; *vacuum*, or exhaustion method, in which the impure air is withdrawn from the house; and the *combined vacuum and plenum* methods."—(Price's *Hygiene and Public Health.*)

3. "Fifty gallons of water per day is a safe average minimum, while in large cities and civilized communities a supply of 300 gallons and more per person is not excessive."—(Price.)

Diseases caused by the use of impure water are: Typhoid, cholera, dysentery, diarrhea, goiter, intestinal parasites, metallic poisoning, vesical calculi.

4. The mere presence of nitrites in water is suspicious, while the amount of nitrates must be marked before the water containing the same is regarded as suspicious. The presence of these salts in water indicates organic nitrogenous matter which has undergone chemical changes.

5. *Milk may be sophisticated or adulterated* by: (1) Skimming; (2) the addition of water; (3) the addition of coloring matter, such as caramel, annatto, or methyl orange; (4) the addition of preservatives, as boric acid, formaldehyde, salicylic acid, or salicylates; (5) the addition of arrowroot, flour, sugar, glycerine, chalk, or sodium carbonate.

The greatest danger in such adulteration is in the transmission of the microorganisms of infectious diseases which may be present in the dirty water with which the milk is diluted.

6. *Meat may be unfit for food* owing to: Disease of the animal; unfit condition and surroundings of living animals; post-mortem changes; infection of the meat by persons or places of manufacture, sale, etc.; and by adulteration. This last may consist in: "(1) Addition of foreign substances reducing, lowering, or injuring the quality of the food. (2) Partial or entire substitution of an inferior substance. (3) Extraction of some of the valuable substance from the meat. (4) Coloring, coating, or otherwise changing the appearance of the food, whereby poor quality is concealed, or it is made to look better than it is. (5) Addition of some foreign substance to 'preserve' it."—(Price's *Epitome of Hygiene.*)

7. *Diseases transmitted by flies:* Typhoid, cholera, plague, tuberculosis, dysentery, anthrax, and intestinal parasites.

8. In locating a well for drinking water on a farm, care should be taken that it is so situated that no water can flow into it from stables, manure pits, privies, cesspools, cattle-pens, etc. Further, the well must be well covered; and all around its opening should be a properly cemented border.

9. To prevent the spread of typhoid fever: Flies should be kept out of the house as far as possible, by means of screens or otherwise; all discharges from the sick person must be disinfected; all utensils, dishes, etc., used by the patient must be thoroughly cleansed and boiled every day; soiled linen must be soaked in a disinfectant solution before being washed; after each attendance on a patient, physicians, nurses, and others should wash their hands in a disinfectant; thorough sterilization of all bedding, etc., must be performed after the disease is over. Further, each household should boil all water that is to be used for drinking or for washing dishes, etc.; milk should be boiled also; and no ice should be put *in* water or other drink or food.

"When the patient has recovered from an infectious disease, he should be given a general bath with soap and water. In addition to this, he may be bathed with chlorinated soda solution, and in the exanthemata it may be advisable to anoint his body again unless all desquamation has ceased. After a general bath has been given the patient may be allowed to mingle with the well. In most localities the convalescent from certain diseases, especially smallpox, is washed with 1:2000 bichloride of mercury solution, clothed with clean clothing, and then transferred to a disinfected room.

"The clothing and bedding which are to be disinfected by means of steam should be carefully wrapped in cloths saturated with 1 per cent. carbolic solution, placed in a wagon, and taken to the disinfecting station. After the bed has been stripped, all refuse matter, paper, and articles of little value are wrapped in cloths saturated with carbolic acid and burned in a stove or furnace. The floor, doors, windows, furniture, and the walls for a distance of 1½ meters from the floor should be washed with 5 per cent. carbolic acid solution. The walls and ceiling of the room should subsequently be sprayed with 1:1000 bichloride of mercury solution. If the walls are papered, it is advisable to remove carefully the paper before beginning the disinfection. The room is then closed as tightly as possible and disinfected by means of formaldehyde."—(Bergey's *Hygiene.*)

10. To *fumigate by sulphur dioxide:* For each 1,000 cubic feet of space, three pounds of sulphur are burned, care being taken to prevent accidents. In every case all apertures and crevices of the room should be closed, all closets, drawers, or other receptacles opened; and after the fumigation the room should be well ventilated and thoroughly cleansed with a solution of corrosive sublimate.

Open Treatment of Wounds with Cellulose Rings.—Lörcher uses rings of cellulose covered with mull as an adjunct to the open treatment of wounds. The cellulose is first rolled up like a long sausage and then bent around in ring shape. Cotton wadding may be used in the same fashion. A mull bandage is then wound about. The rings are of various sizes and thicknesses. They are placed over the wounds and fastened on with a square of muslin fastened to the body with mastisol. In position they resemble large corn or bunion plasters. They are chiefly indicated for wounds involving the skin and soft parts. Naturally they are adapted only for dry dressings. They are superior to bandages in many localities—for example, near joints.—*Münchener medizinische Wochenschrift.*

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THE VALUE OF TRANSFUSION IN ATROPHIC AND DEVITALIZED INFANTS AND CHILDREN.*

BY LOUIS FISCHER, M.D.,

NEW YORK.

IN a certain class of infants of the marasmic or atrophic type, gastroenteric disturbances preclude successful feeding. In like manner toxicity associated with the acute infectious disorders renders the prognosis exceedingly grave. The infant loses day by day and the prognosis is correspondingly worse.

It is immaterial whether the condition is primarily due to faulty metabolism of fat or protein resulting in inanition, or whether we are dealing with a secondary anemia. The examination of the blood reveals the same clinical picture, *to wit:* decrease in the percentage of hemoglobin and marked decrease in the number of red blood corpuscles.

If the general condition improves, the blood picture improves. Here then lies our therapeutic indicator.

How can we best improve the blood? By increasing the power of food assimilation. But is this always possible? Decidedly not, otherwise our infant would not emaciate and go from bad to worse and lose weight. Human milk sometimes saves life provided sufficient can be assimilated.

As these cases offer little if any therapeutic hope one is compelled to lay aside drugs and food, and resort to emergency measures until an apparent crisis has been thwarted.

Another class of cases well adapted for this form of therapeutics is the toxic and the septic type of acute infectious diseases. Cardiac insufficiency resulting from the toxemia will frequently not respond to the routine method of stimulation. Strychnine with or without whiskey does not modify these symptoms. These desperate cases will succumb unless a fresh supply of blood is provided.

Another class of cases which lend themselves to this form of treatment is the hemorrhagic type of disease. Thus we utilize the intravenous injections in the hemorrhagic form of diphtheria.

The previous remarks may be considered my apology for bringing this subject before you for your consideration.

Recent literature records a great deal of progress in the completion of what may be regarded as an almost ideal method of transfusion. This method consists briefly in withdrawing from the donor, with the aid of a blunt-pointed steel needle and a record syringe, as many ounces of blood as desired for the transfusion. To prevent coagulation of the blood a citrate of soda solution is added to it, and the whole kept at blood heat, in a sterile beaker until needed, or with the aid of Unger's apparatus direct transfusion can be done.

Hust in 1914 used a human blood transfusion by adding citrate of soda and glucose to the blood. Citrated blood was also recommended by Weil in 1914, who used 1 per cent. sodium citrate solution. R. Lewisohn found that 0.2 per cent. solution of sodium citrate will keep the blood fluid. His experiments with human blood transfusion were performed at the Mt. Sinai Hospital in New York.

The important fact gleaned from these experiments is that the addition of the citrate of soda prevents clotting.

The technique of the injection has been described by Dr. A. Zingher in the MEDICAL RECORD March 13, 1915. A suitable donor must be chosen. We have encountered no difficulty in procuring one of the parents or uncles to give eight to twelve ounces of blood. The donor must be free from syphilis or tuberculosis. If time permits, and the case is not a desperate one, we should determine if the serum of the donor agglutinates or hemolyzes the patient's red blood cells or *vice versa.* This method is described by Ottenberg and Epstein. In emergency cases as met with by me it was impossible to take the time to study the agglutination and hemolysis of the donor's blood. Ottenberg states that while it is better to test each donor's blood, he believes that danger exists in but 2 per cent. of all cases, or one in fifty.

The technique of transfusion is so simple that it can be successfully carried out in most cases by the general practitioner in the patient's home without any elaborate paraphernalia. But all must be done with sterile and aseptic technique.

The donor is placed in a recumbent position. A piece of rubber tubing and an artery clamp acts as a tourniquet above the elbow. To a 30 c.c. record syringe a steel needle one and one-half inches long is attached and inserted into the tense median cephalic vein. A syringeful of blood is aspirated. The needle is left *in situ.* The barrel of the syringe detached, and the blood quickly emptied into a large beaker containing two and one-half c.c. of a 10 per cent. solution of sodium citrate. To keep the needle free, with the aid of a small record syringe inject a few drops of a 1 per cent. sodium citrate solution. Too rapid depletion is not safe and may result in a sudden cerebral anemia. It is much safer to allow the circulation of the donor to be re-established before withdrawing the second syringeful of blood.

After each addition of blood to the citrate solution the beaker must be thoroughly shaken in order that the citrate may become thoroughly mixed with the blood. By the Unger method of blood transfusion we avoid drawing off the blood into a beaker, hence do not need the soda citrate solution. Clotting is practically avoided.

*Read by invitation before the Chicago Medical Society, Dec. 8, 1915.

When blood is drawn from the donor, saline solution is injected to replace the blood and to keep the needle free. The recipient receives not only blood but also saline.

The advantages of this method are:

1. The frequent handling of the cannulas is eliminated because connections are made not directly to them but to the cock. For this reason the cannulas ought not to be dislodged.

2. Clotting is avoided because the entire system is regularly and instantly flushed with saline, and the length of time the blood is outside the body is reduced to a minimum. In none of the animal experiments did clotting occur.

3. Only the operator handles the blood syringe. The function of the assistant is limited to the injection of the saline.

4. Fewer syringes are needed. In one experiment 800 c.c. of blood were transfused, only two syringes being used. It is advisable, however, to have about four to meet emergencies.

5. It is time saving because it reduces the manipulations; it minimizes the time the blood is outside the body, and it allows of the injection of saline simultaneously with the aspiration or injection of blood. When indicated, a more rapid transfusion can be done by this means than by any other method.

The rate of the flow can however be varied at will. Blood can be sent across as slowly as one wishes, because the patency of the circuits can be relied on.

Choice of Vein in an Infant. There are four places adapted for this method: (1) the median cephalic, (2) the median bacillic, (3) the jugular, and (4) the longitudinal sinus.

The longitudinal sinus has been suggested by Tobler and Helmholz of your city. Marfan as early as 1898 advised the use of this route for the intravenous administration of salt solution. Owing to the ease with which one can enter the sinus through the anterior fontanelle it seems as though Nature had left this opening as an emergency for this course of treatment.

My personal experience with this route dates back many years ago when, in conjunction with the house staff at the Sydenham Hospital, I used the intraventricular method of aspirating spinal fluid, and injecting by the same route, antimeningitis serum. This case was presented in the Section on Pediatrics of the New York Academy of Medicine March 10, 1910. The simplicity of this method is such that one can enter the sinus very readily. It is much easier to use this method than to resort to vein-to-vein, or artery-to-vein method.

In many of my cases the median cephalic vein was used. This being a very small vein in infants, it was necessary to make a small incision and expose the vein in order to inject the blood. The patient receives the blood directly into the vein. A 1 per cent. cocaine solution is used for local anesthesia. An incision is made at the bend of the elbow. The median cephalic vein is exposed, and the needle inserted, through which the blood is then injected. Some of my cases received but two ounces, others four, six, eight, and sixteen ounces at one transfusion.

The following cases will illustrate the types which have been selected, and which I believe offer a good method of resuscitation of many moribund cases:

Case I.—Baby W., born Jan. 4, 1915, was asphyxiated at birth and resuscitated with the aid of a pulmotor. It was a forceps case. Suffered cerebral hemorrhage. Prognosis hopeless. Received breast feeding, but was so weak that its first cry was noted when one month old. Always regurgitated or vomited its food. The infant when I first saw it was seven weeks old, and weighed seven and one-half pounds. It had an irregular, thready, and intermittent pulse, was fed with difficulty, was listless and cyanotic. The stools contained undigested particles of cheese and mucus. The circulation was bad, extremities cold, the heart sounds were feeble. Eight ounces of citrated blood were transfused. There was slight improvement in the color of the skin during the transfusion. On the following day the infant was brighter, had more color in the cheeks and ears, began to notice objects, and appeared more natural. Gained six ounces during the first week after the transfusion. The second week gained six ounces more. It is now over eleven months since the first transfusion, the child weighs over twenty pounds and has been discharged as cured.

Case II.—Baby S., 2¼ years old, was seen by me suffering with influenza. In addition thereto there was a localized cervical abscess which required incision. Later marked hyperpyrexia, with temperature as high as 106°, continued for a number of days. The case was seen by Dr. Holt, who concurred in the diagnosis of toxemia from influenza. A few days later evidences of bronchopneumonia were noted. The exhaustion and devitalization due to the prolonged pyrexia so weakened the infant that the prognosis seemed grave. Transfusion by the direct method was used, six ounces of citrated blood injected into the median cephalic vein. Great improvement followed this transfusion within 24 hours. A striking fact was the drop in the temperature by lysis of one degree every three hours for the succeeding sixteen hours. Four days later another area of consolidation was noted and the temperature again rose. Packing and tubbing were used to reduce the temperature, but after one week more we again noticed evidence of exhaustion due to prolonged pyrexia, feeble pulse, muffled heart sounds, and general asthenia. As marked anorexia was noted I ordered gavage, using four to six ounces of peptonized milk. One day later a second transfusion of 7 ounces of blood was given. The same striking effect was again noted on the temperature, but the improvement most marked was on the pulse, on the heart action, and on the circulation of the extremities. Whereas the child previously was peevish and cross, it now became more contented and quiet. In this case three transfusions were given, and the child seemed to revive after each transfusion. Thus a hopeless condition before transfusion seemed to be modified within six hours after the blood was injected. The child succumbed to paralysis.

Case III.—Rose G., 5 years old, was admitted to the Willard Parker Hospital with a temperature of 104°. She was ill six days with a severe toxic condition. The rash was a punctate erythema. The prognosis was hopeless. Nine hours after admission the temperature rose to 105°, pulse 164, respiration 44. An injection of 240 c.c. citrated blood from a parent was given. Six hours later her temperature dropped to 103°. On the following day the temperature dropped to 101°, although it rose to 104° on the evening of the same day. Three days after the first transfusion a second transfusion of 210 c.c. was given. The child seemed brighter, although the pulse and temperature were not markedly influenced by the second transfusion. Four days later 240 c.c. from an uncle was transfused. Within 24 hours the child's temperature, which before the third transfusion was 103.6°, dropped to 100.6°. The child made a slow convalescence. On the 27th day of illness the temperature was normal and remained so for two days. About two weeks after this transfusion a slight febrile disturbance appeared. There was a distinct chill, and a rise of temperature from 98.8° to 105°. The temperature then dropped to normal and remained so three days, when the same phenomenon was again observed, a chill followed by a rapid rise of temperature to 104°, and again the temperature dropped to normal. The spleen was enlarged. Three more days intervened, again a chill, followed by a rise to 106.4°. Quinine was given. The temperature then dropped to normal and remained normal. The child was discharged two weeks later in good health. A study of the temperature curve will show an interesting phenomena. That we had a recurrence of fever once every three days and the blood examination revealed the plasmodium. As this was the only case in the hospital, the inference was that the

plasmodium entered the circulation from the donor's blood.

CASE IV.—Ethel K., 3 months old, was admitted to the Willard Parker Hospital with marked opisthotonus, projectile vomiting, and all evidence of cerebrospinal meningitis. A diphtheritic exudate was seen on the tonsil. The culture showed the Kleb's Löffler infection. Lumbar puncture was attempted to control frequent convulsions. As the puncture resulted in a dry tap, we suspected a closure of the Foramen of Magendie. We aspirated the lateral ventricles and obtained from 50 to 60 c.c. of turbulent fluid, in which the *Diplococcus intracellularis* was found.* As we were dealing with a Klebs-Löffler infection in addition to a *Diplococcus meningitis*, the prognosis was hopeless. Notwithstanding this hopeless condition we were able to prolong life for many weeks by transfusing from 4 to 8 ounces of blood from the mother or father. The child died after a prolonged struggle.

CASE V.—Philip A. was admitted to the Willard Parker Hospital diphtheria service February, 1915. Diphtheritic membrane was seen on both tonsils and on the soft palate. The child was anemic and extremely emaciated. A soft systolic murmur was heard at the apex. The prognosis was hopeless.

Complications.—Pleuropneumonia was noted. The chest was aspirated and pus found. Exhaustion from inanition continued. A transfusion of 9 ounces of citrated blood was given by Dr. Zingher. The child lingered several days and finally died of exhaustion. Post-mortem examination showed a pulmonary abscess.

Incompatibility of Blood.—An accident that is possible in about 2 per cent. of cases is that the red blood cells of either the donor or recipient will hemolize or agglutinate by the serum of the other. Ottenberg found, as a rule, that the blood on one person in every five or six examined was not entirely compatible with the recipients.

Hypertrophic and Dilated Heart.—Another condition that one should note is a danger caused by dilatation of the heart. When the heart is embarrassed, transfusion should be interrupted every few minutes. In a case of this character *syringe transfusion* would be indicated, rather than vein-to-vein or artery-to-vein transfusion. Ottenberg reports two cases of hypertransfusion, both fatal cases; one an endocarditis, the second a pernicious anemia. Large amounts of blood were transfused with fatal results.

Transfusion to Modify the Acute Infectious Diseases.—Any one who has seen the type of cases which exist among the poor and especially those neglected because of poverty or ignorance will have before him a type of septic or toxic cases as seen by us in the public hospital. Some of these cases are admitted in a moribund condition. Many more die within the first 24 to 48 hours regardless of any form of treatment, and it is to this class of cases, the so-called hopeless type, that we turn with some degree of optimism, hoping against hope. In a hemorrhagic case of diphtheria the patient, who was almost pulseless from nasal hemorrhages and did not respond to stimulation, was transfused by Dr. Leo Buerger, with the assistance of Dr. Ottenberg and the House Staff, at the Willard Parker Hospital. In this case the transfusion was direct. This patient responded to the transfusion but eventually died of toxic myocarditis.

Regarding the effect of normal blood during an acute infectious disease, much has yet to be learned. In some instances the blood of convalescents from scarlet fever† was utilized for both intravenous and intramuscular injections in the severer forms of scarlet fever, and it seems that there is more specific bactericidal power in the *blood of a convalescent* than there is in the normal human blood. This leads Ottenberg to state that the blood of persons who have recovered from an infectious disease or who have been artificially immunized has specific properties not only in the antibodies of the plasma but possibly also in the cells.

Observation and Treatment of the Donor.—The pulse of the donor requires careful supervision whether we draw blood with a syringe or otherwise; less supervision, however, with the syringe method. Most of the men whom I have seen did best when they were blindfolded, as the sight of blood invariably caused nausea and sometimes syncope. The pulse is invariably slowed and should be watched for signs of collapse. Weakness was described by one donor when the second syringeful of blood was withdrawn. We invariably stimulate the circulation after withdrawing eight ounces or a pint of blood by giving the donor one-half pint of milk with the yolk of egg added, or warm broth or coffee to which the yolk of egg is added. No other stimulation was necessary. It is important to have the donor rest at least an hour after withdrawing the blood.

I have utilized transfusion for the relief of devitalized and marasmic infants. Thus an infant seven weeks old was successfully transfused. This was my youngest case. The child was born in January, 1915, and transfused toward the end of February. It is alive to-day.

Influence of Fever.—A decided drop in the temperature followed in each of six transfusions (transfused cases). In one instance the temperature dropped from 104° to 100° within six hours. In another instance the temperature dropped three degrees within six hours by lysis. This decided antithermic effect could be accounted for in no other way excepting directly due to the influence of the fresh blood supply. Ottenberg and Libman have made a similar observation on the influence of transfusion on fever. "Of particular interest is the transfusion on the fever which is such a conspicuous feature of a large number of cases of pernicious anemia. It has been found in over 60 per cent. of the cases (in one report as high as 80). In 5 of the 6 febrile cases we investigated the fever disappeared after transfusion. This phenomena is not peculiar to this form of anemia, for among 16 other cases of anemia due to a variety of causes (including infections) febrile before transfusion, 8 became afebrile after it. These observations lend strong support to the view that there exists a fever dependent upon anemia as such, the so-called anemic fever. Transfusion is the best remedy for pernicious anemia; it never cures, but it leads to remissions in about half the cases."

The Advantages of Syringe Transfusion.—There are decided advantages in the direct or syringe method as advised by Lindeman, Zingher, and others. There is no traumatism, no pain, and a decided absence of shock. The most important point, however, is that the exact amount transfused is known.

Another advantage of the syringe method is that the donor's blood can be removed, mixed with an anti-coagulant such as citrate of soda, and then taken to the patient. This may be an important factor in securing blood from a donor who is sensitive about going to a hospital or who does not care to come in immediate contact with the recipient. This latter may be an important point if the patient

*Dr. Abrahams of the Research Laboratory aspirated and injected the patient in this case.

†See paper of Park and Zingher, read before the Medical Society of the State of New York, 1915.

(recipient) has an acute infectious disease which could be transmitted to the donor.

From the communication here presented I feel justified in making the following deductions:

1. That this is a very useful method of therapeutics.

2. That it can be used in the private house as well as the hospital.

3. That very little assistance is required.

4. That many marasmic and underfed infants and especially cases of secondary anemia are adapted to this treatment.

One striking point was forcibly brought out in the marasmic case under consideration. The infant's temperature was subnormal, the extremities cold. A general cyanosis was evident in the lips as well as fingernails and toenails. The circulation was stagnant. Within a few hours after the transfusion the cyanosis was lessened, the body temperature rose one degree, and this improvement continued and aided the general nutrition. I am therefore encouraged to believe that transfusion should be added to our therapeutic measures in marasmic infants.

It is a great pleasure to acknowledge the valuable association of Dr. A. Zingher and Dr. Abrahams of the Research Laboratory and the co-operation of Dr. C. T. Sharpe and Dr. W. K. Sharp and Dr. Franz of the Resident Staff of Willard Parker Hospital in furnishing clinical assistance and bedside notes.

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Lumbricoid Worm in a Tonsil.—A. B. Middleton reports the case of an eight-year old girl who was thin and anemic and suffered from "bilious attacks" lasting two or three days about every three weeks. The child did not complain of sore throat, but had an adenoid expansion and the tonsils were enlarged. An operation was undertaken for the removal of the latter. The right tonsil ruptured when the snare was tightened, and a female ascaris, 1¼ inches in length, escaped. Within the tonsil was a cavity, the habitat of the worm. After the operation the bilious attacks ceased and the child improved in health.—*British Journal of Children's Diseases.*

INFLUENZA AND GRIPPE IN INFANTS AND CHILDREN.*

BY CARL G. LEO-WOLF, M.D.,

BUFFALO, N. Y.

IN going through the literature on the subject of this paper, especially the pediatric literature, as one is apt to do in preparing a paper to be read before a body of learned men and physicians, I was struck at once by one fact, namely, that in the books published before the year 1890 I could not find any references, at least no extensive ones, to influenza or grippe, while beginning with that year these infections are described in every volume we open.

For the purposes of this short discourse, which is meant for a recapitulation and separation of clinical pictures, I have refreshed my memory and pieced out my personal clinical experience from the following volumes: Spiegelberg, in Pfaundler and Schlossmann, "Diseases of Children," second edition, 1912; O. Heubner, "Lehrbuch der Kinderkrankheiten," first edition, 1903; E. Feer, in his "Lehrbuch der Kinderheilkunde," first edition, 1911.

As can be gleaned from the title of this paper, I make a distinction between the two terms, "influenza" and "grippe," which have been considered by many to be but two names for the same disease or group of diseases. I trust, however, that I may be able to prove that this is a mistake, and that we have to deal here with two distinct entities, on the one hand an acute, contagious, and infectious, epidemic disease, "influenza," and on the other hand a group of numerous other contagious diseases, mostly of the respiratory tract, "the grippy infections," or as they are commonly called, "the colds." If we should insist upon using the name "grippe" for both types of infection, then we should accept Filatow's suggestion of classifying influenza as pandemic or epidemic grippe, and the grippy infections as endemic grippe; but, as stated before, I believe that by adhering to the distinction in names we will avoid many a mistake and misunderstanding on our own part as well as on the part of our patients.

History.—The history of medicine, than which there is, to my mind at least, no more fascinating nor instructive part of our science, records some eighty epidemics of influenza, which have been traced through the course of the centuries, and to those who are interested in this subject I would recommend the reading of "The Epidemiology of Influenza" by Professor Ditmar Finkler of Bonn University, in the fifteenth volume of the "Twentieth Century Practice of Medicine."

Suffice it for me to state here that the last extensive epidemic of influenza was the one, undoubtedly well though not favorably remembered by the older men here, in the years 1889 and 1890. This epidemic came from the steppes of Asiatic Russia, spread successively from east to west over the principal cities of Europe, and then, while it was making its appearance in the smaller communities of the old world, it followed the routes of rapid transportation to this side of the water, to make its appearance first in the city of New York, then in Chicago, Philadelphia, and Boston, whence it spread all over this continent.

Since then we have been able to observe sporadic cases of this disease as well as small epidemics

*Read at the meeting of the Cattaraugus County Medical Society at Salamanca, N. Y., January 14, 1916.

from foci where the disease had remained dormant, due to the fact that infected persons do not always become freed very readily from these bacteria, which may sometimes vegetate for months and even years in the human body, especially in the lungs in cavities and in bronchiectasies, and also in the accessory sinuses at the upper end of the respiratory tract. A few weeks ago another epidemic took its inception from Philadelphia, as it appears at present, and is now raging all over this country, and which has made me choose this subject for my paper.

The grippy infections are endemic, they are with us all the time, at least in the settled portions of the world, and to write their history we would have to go back to the time when man developed from a branch of the common tree of animal life, if not still further back.

Etiology.—Let us look first at the etiology of the two diseases. Influenza is caused by the coccobacillus of Pfeiffer, discovered in 1890; this is a very slender bacillus which grows only on media containing blood hemoglobin at temperatures between 76° and 106° Fahrenheit. Even on these media it can be kept alive only for about two weeks. In the specimen it is found in arrangements which have been compared to the schools of fish or to the flights of migrating birds; it is readily stained with carbol-fuchsin. The germ is found in the secretions of the mucous membranes in large numbers; in children it can be recovered from the blood, the various secretions, the cerebrospinal fluid, the pus from the ears, etc.

In the grippy infections we find at different times and in different endemics different bacteria, most frequently pneumococci, also the *Micrococcus catarrhalis,* the bacillus of Friedländer, streptococci, in fact, bacteria which live as saprophytic parasites in the mouth and the pharynx of healthy persons. Climatic changes, exposure, and improper clothing seem to play an important rôle in the development of these infections, as does anything which tends to lower the vitality of the system; thus we know that children with digestive disturbances, with exudative diathesis, and with scrofulosis are very prone to these infections, still the "genius epidemicus," as it used to be called in the prebacteriologic times, seems to be a quantity by no means negligible. I suppose most of you here can testify to the fact that you brought a grippy infection to your own penates from a patient who was so inconsiderate or so ignorant and so ill mannered as to cough or sneeze into your face; while, on the other hand, you can go into the wilds, fishing or shooting, be exposed to the inclemencies of the weather, stay in wet clothes day and night for any length of time, and yet not get infected, provided you have been careful in the choice of your companions and guides, and have seen to it that nobody in your party has a "cold." And then, having safely passed through all kinds of exposure, you may return to your home and to civilization and catch an infection from one of the members of your own family or from one of the first patients you see. This, at least, has been my own experience upon more than one occasion.

Transmission.—Both kinds of infection are transmitted by direct contact with infected persons, the germs are spread by sneezing, coughing, and talking, the so-called spray infection, and also by handkerchiefs; riding in street cars or traveling on railroad trains, the attendance at school or the church, in short, all gatherings where large numbers of people are brought into close contact are the means of spreading these diseases. But while influenza does not seem to be dependent upon the climate nor the seasons, at least not any more than the other infectious diseases, the grippy infections appear regularly during the inclement weather of our late fall and last throughout the winter and early spring, though they may also appear in summer; in orphan asylums and in children's hospitals they are an extremely frequent occurrence. Here a new arrival or a visitor, nurse, or physician suffering from a so-called "cold in the head" will cause an endemic in the institution, and as the chances for these infections are thus very great it has been estimated that the inmates of these institutions will suffer from these infections, in some form or other, about once a month. This has been very aptly called hospitalism by my friend, Dr. L. F. Meyer of Berlin, and he has also shown that by certain measures, such as the exclusion of visitors, the wearing of gauze masks by physicians and nurses afflicted with a cold, and the separation of the infants by gauze screens, the so-called box system, we will be able to minimize the occurrence of these diseases.

Age also makes a considerable difference in the possibility of the transmission of the two diseases; influenza is mostly a disease of adults and older children, grippe is especially prevalent among infants and young children.

Pathological Anatomy.—Owing to the fact that we can but rarely obtain permission to perform a post mortem here, we have to depend largely upon European scientists for these investigations.

The pathological changes found in children dead from influenza are very little characteristic. Heubner describes them as follows: Usually we find more or less catarrh of the mucosa of the respiratory tract, with or without mucopurulent secretion; only the pneumonia following the serious cases is characteristic. Originally it is always lobular. We find a yellowish center in which there is usually a bronchus. This is surrounded by a reddish infiltrate, which is frequently hemorrhagic, sometimes the lobular inflammation becomes lobar from the confluence of a large number of lobular foci; the lung is very resistant to touch and has a multicolored appearance on the cut surface; in the microscopical specimen we find the alveoli and the interstitial tissue engorged with round cells which contain the coccobacilli in large numbers. On the pleura we find mostly a fibrinous exudate and hemorrhagic foci; at times we may find a hemorrhagic or a purulent exudate; in some cases also abscess or necrosis of the lung.

In the grippy infections the pathological findings will be those of the secondary infections, such as the bronchopneumonia, the septic infections, such as meningitis from infection of the middle ear, which have nothing characteristic.

Symptomatology.—The typical symptoms of influenza in children, especially in the older ones, do not differ in any marked way from those in adults, and I therefore do not propose to take up your valuable time with a recital of things which you can read up in any textbook on the practice of medicine, provided it was not printed before 1890. What I intend to bring out to-day is the differential diagnosis, the atypical symptoms, the cases where you will be at sea when called upon to make a diagnosis, and where we, all of us, are the most

likely to make mistakes, and let me say, pardonable mistakes.

The younger the child the more atypical, the more protean will be the clinical picture. In young infants, who, by the way, seem to have a certain amount of immunity against the coccobacillus of Pfeiffer, especially when they are at the breast, the disease may be ushered in by vomiting, convulsions, and other symptoms of meningeal irritation. The symptoms from the alimentary tract will also prevail most frequently in the clinical picture in infants and young children, as the result of the indirect effect of the infection due to toxic irritation. We observe intestinal disturbances, such as constipation, soon to be followed by diarrhea and loss of appetite. The stools are more frequent and fluid and fetid, the prostration is profound, and if this should not happen during the height of an epidemic of influenza we may be wavering in our diagnosis between meningitis and typhoid.

As the child grows older the affection of the respiratory apparatus is more in evidence, which is due to the direct effect of the coccobacilli, which gain their entrance here, and this again will lead to many a mistake, or at least doubt in the diagnosis. Supposing you are called to see a child who has a conjunctivitis, a severe coryza, and a dry, barking cough, you hear that this little patient has never had measles; you know that at this time there is an epidemic of measles prevailing in your locality, while the epidemic of influenza is still in its inception; you examine the child carefully, and fail to find Koplik's spots, but instead of these you see a diffuse redness and a retropharyngitis; add to this a mottled appearance of the child's skin. What more natural than to make a diagnosis of measles? We learn really more from our mistakes than from the correct diagnosis we hit upon once in a while, if we only are open-minded enough to realize where our mistakes lie, and do not persist in making them again and again; and I am not in the least ashamed to confess that I have made this mistake in the beginning of the present epidemic. Needless to state, that after that I was not quite as positive in pronouncing my diagnosis on the spot, though I did not make the opposite mistake of pronouncing a case to be influenza when I was not sure but that it might be a case of measles, after all.

Or one is called to see a child with a high fever, and is told that it has been taken ill suddenly and has vomited. The child's skin shows an exanthema, consisting of small punctate erythematous spots on the chest, the abdomen, and the sides of the extremities; an inspection of the patient's pharynx reveals a considerable livid redness of the tonsils, the uvula, and the palatine arch, which is sharply bordered above. What more natural than that the diagnosis of scarlatina will suggest itself? Still one had better defer pronouncing this when in the midst of an epidemic of influenza.

Another picture: You see a little patient, a baby, who has been ill for a few days, who has now a high fever, throws itself around a great deal in bed, is very restless, cries when taken up; its head is retracted and when you try to move the head it cries out with pain; it has, furthermore, slight jerking of the extremities. Do not fail to look into the patient's ears, an examination you should never omit as part of your routine examination in young children. This may save you in this instance from making a wrong diagnosis of meningitis. In influenza you will often find a hemorrhagic inflammation of the drum membrane which is bluish-red or bluish-black, and which may show either ecchymoses on its surface or still more frequently one or more bloody blisters upon its external surface. If you know what to do you will make a paracentesis at once and give the child instant relief and help it to a quick recovery, otherwise you will wait and let nature take its course until finally the pus breaks through, while the child is suffering all this time and the disease may spread into the mastoid cells. In the pus you will find the coccobacillus in large numbers.

We must, however, not forget that there is a distinct clinical picture of nervous influenza, where you can observe all degrees, from meningeal irritation, or meningism, to severe inflammations of the meninges, even purulent or parenchymatous changes. The toxic irritation causes headaches of the severest degree, and in small children stupor which may alternate with eclamptic seizures. In these cases you will find at post mortem only a slight opacity of the meninges. The true meningitis may be due either to the coccobacillus or due to secondary infection from the middle ear. Sometimes you may also see a case with hemorrhagic encephalitis or with symptoms closely simulating poliomyelitis after an attack of influenza. In all these cases lumbar puncture will be of great aid to you in making your diagnosis, and in some cases you may be rewarded by finding the specific organism in the lumbar fluid.

Nor must we forget that from six to ten per cent. of the children attacked by influenza suffer from nephritis which may be of the hemorrhagic type. One of these latter cases has recently been brought to my attention.

In other cases the respiratory organs may have to stand the brunt of the infection. We may observe a severe and dangerous pseudocroup, Concetti's "forma laryngea." In young and weakly children we may have a latent bronchopneumonia which may cause sudden death; or we may have to deal with an extensive bronchitis in the medium-sized and even the finest bronchial tubes; these are accompanied by continued fever, nervous symptoms, and somnolence which is hard to combat, or the child may be quite lethargic for some days. What may be the final result of this infection of the respiratory tract I have told you when speaking of the pathological anatomy. The dry swelling in the nose with which the disease often begins is a frequent source of nose-bleed.

So much about influenza; let us now look at the symptomatology of the grippy infections. Let us first take the case of an infant in an institution, an orphan asylum or a Baby's Hospital ward. The infant may have been getting along nicely, its stools were normal and its gain regular and sufficient, when all at once it will have diarrhea, perhaps also vomit, have some fever, and be restless; what more natural than to think of a food-intoxication, or a cholera infantum, as it used to be called, especially if the child had been suffering from severe digestive disturbances before? A few hours will tell the story; we then see the discharging nose of a typical coryza of grippy origin. But when we first approach the case, what are we to do? Are we to subject the baby to starvation, this being the only rational procedure in food-intoxication, or are we to continue the same food that we have been giving, although in slightly reduced amounts, which would be the rational procedure in a grippy infection, es-

pecially in an infant who has already been weakened by digestive disturbances and in whom even a short period of starvation might be of serious import? This, gentlemen, is one of the most difficult and momentous decisions for the physician in an institution for infants, and it will bring before one's mental eye the full responsibility he bears, though to the tyro it may seem to be easy.

In private and dispensary practice we frequently hear the following story: A young child has had what the parents call a slight cold in the head, with a running nose and some difficulty in breathing and consequently in nursing or taking the bottle; then it develops some cough, to which little attention is paid until it is brought to you or you are called in a hurry and find the baby with a severe bronchitis or a bronchopneumonia. What has happened in this case? The child contracted a coryza, which was at first in the anterior part of the nose only, whence it spread to the posterior part of the nasal cavity, then the child had a tracheolaryngitis, and this being neglected the disease followed its downward course, first into the large bronchial tubes and then still farther down until finally we see it with a fully developed bronchopneumonia, and everyone of you knows what that means.

Some children—we might say the more fortunate ones—have the symptoms of pseudocroup with their laryngotracheitis, and as this usually frightens the parents, the physician will probably then be called early enough to prevent the downward march of the infection.

How many cases of grippy infection do we see day in and day out where we stand helpless almost and where we have to say to ourselves that if we had only been called more promptly we might possibly have been able to stop the further progress of the disease?

Let us always remember that a grippy infection, even a slight coryza, if such is possible, is portentous, the more so the younger the child, and that we as careful physicians to whom the health and life of our patients is entrusted must never make light of these conditions.

I shall not go into the complications of the grippy infections, this would lead us too far, but I will mention the one which is the most frequent and at the same time one of the most dangerous, namely, otitis media. The Eustachian tube in young children is patulous and comparatively wide; what then is more natural than that the bacteria in the secretions of a posterior rhinitis should find their way into this passage, there to ascend and to cause sometimes irreparable damage? Let me state again that we must never make light of the grippy infections.

Diagnosis.—This has been largely covered in the Symptomatology, but let me recapitulate that the diagnosis of influenza is by no means easy, except at the height of an epidemic, and that even then we may mistake it for meningitis, measles, or scarlet fever, in infants for digestive disturbances, and vice versa. Sporadic cases are extremely difficult to diagnose and are undoubtedly very frequently misnamed.

The diagnosis of the grippy infections is easy from the history of the case alone, though in infants who have been suffering from digestive disturbances we may be at sea for some hours.

Prognosis.—The prognosis of influenza in children, even when the lungs are involved, is on the whole favorable, but the social condition of the patient and consequently the care that he can receive is often decisive.

In the grippy infections the age of the patient is of the greatest importance; the younger the child the more doubtful his recovery, provided we have not been called in the very beginning of the infection.

Treatment.—This part of my paper will, I am afraid, be the most disappointing to you, because I can not give you anything new, nor can I tell you of any specifics; but this does not mean that we are not able to do a great deal for the comfort of our patients nevertheless.

In influenza the therapy is mostly symptomatic. We naturally keep the child in bed even for a few days after the acute symptoms have disappeared. The diet in older children should be liquid at first, then we give a generous diet rich in proteids. Starvation must be avoided, the more so as these patients are usually suffering from anorexia. In babies we continue with the food on which the baby has been thriving, though in slightly reduced quantity, giving more water. Older children also will be very grateful for a plentiful administration of water, which may be given advantageously in the shape of lemonades, fruit juices, and ices. Hydrotherapy is of great benefit, especially in young children, but the older ones will also react very well to cold baths or packs for the high fever, and hot bath with cold effusions for the stupor.

Of drugs you may use the salycilates in small doses, or quinine; in older children, aspirin with sodium benzoate; for the irritating cough, inhalations of tincture benzoin will be soothing; in bronchitis or when the diarrhea is severe you may have to resort to an opiate; but on the whole drugs are of minor importance compared to hygienic measures. The complications must naturally be met as they arise.

For the grippy infections I resort entirely to instillations of argyrol in rhinitis, in babies especially. I also use instillations of adrenalin to facilitate the breathing through the nose, and this is also done before nursing to make this easier. For the laryngotracheitis and the bronchitis I use wet compresses and packs, and I am also a great believer in the efficiency of the bronchitis kettle or one of its substitutes, with or without the addition of turpentine or tincture of benzoin, but I do not use cresolin or formaldehyde or similar lamps, as I am convinced that it is the moisture of the atmosphere around the child that does the work and not the medication. Drugs administered internally I have given up almost entirely, except to meet complications; the results I have observed from the hypodermic administration of some of the newer remedies, have been by no means convincing.

The principal point in influenza as well as the grippy infections is prophylaxis. In epidemics of influenza children should avoid all public or private gatherings, also all public conveyances, and they should be guarded most carefuly against exposure.

As to the grippy infections, especially in infants, and mainly those in institutions, I have indicated the best means of prophylaxis before, and I have only to add that if people would refrain from touching and still more from kissing children and, if we could enforce the laws against promiscuous expectorating, the number of these infections would be materially reduced.

181 Franklin Street.

ENTEROPTOSIS.

By F. ROBBINS, M.D.,

NEW YORK.

General Remarks.—Enteroptosis means a descent of otherwise healthy abdominal organs below their normal level, in the direction of gravity, and is characterized by abnormal mobility of the displaced viscera. The displacement may concern the bowel, the stomach, the liver, the spleen, and the kidney. The condition is named after Glénard, who regarded it as extremely common, believing it to be present in ninety or more per cent. of all persons who seek professional advice.

The *cause* of enteroptosis, aside from congenital factors, is referable to a lack of tonus of the anterior abdominal wall. This relaxation affects the abdominal muscles, so that the recti become insufficient and unable to resist the intraabdominal pressure. The onset of enteroptosis is favored by traumatism and violent exercise. Pregnancy, and improper clothing, such as tight corsets, are important etiological factors, and enteroptosis is accordingly more frequent in women than in men. Symptoms on the part of the uterus are often relieved by the treatment of enteroptosis. Rational methods of treatment are based upon the recognition of the etiological factor of the disease, which is relaxation with atony. Enteroptosis gives rise to a train of rather indefinite symptoms, indigestion with abdominal discomfort, increased peristalsis and constipation, nervousness, mental depression, and vertigo.

Radiography.—The extreme frequency of gastroptoses of all degrees, in women as well as in men, is best revealed by *x*-ray examination, which also explains the reason why conservative therapeutic measures fail in a certain number of the cases, on account of adhesions fixing the displaced stomach at various points of the abdominal cavity. Radiography illustrates the inadequacy, futility, or actual harmfulness of most of the customary procedures for the correction of the gastric displacement. A revolution of the pathology of the large intestine has been brought about by the use of the *x*-rays, which also afford valuable information on the subject of enteroptosis. However, the opinions of specialists are still at variance as to the interpretation of the findings. In enteroptosis, the last coils of small intestine are no longer in the vicinity of the cecum, but they have dropped down into the small pelvis. The transverse colon is usually lowered, and the hepatic flexure is often displaced downwards, while the sigmoid flexure sags more frequently than any other segment of the large intestine. The descent of the large bowel (coloptosis) is of even greater clinical significance than a sagging stomach, whereas ptosis of the small intestine is relatively unimportant.

Recent Statements of Prominent Clinicians and Operators.—The most recent important contributions to the subject of enteroptosis (splanchnoptosis) are those of Thorkild Rovsing[1] and of Grechen.[2] The monograph of the former, entitled, Gastro-Coloptosis, contains chapters devoted to the discussion of the pathological significance, which in the author's opinion is frequently underestimated, the *clinical pictures* of the disease, its diagnosis and treatment; with a report of three hundred cases treated by gastropexy. Rovsing emphasizes the numerous confusions of gastroptosis with other diseases of the stomach, such as gastric ulcer or cancer, and the frequency of mistaken treatment. Inefficient or harmful gastroenterostomies for "suspected ulcer," as well as most useless appendectomies and oophorectomies, can be avoided by the proper recognition of enteroptosis, and its cure through the performance of an operation (gastropexy), or the application of a bandage, according to individual needs in a given case. Proper fixation compensates for the lost function of the suspensory ligaments of the stomach, and the resulting loss of normal support. The power of evacuation of the stomach is improved, as the indirect effect of the operation. Gastropexy is absolutely indicated in all those cases of gastrocoloptosis in which the patients are semi-invalids, and more or less unfit for work, on account of their gastrointestinal disturbances, in spite of systematic medicinal measures and the application of an abdominal supporting bandage. In order to be efficient in any case of enteroptosis, the bandage or binder must meet the following conditions: The pressure must act widely, on the hypogastrium alone, by means of a large strong pad or pledget; the pressure must be uninterrupted and extensive; the bandage must be so constructed that the patient can put it on in the morning, before getting up, while the abdominal organs are still in their proper place.

Enteroptosis is considered by some authors as a phenomenon of degeneration, one of many symptoms of a universal asthenia; while others believe that the displacement of the organs as such is the actual cause of most of the distressing symptoms and disturbances. Rovsing points out that there is a tendency among physicians as well as in the laity, to regard as hysterics or malingerers many unfortunate sufferers from enteroptosis, who on examination were found to be free from organic or functional disease of the digestive system. In those cases gastropexy, in his experience, has a most beneficial effect, and requires to be supplemented by gastroenterostomy, or more rarely resection, only when the condition is complicated by duodenal ulcer, pyloric stenosis, or hourglass stomach.

Grechen considers *gastroptosis* as a congenital displacement of the stomach. Well-marked cases were observed by him in children less than five years of age. The displacement is always associated with anomalies of microscopical structure, congenital weakness of the muscular layer, insufficient secretion, general relaxation, and a tendency to disease. The muscular tonus of a displaced stomach is diminished or altogether lost, and enormous quantities of indigested, half decomposed food will occasionally collect, with disastrous results, in a sluggish dilated stomach. The diagnosis of gastric dilatation—a result of gastroptosis—is based essentially upon the history, the long-standing digestive disturbances, symptoms of gastric ulcer, anorexia, obstipation, general weakness, and nervous irritability. The most favorable cases of gastroptosis are those in which the upper pole of the stomach is not much lower than the umbilicus. In very advanced cases, the displaced stomach rests upon the pubic ramus, filling most of the large pelvis. Midway cases are those in which the lowest point lies between the umbilicus and an imaginary horizontal line drawn through the two iliac crests.

Gastroptosis and *enteroptosis*, from the therapeutic point of view, are a single closely associated disease. The descent of the stomach is invariably

accompanied by intestinal disturbances, which in a number of cases govern the clinical picture. The duodenal digestion is necessarily impaired, as the direct consequence of the pathological processes in the stomach and at the pylorus. Furthermore, it results from the congenital etiology that the deficiency is never limited to a single segment of the digestive apparatus, but that the entire system is involved in the degeneration. Ptosis of the sigmoid flexure of the colon is the most common type of displacement of the large bowel. On the other hand, the duodenum is not apt to leave its normal position, although a vertical displacement of its first segment has been observed as a sequel of gastroptosis. The jejunum and ileum are so freely movable under normal conditions that enteroptosis here plays a subordinate part. Conditions differ in the large intestine, where the sigmoid flexure shows a predisposition to displacement. Motor insufficiency is the principal factor, and this is maintained and aggravated by congenital (more rarely, acquired) anomalies of position. The enteroptosis is not primarily due to abnormal mechanical pressure of a dilated stomach upon the transverse colon, but is in all probability dependent upon congenital developmental variations.

Treatment.—In a general way, surgical treatment of gastroptosis is reserved for the gravest cases, whereas all other patients are treated only with dietetic and internal measures. Although these can hardly accomplish a cure, the disturbances may be efficiently controlled and the nutrition greatly improved, so that operative interference no longer enters into consideration. A purely vegetable diet, including egg-yolks, is usually recommended, with restriction of all sorts of fluids, not excepting milk, unless this be incorporated in the solid dishes. One-quarter to one-third of a liter is sufficient beverage for the day. In this way, the dilatation of the gastric wall and irritation of the mucosa may be prevented, or at least essentially diminished, most of the digestive work being done by the salivary glands, the pancreas, the bile, and the enteric juice. Routine washing of the stomach in these cases is now entirely abandoned, as the few remnants of active gastric juice are swept away by the irrigations. Regulation of the bowels is of the greatest importance in all cases of displacement of the stomach alone or together with the intestine.

The *treatment* of enteroptosis is based upon the symptoms and must meet the double indication of disinfecting the intestinal contents and regularly emptying the bowel. Relief is often secured by well-adjusted supporting bandages, properly selected exercises (for strengthening the abdominal coverings), cold baths, electricity, and massage. Surgery, in form of the application of an anastomosis between the lowest point of the stomach and the highest jejunal coil, is regarded by Grechen as the simplest and most reliable radical treatment, in severe cases of chronic enteroptosis. This operation has highly beneficial results, and owing to the improved modern technique, its mortality (10 per cent.) would be still lower, if surgical intervention were not often too long delayed. Other procedures, such as pylorectomy, or plastic dilatation of the pylorus, are either inefficient or too dangerous. The indications for surgical interference are restricted to the advanced cases of enteroptosis, unrelieved by symptomatic measures, in which the dilated paralyzed stomach and displaced intestines have led to severe digestive disturbances, notably vomiting, loss of weight and nervous symptoms.

The importance of careful individualization in these cases is emphasized by Ransohoff,[8] who states that even desperate cases of enteroptosis with grave neurasthenic symptoms, are often permanently cured by operation, which should not be too long delayed, after all other measures have been found inefficient. However, only those cases of gastroptosis should be operated upon in which a serious functional disturbance, amenable to surgical relief, is present. Goldthwait[6] emphasizes the importance in these cases of "teamwork" between the physician, the surgeon and the orthopedist.

A good description of enteroptosis and splanchnoptosis is given by S. Goodwin Gant,[11] who states that this condition may be general (Glénard's disease), when the liver, kidneys, spleen, stomach and intestines descend below their normal level; or localized, when the displacement concerns but a single organ or section of an organ, as for instance when there is a sagging of some particular part of the large intestine. Enteroptosis is sometimes due to a separation of the recti muscles, and ingenious procedures have been devised for the repair of the abdominal wall. The first treatment recommended for the support of displaced organs was Glénard's elastic hypogastric belt. This has been more or less successfully imitated by many mechanical devices, in form of belts, trusses, stocks, girdles, binders, pressure-pads or pledgets, plaster jackets, corsets and roller bandages. Gant points out that these supports should conform to the lines of the body while breathing, walking and defecating, but must also be sufficiently firm to retain the displaced organs in position, at all times. A support of this kind must be worn for weeks or months. Systematic deep breathing, massage, and mechanical vibration, as well as electricity and hydrotherapy, are useful adjuvants in the treatment of enteroptosis. After the failure of non-operative measures, surgical procedures are indicated for the restoration of the displaced organs and their fixation in, or as near their normal position as possible. The fixation of the displaced colon to the abdominal wall (colopexy and sigmoidopexy) have proved successful measures in the treatment of enteroptosis in the experience of Gant, who has devised several modifications of the operative technique, especially for the management of sagging portions of the bowel after it has been fixed to the abdominal wall. His experience with colopexy, which he does not regard as a dangerous operation, has convinced him that persons suffering from obstipation and other troublesome manifestations of enteroptosis, who fail to obtain relief from non-surgical measures, can in many instances be permanently cured by this procedure.

Based on his assumption of congenital relaxation of all tissues, in enteroptosis, Zweig[9] is not in favor of surgery in these cases. Although the stomach, the colon, or the kidney, as the case may be, can be anchored in place, this will not alter the clinical picture of visceral neurosis, the anatomical dislocation of the organs being relatively unimportant as compared to the symptoms on the part of the digestive and nervous system. Rational treatment aims at restoring the mechanical equilibrium in the abdominal cavity, thus counteracting the further descent of the viscera; and also at relieving the associated disturbance of the digestive nerve-system.

Gastroptosis being in the great majority of the cases the more or less remote result of gastric atony (Gazaignaire[6]), the displacement may be relieved by dietetic measures, after the normal shape and position of the stomach have been re-established, and the kink in the pyloroduodenal canal has been straightened out. Belts, bandages, and other abdominal supports aim at this result. The effects obtained depend not so much upon the displacement itself, as upon the configuration of the abdominal walls. When the patient's abdomen is relaxed and hangs down, the results are often excellent, whereas in the case of a flat and caved-in abdomen, treatment of this kind is apt to prove unsatisfactory. A stomach not bound down by adhesions is usually well held up by a non-elastic belt, with a pneumatic fixture. The elevated organ tends to resume its normal shape, and promptly responds to the beneficial effects of restitution and dietetic régime. The advantages of this method of treatment consist in the often immediate relief of the painful symptoms; the relatively rapid gain in weight; and the definite return of the stomach to its normal position, the required time depending upon the degree of gastric atony present.

The existence of gastroptosis cannot be surmised on the basis of the subjective symptoms complained of by the patient, for in the great majority of the cases, the symptoms do not differ markedly from those of atony of the stomach, or hypasthenic dyspepsia. Gastroptosis finds its clinical expression in the disturbance of the rhythmic evacuation of the stomach. This delayed emptying of the organ is dependent upon the two factors of motor insufficiency (gastric atony), and obstruction of the digestive passage through the resulting curvature in the pyloroduodenal canal. The displacement of the stomach is revealed through the routine examination of the gastric boundaries, and the demonstration of a lowered inferior margin and lesser curvature. Simple percussion will not suffice to show the descent of the lesser curvature, when ptosis and atony are associated with dilatation, as is frequently the case.

Based upon the observation that in certain cases of enteroptosis the disturbances are not so marked when the bowel is full, as the result of several days' constipation, Arnoldi[12] recommends an abdominal support which is held tightly in place by a roller bandage directly above the symphysis. This bandage does not aim at retaining the stomach and the bowel, but at preventing the descent of the upper abdominal organs, through the firm fixation of the lower organs. Lerch, who points out that the intra-abdominal pressure must be restored in these cases, has devised a suitable whale-boned cloth bandage, which restores the pendulous abdomen to the normal, or nearly so. A natural belt, strong enough to resist the intra-abdominal pressure, can sometimes be provided by surgical interference, after medical and orthopedic measures have been exhausted. Resection of a portion of the relaxed abdominal coverings serves to tighten the wall, and may be sufficient to keep in place, without anchorage, the dislocated organ or organs. (Lamyot de la Haye.[10])

Displacements of the *liver* and the *spleen*, hepatoptosis and splenoptosis, are observed only in cases of very marked tissue-relaxation, congenital or acquired. The condition is usually noted in those cases in which a pendulous abdomen, with all its sequelæ, develops as the result of acquired mechanical factors (such as difficult childbirth, or surgical extirpation of very large abdominal tumors). The same causes may also lead to a displacement of the *kidney*, known as nephroptosis. The symptoms are usually vague, and partly referable to nervous irritability or weakness. A displaced pelvic kidney is usually congenital, and may never give rise to disturbances of any kind, but cases have been recorded in which it has acted as a serious obstacle to childbirth. The symptoms of renal displacement consist in abdominal pains, digestive disturbances, and nervous affections of variable degree. No operative interference is called for, unless the symptoms are of considerable severity. Removal of diseased female genital organs leads in many cases to subsidence of the renal symptoms. (Plummer.[3]) The indications for operative interference with the kidney itself must be based upon the anatomical degree of the displacement, the gravity of the condition, especially strangulation, and the presence of complications, such as intermittent hydronephrosis, pyelonephritis and nephritis. The operation of choice for pelvic and otherwise displaced kidneys is dislocation and reimplantation in a place where the organ will not be a mechanical hindrance. Provided the necessary precautions are observed, the anchorage of the kidney is usually followed by very satisfactory permanent results.

A complete discussion of enteroptosis should include the mention of displacements of the esophagus and of the heart (cardioptosis), although these ptoses are not common. Ptosis of the female genital organs (prolapse) is a condition of itself, and is not usually included under the general heading of enteroptosis.

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11 West Forty-fifth Street.

Appendicular Abscess in an Infant.—Phélip records a case in a child, aged thirteen months, bottle-fed, who had suffered from constipation for two months. The symptoms were fever, diarrhea, blood in the stools, and a swelling in the right iliac fossa. Laparotomy was performed, and an appendicular abscess was found. Recovery was complete.—*Brit. Journ. Child. Diseases.*

THERAPEUTIC ACTION OF CARBONIC ACID BRINE BATHS (NAUHEIM BATHS) IN CARDIOVASCULAR DISEASES.*

By JAMES HENRY HONAN, M.D.,

BAD-NAUHEIM, GERMANY, AND AUGUSTA, GA.

For the past seven years I have given much study to the clinical effects of CO_2 brine baths, studying cases at a European spa, Bad-Nauheim, accompanying patients to the bath, observing the effects on patients during immersion, as well as after the bath, studying the different forms of cardiovascular disease and the effects of the baths in each, keeping a close record of each case, noticing and comparing the effects on many of the patients for a number of successive years.

For the past four years in this country, I have studied in my winter practice in the South the clinical effects of the baths, made from the Nauheim salts and prescribed and administered with the same care, variation and watchfulness which I have found so important in the treatment of my patients at the European spa.

The observations and records which I have made here at home and those made in my practice abroad lead me to the conclusion that just as favorable results can be obtained in America, and every year has given me a broader and firmer faith in CO_2 brine baths as a therapeutic measure.

There is, in our country, a tendency to overestimate the effect of the CO_2 gas, attributing almost entirely to this element of the bath the hyperemia and other desired effects. It is true that the chemical action of the gas bubbles on the nerve ends of the skin increases the dilatation of the capillaries, lessens the peripheral resistance, and reduces the endovascular pressure. Laquer, Solmsen, and others, however, have emphasized the greater importance of the *salts* of the bath in producing the physiological effect, and my own observations corroborate their tests. I have frequently observed as much hyperemia of the skin in the "Thermal bath" in which there is no free CO_2 gas.

It is my experience, as well as that of my colleagues at the Nauheim spa, that certain cases make more satisfactory improvement from a course of baths consisting entirely of thermal or brine baths, in which there is no free CO_2 gas, than from a course in which Sprudel baths, a supersaturated solution of CO_2, have a place. The great importance of the temperature of the bath and the variation of temperature for the individual through the course of treatment, I have dwelt upon at length in previous papers.

The majority of baths I prescribe at the neutral zone of temperature, that is, between 32° and 34° C., giving the cold bath only where there exists a subnormal endovascular pressure with a flaccid, toneless arterial wall.

A cold bath with the sudden constriction of the peripheral capillaries and of the arterioles, and the greater amount of blood forced into the renal circulation, may cause much mischief to the kidneys. Cold baths should be prescribed with great caution, and particular vigilance should be kept on the urinary output. Care should be exercised that no irreparable damage be done to the kidneys, while trying to improve the heart and blood-vessels. The shock occasioned by the sudden very cold bath is, in my opinion, pernicious, notwithstanding that it causes a temporary stimulation and feeling of well-being. The insidious effects are often met with much later in the renal or pulmonary circulations. I do not believe in the shock, excepting in very extreme emergency cases.

The CO_2 brine bath has a mechanical and chemical action which is peculiar to this kind of bath, while the temperature action which is common to all baths may be employed with these baths to increase or decrease the mechanical or chemical effect. The mechanical and chemical irritation of the skin produced by these baths induces a sense of heat which neutralizes the temperature of the water, admitting of a wider range of neutral temperature than in a plain bath.

In consequence of the mechanical and chemical irritation of the skin there is a marked hyperemia, an increased activity of peripheral capillaries, and an increase of the peripheral blood space, with the resultant unburdening of the overtaxed or weakened heart.

The slowing of the pulse is a constant action of these baths and is most important. The slowing, as shown by a large number of sphygmographs, is due to the lengthened diastole. This lengthening of the compensatory pause permits of a more complete filling of the coronary arteries, an increased activity in coronary circulation; thereby adding to the integrity of the myocardium, improving the metabolism in the myocardial tissue, and increasing the force of the systole—all of which show that the CO_2 brine bath does not add extra work to the heart, but improves that organ and relieves it of the extra burden.

The increased length of the compensatory pause, with a more nearly complete filling of the ventricle and a more nearly normal systole, leads to greater pulse amplitude. With more time for the ventricle to fill there is more time for the muscle to recover from fatigue, so that the systolic output is increased. The heart requires sufficient time between beats to overcome fatigue and maintain its functional integrity. This is best accomplished by the CO_2 brine bath treatment, which produces the effect, not by the depression of the cardiac nerve supply, but in the most natural way.

The slowing of the heart rate is very important, since the heart rests only in diastole. The slowing lengthens the diastole or compensatory pause, and presses the blood more thoroughly out of the myocardial tissues, making systole more nearly complete and allowing a larger volume of fresh blood to be carried through the myocardial circulation. The increased nutrition supply to the myocardium, in consequence of the improved circulation, is soon manifest by a greater force in the systole. This increase in the coronary circulation, thus brought about in many cases of chronic myocarditis, leads to splendid results,—a permanent strengthening of the myocardium, and an improved general circulation with an improvement in the functioning powers of all the organs.

As I have stated on former occasions, though there may be a slight temporary increase in endovascular pressure in some high blood pressure cases, the increase does not put an added strain on the heart, as the heart and vessels with added energy are in much better condition to meet and overcome the change.

It has sometimes been contended that the CO_2 brine baths increase blood pressure. This effect

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can occur only when the temperature of the bath is reduced below that indicated for the patient. When the baths are administered within the neutral zone of temperature from 33° to 34° C. (92°-94° F.) there is little or no rise in blood pressure, and where a slight rise occurs, it is but temporary; that is, it lasts only a few days, after the course of baths is finished, or until the readjustment of the circulation after the immediate effect of the baths is over. In the great majority of cases the effect of the baths is to reduce the blood pressure, and this effect is observed from the early part of the course.

The therapeutic effects of the CO_2 brine baths are produced by the following physiological actions: the slowing of the pulse, the increase of the pulse volume, the changing of the splanchnic blood current to the peripheral circulation and thus relieving the embarrassed heart, the increase of elimination and the consequent improvement of the integrity of the myocardium, and the increased coronary circulation. During the time these changes which equalize the general circulation are taking place, a high blood pressure may be reduced or a low blood pressure may be raised, depending on whether the endovascular pressure was too high or too low before the treatment began. The tendency of the treatment is to bring the blood pressure to the normal level.

When there is an insufficient blood supply to the central nervous system, there is observed an impairment of the general circulation. All the organs suffer from this impairment, and first and above all others the heart, from the weakening of whose functional integrity a vicious circle is formed which, if not soon corrected, leads to fatal results.

About ten years ago Ottfried Müller proved the law of antagonism or the equalization between the peripheral and splanchnic systems, that as one system is restricted there is a reciprocal dilatation in the other. I have found that the patients under my care, the majority of whom suffer from an engorged splanchnic circulation with stasis of the abdominal viscera, can best be relieved by the CO_2 brine baths at the neutral zone of temperature. The most frequent and important action of the CO_2 brine baths is elimination and the equalization of the circulation of the peripheral, splanchnic, and pulmonary systems.

Many patients who consult the heart specialist suffer from some form of circulatory disturbance. No doubt many troubles which masquerade under the name of gastric or liver diseases are primarily circulatory disorders. When we have learned more about blood pressure, how to recognize it in its incipiency, to trace its early causes and give them their proper significance, we will be better able to check the increase in numbers of circulatory diseases.

There is decided evidence that a change of blood current from the splanchnic to the peripheral system of the patient relieves the engorgement of the organs of the abdominal cavity, and thus brings about a marked change in the general condition of the patient. This change is first noticed in the patient's feeling lighter on his feet and his having a keener desire to take active exercise, in the greater activity of the bowels—more copious stools and greater regularity of movement, and in the greater activity of the kidneys—a marked increase in the output with a corresponding increase in the solid constituents.

This change in circulation is a characteristic effect of the baths, and with its resultant benefits may be relied on when the baths are properly administered. There is usually an accompanying slowing of the pulse rate while the patient is in the bath, and for some time after his leaving the tub an increase in pulse volume which may continue for several hours as the result of this slowing.

The blood pressure may be acted upon more directly by the raising or the lowering of the temperature of the bath. The careful study of these immediate and indirect effects and how they are produced gives convincing evidence that the baths may be modified in such a way as to benefit a great variety of cardiovascular cases.

Endocardial and myocardial troubles are so closely associated symptomatically that it is difficult at times to differentiate them. Many of these troubles are due to a direct or antecedent infection. The observations of Billings, Poynton, Schottmueller, Paine, and Rosenow, show how often endocardial and myocardial troubles may be traced to the invasion of the viridans group. The staphylococci and other bacteria may also cause endocarditis. Endocarditis may be secondary to tonsillitis, pyorrhea, or foci of infection in other parts. It is but recently that we have recognized what a very prominent rôle lues plays in causing heart diseases.

We must in these cases, as in all cases of chronic heart disease, take a very careful case history, and where lues is suspected have a Wassermann test made. If a positive reaction is given, salvarsan should be administered, preferably before the bath treatment is begun. The CO_2 brine bath treatment in lues is not curative without salvarsan or other specifics, but I have seen much improvement follow in cases where no specific remedies had been used.

Toxemia due to high living, often in the form of overeating or malassimilation, is accountable for a large percentage of cardiovascular troubles in the well-to-do men of fifty years or over. I know of no other form of treatment which so quickly clears up these troubles as the CO_2 brine baths. The active elimination caused by these baths promotes the expulsion of poisonous products from the system, whether these products are due to a direct invasion, or the result of some acute disease, or the more chronic and much more common result of errors of diet. A careful study of these etiological factors shows us why a closely regulated diet, carefully prescribed exercise, and rest, are so often a necessary accompaniment of the baths.

One of the early effects of the CO_2 brine bath treatment in cases of chronic myocarditis is an increased diuresis. When the integrity of the heart muscle is impaired there is a decrease in urine output. This functional impairment of the kidneys is more marked during the day, the night urine often being in excess. The baths unburden the embarrassed heart, and increase its functional activity, as noticeable in hydremia and increased diuresis with reduction of edema, if present, and relief of dyspnea.

Cardiac hypertrophy is frequently due to defective valves, and arterial resistance or obstruction in the pulmonary or general circulation. The resistance is due to a hyperplastic infiltration in the arterial walls, reaching the endothelium and constricting the lumen of the vessels. The hypertrophy may become pathological if the resistance is great or long continued.

Dilatation is the result of hypertrophy or of a weakened myocardium from other causes. Passive dilatation may also occur from valvular defect or sudden strain, without hypertrophy. If the dilatation is acute absolute rest is the treatment, while the after effects due to an impaired circulation may be much improved by the CO_2 brine baths.

From a clinical point of view, it is very important that we differentiate between simple and complicated high blood pressure. Simple or uncomplicated hyperpiesis is usually transient, due to some mental strain or worry manifested in marked hypertension, with a corresponding high blood pressure reading and other subjective symptoms. The increased elimination due to the baths, the enforced rest and muscular relaxation prescribed, the quiet and changed surroundings, bring about for the majority of patients a complete and speedy recovery.

The complicated form of hyperpiesis is much more difficult to recognize, being very insidious in development and its symptoms less marked. In the great majority of cases of sclerosis of the kidney I find an irregular variation in the blood-pressure readings, which are reduced less by absolute rest than in hyperpiesis simplex, while a heavy meal causes a greater pressure increase. The polyuria and cardiac hypertrophy, while aiding the diagnosis, tend to keep the kidney function approximately normal. In these cases the high blood pressure is compensatory and should be reduced very cautiously. As previously mentioned, many of these cases under my care are due to faulty metabolism, caused by errors in diet, and therefore it is obvious that a restricted diet is an important factor in aiding the balneological treatment. In restricting the quantity of food and drink the physician must see that the patient has sufficient food to maintain the body energy. Close vigilance is necessary to avoid such exercise as may overtax the blood-vessels and cause a cerebral hemorrhage.

The baths in these cases must be administered cautiously, the bowels and kidneys kept active. Although cases of this class require very close watching, the results of balneological treatment are quite as satisfactory as in cases of uncomplicated high blood pressure and well repay the great care exercised.

The desideratum in the treatment of these cases is cardiac rest, especially in the advanced stages, when the heart should be relieved of every possible burden. The blood-pressure level which a patient may sustain in safety depends entirely on the integrity of the myocardium and the walls of the arteries. Although we agree with Janeway's opinion that the patient whose blood pressure is sustained above 200 mm. is in danger of death by uremia or apoplexy, as numerous records show, it should be borne in mind that practitioners know by experience of many persons whose endovascular pressure has remained above this point for years.

I recently reported some cases with blood pressure sustained from 202 to 240 mm. Hg. One of these patients is a man in politics and much before the public. When he consulted me first in December, 1912, in Augusta, Ga., he brought from his physician the report to me that the patient had passed through a successful campaign some months previously sustaining a blood pressure of 222 mm. I found a blood pressure of 282 mm. Hg., and the patient suffering from all the head and gastric symptoms of hyperpiesis. The course of CO_2 brine baths which I gave him that winter reduced the endovascular pressure to 240, with a complete relief of all the symptoms, enabling him to walk at a slow gait with comfort.

In August, 1913, the patient came to Bad-Nauheim for another course of treatment, which further reduced his blood pressure. A report from him recently, two years after treatment, shows a sustained blood pressure of 202 mm. Hg. and that he is feeling quite well, although he has again passed through a rather trying but successful campaign.

It is astounding in some cases to observe the ability of the myocardium to withstand undue strain for years before the inevitable break comes. My added years of experience but confirm what I have long thought—that all these blood pressure patients should be considered heart patients, as they are sure to become such sooner or later.

Drugging measures for the permanent reduction of endovascular pressure have proved practically useless as far as I have been able to observe. Their effects are evanescent, which makes them nothing more than temporary measures.

The most rational method of obtaining a permanent gain in these cases of hyperpiesis is to make a careful study of each individual and to regulate his life accordingly, that is, his diet, elimination, sleep, rest, exercise, relaxation, and general habits. These regulations promote the stability of the beneficial results of the CO_2 brine baths. The increased elimination due to the baths equalizes the circulation and thus relieves the cardiovascular strain and brings about a marked permanent gain.

A very important evidence of the beneficial effects derived from the proper administration of the CO_2 brine baths in cases of arrhythmia is the decrease in pulse deficit, more marked in instances of auricular fibrillations and auricular flutter. It is not infrequent in the balneological treatment of these cases to observe the heart contraction return to normal rhythm.

In paroxysmal tachycardia, the effects of baths are quite marked, often producing a permanent benefit. In sinus arrhythmia as well as in heart block, where drug therapy has failed, I have observed a decided improvement from the careful administration of the CO_2 brine baths—the slowing down of the heart to a normal rhythm and improvement in the general condition of the patient.

When there is an intermittent pulse or when ectopic beats or extra systole are present and the heart is overburdened, the treatment often gives very gratifying results.

Auricular flutter and auricular fibrillation are indices of myocardial impairment, and by their excitation add an increased embarrassment to the heart action. Therefore, they should be considered as serious conditions, though occasionally a patient with auricular fibrillation may live for years. Pulsus alternans is found only where there is a positive damage to the contracting power of the heart and is more ominous in character.

The frequent association of all these irregularities of the heart, with serious changes in the atrioventricular bundle of His or its branches, usually indicates a grave prognosis, although these conditions are not absolutely incompatible with long life.

Among a number of such cases under my care, the two following may be taken as typical: The

first is a man of sixty-six years, who has had an irregular pulse for twenty-five years. He conducts a large business, plays golf, and does most of the things which men of his age can do, without any apparent cardiac embarrassment. The second is a lady sixty-one years old who five years ago had a severe acute endocarditis and has since had a marked irregularity of the neurotic type. Though this patient is very much restricted in her physical exercise and it requires constant care to keep the heart action at compensation level, she suffers no further discomfort. She is now able to walk 1,300 to 1,800 feet on the level without discomfort or ill effects. The normal pulse beats are much more numerous, the imperfect beats less frequent. The latter can be counted only by the stethoscope. The pulse deficit is becoming gradually less as the myocardial integrity improves. In the last five years the former of these patients has had two courses, and the other four courses of baths.

The circulation is so exquisitely balanced and so nicely adjusted to all the organs of the body that the slightest deviation in one organ may cause a derangement in all the organs. If the force or pressure in one is increased, a relative change may extend to all. When there is present hyperplastic infiltration of the arterial walls causing a primary blood pressure, all the abdominal viscera soon become involved, the entire splanchnic system becomes engorged, and the patient soon presents the picture of cardiac insufficiency with all the manifestations of broken compensation.

If treatment in these cases is begun before irreparable changes have taken place in the myocardium, the process can be arrested and much improvement of the condition brought about by means of CO_2 brine baths. The increased peripheral circulation caused by the baths relieves the engorgement of the abdominal viscera and reestablishes metabolism, with the result of general improvement. Numerous instruments of precision have been devised which have aided much in our diagnosis. Indeed there is no part of internal medicine that has progressed so rapidly as our knowledge of cardiovascular diseases—making possible much earlier diagnosis and treatment, with consequent lessened mortality.

The CO_2 brine bath has now established its great value as a conservative therapeutic measure in almost all forms of subacute and chronic cardiovascular diseases. Conservative practitioners have observed such a marked and permanent improvement in their patients after the balneological treatment that there is a growing confidence in this form of treatment which only a reliable and safe method can inspire. Every year the tendency to place less confidence in drugs is more pronounced. The use of strychnine is now almost or entirely abandoned in these cases by many practitioners. Digitalis has been much more restricted in its range of administration, although it is now about the only drug used exhibiting any degree of satisfactory results. Clinical studies of the effects of drugs have been disappointing and, aside from the vasodilators used in anginoid pain and digitalis in selected cases, few other drugs are of use.

The nonreliability of drugs in cardiovascular diseases has directed the attention of medical men more to the efficiency of the CO_2 brine baths in these cases and has caused them to study more carefully balneotherapy, and also to give more importance to rest, diet, and heart gymnastics.

As a result of scientific observations, there has accumulated a large amount of data concerning the physiological action of CO_2 brine baths. These observations prove beyond peradventure the unvaried physiological action of these baths and should remove all doubt of their efficacy in cardiovascular diseases. There are convincing proofs that we have in the CO_2 brine bath a therapeutic measure of the highest value, one that admits of the finest gradations in administration, and a variation in application impossible in any other therapeutic measure. The greater permanence and reliability of the effects of these baths begets for them a confidence which drug therapy does not have.

The action of the CO_2 brine bath has often been compared to the action of digitalis on the heart. Digitalis slows the pulse by impeding the conduction of the impulses through the atrioventricular bundle of His. The bath slows the heart action, but without impeding any function. The slowing is brought about by relieving the burden of the toxic and overdriven heart, by direct action on the myocardium, by improving the coronary circulation. The lengthened diastole causes a more vigorous contraction and a complete pressing out of all the stagnant blood in the myocardial tissue, thus slowing and strengthening the heart in the most natural way, with the results plainly shown of a better general circulation and longer lasting benefits to the health of the patient.

The CO_2 brine bath affords us a reliable therapeutic measure in nearly all forms of chronic cardiovascular diseases, as the most natural stimulation to the heart and vasomotor system. As an active agent in producing general elimination, in equalizing an impaired circulation, in the correction of blood pressure, in arresting tissue change, there is no other therapeutic measure so reliable. The invariable action of the baths and their safety, when administered as indicated, give them a place in therapeutics which is becoming more and more apparent.

The change of attitude of prominent medical men who were long skeptical, and rightly so, until they were thoroughly convinced, is more and more noticeable every year, and every year adds to the list of names of those foremost in the rank of internal medicine who recommend the CO_2 brine bath treatment for their patients.

936 Hickman Road.

VITALITY OF THE CHOLERA VIBRIO IN THE WATER OF NEW YORK BAY.

By A. J. Gelarie, M.D.,

Rosebank, N. Y.

(From the Quarantine Laboratory, Port of New York.)

While sporadic cases of infectious diseases, like typhoid and cholera, are ordinarily transmitted by personal contact of individuals, epidemics are, as a rule, caused by polluted water, whatever its use, whether it be for drinking or washing purposes or otherwise. According to Schueder (*Zeitschr. f. Hyg. and Infkr.*, Bd. 38, S. 343, 1901) about 70 per cent. of all epidemics are caused in the manner aforementioned.

An examination of the waters in and about New York Bay is therefore of the utmost importance, inasmuch as there are usually a large number of vessels at anchor in New York Bay and vicinity. Such vessels may at any time come from countries

where cholera is prevalent. Notwithstanding the short duration of the disease, it is well known that even convalescents may contain cholera vibrios in their dejecta as much as 48 days subsequent to recovery. When, as is usual, dejecta are thrown into the bay, danger is imminent.

With such obvious dangers in mind, Health Officer Dr. Joseph J. O'Connell raised the question as to whether or not the cholera vibrio would die or survive if placed in the water of New York Bay off the Quarantine Station. This water is a mixture of Hudson River water and sea water in proportions varying with the tides. If cholera feces should pass from an infected ship into this water, would the cholera vibrios die immediately, or survive a few days only with little or no multiplication, or would they survive and undergo a progressive multiplication? Without question in the latter instance there would be a practical danger of contamination of such water from ships with cholera cases on board. If, however, the vibrios merely survive a few days without any multiplication, infection, although improbable on account of the great dilution of the feces in such a large body of water as New York Bay, should be guarded against.

Two factors should be considered as to the survival of cholera vibrios in such water; first, the sudden increase in osmotic pressure due to the large amount of salt in the water, and secondly, the overgrowth of the cholera vibrio by other organisms present in the water. A strain of cholera that had been isolated a few months previously in the Philippine Islands was employed in the experiment.

To study the influence of the first factor, water was collected in a large sterile flask near the center of the bay and was heated in the autoclave for 20 minutes. The sterilized water was then inoculated with cholera from an 18-hour agar slant and plated at once to determine the number of cholera vibrios present. Similar platings were made at from 24 to 48 hour intervals; the results of this are shown in Table I.

Table I.—Viability of Cholera Vibrios (Manila Strain) in Sterilized Bay Water

Number of cholera vibrios per cubic centimeter=

At once,	7,280	After 7 days,	1,600,000	After 16 days,	250,000
After 24 hrs.,	22,800	After 8 days,	1,648,000	After 17 days,	236,000
After 48 hrs.,	131,600	After 9 days,	672,000	After 19 days,	255,000
After 3 days,	674,000	After 10 days,	500,000	After 20 days,	180,000
After 4 days,	1,216,000	After 11 days,	800,000	After 21 days,	200,000
After 5 days,	1,620,000	After 12 days,	554,000	After 24 days,	240,000
After 6 days,	1,280,000	After 14 days	305,000	After 26 days,	328,000
		After 15 days,	292,000		

As can be seen from Table I, there is a constant increase at the outset, lasting for about eight days, followed by a gradual decrease lasting for about fourteen days. This, however, will be hereinafter discussed.

Having shown that the subjection of the cholera vibrios to sudden increase in osmotic pressure has no apparent effect on them, it was then planned to study the influence of the associated microorganisms in the unsterilized water of the bay. Water was collected from near the center of the bay off Quarantine, as heretofore, and was at once inoculated with cholera from a 24-hour agar culture (great care, however, being taken not to transmit any nourishing material from the culture) and at once inoculated on Dieudonné's medium and other specially prepared differential media in the manner described below:

A given number of loops were inoculated on the plates and the resulting colonies counted after incubation for from 24 to 48 hours. The specially prepared plates have been worked out by Drs. Teague and Travis and will be fully described by them in a later article. These plates are very suitable for differentiating cholera colonies from other colonies by virtue of their color. In this way the cholera and non-cholera colonies could be counted. In addition agglutination tests have always been made. The results are detailed in Table II.

Table II.—Unsterilized Bay Water Inoculated with Cholera Vibrios

	Cholera Colonies	Other Colonies		Cholera Colonies	Other Colonies
At once	270	2	After 4 days	0	6
After 24 hrs.	9	2	After 5 days	0	10
After 48 hours	0	1	After 6 days	0	15
After 3 days	0	1	After 7 days	0	60

Table II shows that the number of the cholera vibrios in the native bay water decreases rapidly while the other colonies increase in number. The experiments detailed below extend over much longer periods and the presence of viable cholera vibrios was determined by enrichment in peptone water. Different strains of cholera were used in the different experiments.

The method employed was similar in nature to that described above. To 200 c.c. of water contained in an Erlenmeyer's flask a certain amount of a cholera suspension was added, great care, however, being taken not to transmit any nourishing material from the culture. The flasks were kept at room temperature and in the dark. At intervals, as set forth in the tables below, a certain amount of the water was plated, and the number of the colonies developed thereon counted. To the water remaining in the flask a given amount of peptone was added, so as to make up a 1 per cent. solution (Anreicherung). After from 16 to 18 hours' incubation plates were made from the peptone on ordinary alkaline agar and also on Dieudonné's medium. The characteristic colonies, as well as those which appeared suspicious, were fished, inoculated upon agar slants, and then subjected to the agglutination test. In some cases, where there was any doubt, the colonies were again transferred to peptone for a period of 48 hours and then again to agar.

The growth which takes place on Dieudonné's medium has never been relied upon as a conclusive test for cholera, since it has been found that other microorganisms, like the *Bacillus pyocyaneus*, some water bacteria, and different kinds of cocci will also grow on this medium. Hence agglutination tests were also applied to those microorganisms which had been developed on Dieudonné's medium.

Four strains were employed, one of which was an old laboratory strain which had been cultivated in the laboratory for two years; the second strain was received from the Museum of Natural History of New York. The remaining two strains were obtained direct from Egypt and Austria respectively. In general, the vibrios had been passed one or more times through a guinea pig before being employed in these experiments. Only a 16 to 18 hour culture was used.

Table III exhibits the results of an examination of the bay water, both sterilized and native, and also of the tap water taken from Staten Island. In connection with this experiment the laboratory strain was employed.

TABLE III.—VIABILITY OF THE QUARANTINE LABORATORY STRAIN.

	Examined After Days:												
	1	3	8	14	18	21	28	34	51	62	92	154	162
Sterile bay water	+	+	+	+	+	+	+	+	+	+	+	+	−
Native bay water	+	+	+	+	+	+	−	−	−		−		
Sterile tap water, Staten Island	+	+	+	+	+	−							
Native tap water, Staten Island	+	+		−		−				−	−		

+ = Cholera vibrios present.
− = Cholera vibrios not recovered from the water.

Table IV represents the results of the examination of the bay water taken at different hours of the same day, as well as of the Brooklyn tap water, to which the strain received from the New York Museum of Natural History was added.

TABLE IV.—VIABILITY OF THE MUSEUM OF NATURAL HISTORY STRAIN.

	Examined After Days:																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Sterile tap water, Brooklyn	−		−		−		−		−		−		−												
Native tap water, Brooklyn																									
Sterile bay water, high tide	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Native bay water; high tide	+		+		+		−		−																−
Sterile bay water, low tide	+		+		+		+		+		+		+		+		+		+		+		+		+
Native bay water; low tide	+		+		−		−																		
Sterile ocean water	+		+		+		+		+		+		+		+		+		+		+		+		+
Native ocean water	+		+																						

Table V indicates the results subsequent to inoculation with a strain received direct from Egypt.

TABLE V.—VIABILITY OF AN EGYPTIAN STRAIN.

	Examination After Days:																		
	7	16	26	32	39	47	50	54	60	73	90	102	108	137	159	190			
Sterile bay water	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−		
Native bay water	+	+	+	+	+	+									−				

In Table VI are tabulated the results of the experiment when a strain received from Austria was employed.

TABLE VI.—VIABILITY OF AN AUSTRIAN STRAIN.

	Examination After Days:																								
	6	14	21	24	35	39	45	50	54	60	73	90	102	108	137	159	190	215	230	245	260	275	285		
Sterile bay water	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Native bay water	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−		

A review of the foregoing tables will show that the cholera vibrios lived in the native bay water for from 7 to 47 days, and in the sterilized bay water the vibrios at the expiration of 285 days are still alive, with the exception of those mentioned in Table III, which lived for a period of only 154 days, whereas in the native tap water they remained alive for only from 1 to 3 days, and in the sterile tap water from 1 to 18 days. These great differences are due to several factors, such as the strain of cholera employed, the character of the water itself, and the quantity of bacteria put into the water.

In confirmation of the foregoing statement, attention need only be called to Table VII, showing the strain employed, the nature of the water, the number of bacteria added, and the period of time they lived therein.

TABLE VII.—COMPARATIVE VIABILITY OF VARIOUS STRAINS.

Strain.	Nature of the Water	Number of Vibrios Added	Period of Time They Lived
Laboratory strain *A*	Sterile bay water	149,500	154 days
	Native bay water	149,500	21 days
	Sterile tap water, Staten Island	149,500	18 days
	Native tap water, Staten Island	149,500	3 days
B Museum Natural History	Sterile bay water	4,000,000	285 days, still living
	Native bay water	4,000,000	7 days
	Sterile ocean water	4,000,000	285 days, still living
	Native ocean water	4,000,000	7 days
	Sterile tap water, Brooklyn	4,000,000	1 day
	Native tap water, Brooklyn	4,000,000	1 day
Egypt	Sterile bay water	60,000,000	190 days, still living
	Native bay water		47 days

In the sterile bay water containing 149,500 vibrios, they lived 154 days; in the nativte bay water, containing the same amount, they lived only 21 days; whereas in sterile tap water the period of life was only 18 days, and in native tap water 3 days. A different result was obtained when using a quantity of 4 million vibrios. In this connection we find that at the end of 285 days the vibrios are still alive in sterile bay water and ocean water respectively, while in the native bay and ocean water respectively they lived only 7 days. Further proof of this may be had when 60 million vibrios were added, in which case they survived for 47 days in the native bay water. The results so obtained tend to confirm the conclusion that the longevity is dependent upon the strain employed, the nature of the water, and the quantity of bacteria involved in the experiment. It goes without saying that the life of the vibrios in the sterile bay water is due to the total destruction of the saprophytic bacteria present in the water during the process of sterilization. The presence of a large quantity of nourishing material, chiefly mineral salts, is conducive to their growth. In the bay water at high tide, the total amount of solids found was 29.68060 per liter and in the bay water at low tide 28.5140 per liter, whereas the ocean water was found to contain 27.3473 grams per liter.

In the native water, on the other hand, containing the same nourishing material, their life is short, inasmuch as the vibrios have to compete with the water bacteria. No doubt, retrogressive metabolic products of the saprophytic bacteria act unfavorably upon the vibrios.

TABLE VIII.—COMPARATIVE VIABILITY OF COLON BACILLUS AND CHOLERA VIBRIO.

Nature of the Water	Number of Bac. Coli. Comm.	Number of Cholera Vibrios	Period of Life of	
			Bac. Coli Comm.	Cholera Vibrios
Sterile bay water, low tide	160,000,000	4,000,000	[illegible]	285 days, still living

To ascertain whether the *Bacillus coli communis* would have a similar effect upon the vibrios, 200 c.c. of bay water was sterilized and to it 160 million *Bacillus coli communis*, together with 4 million cholera vibrios, were added. As may be seen by a reference to Table VIII, the *B. coli communis* disappeared within 3 days, whereas the cholera vibrios were still alive at the end of 285 days. A strain of

B. coli that had been transplanted on nutrient agar at irregular intervals for more than a year was employed in this experiment.

The short life of the cholera vibrios in the tap water may be due to the small amount of food material present. Moreover, it must be borne in mind, that the osmotic pressure in the tap water is lower than in the culture medium upon which the vibrios were growing. Their vitality in tap water (Tables VII, A. and B.) varies. In the sterilized tap water (Table VII A.), to which 149,500 vibrios were added, they lived only 18 days, whereas in the native tap water they lived only 3 days. When, however, 4 million were added to the native as well as the sterile tap water (Table VII B.) the vibrios died in the course of 24 hours. A plausible explanation is that in the first case (Table VII A.), where 149,500 vibrios were employed, the tap water was taken from Staten Island, which is a very hard water, while in the second case (Table VII B.) the Brooklyn tap water was employed. Possibly, as a result of the partial dissolution of the metal pipes in the water, the tap water becomes unfavorable to the cholera vibrios.

From an inspection of Table I, where a strain received from Manila was used, we observe that a rapid increase at the beginning is followed by a gradual decrease. In the experiments involved in Table IX, where different strains were employed, we notice that there is an alternating increase and decrease. The very marked increase lasting for several weeks is usually followed by a slight decrease.

I am of the opinion that this is due to a natural selection, the survival of the fittest; the weak succumb, being unable to adapt themselves to the new environment. Such natural selection is followed by an increase in number. Furthermore, in examining the water to which an Austrian strain had been added, it was found that after 44 days the vibrios disappeared from the native bay water, but some bacteria remained in the form of long and short thick rods, some of which grew on Dieudonné's medium. These bacteria did not, however, agglutinate with cholera serum.

I have heretofore mentioned that the bacteria had been transferred from peptone to agar, and vice versa. It was then found that at the end of from 14 to 19 days with such successive transfers from agar to peptone and from peptone to agar, these very same microorganisms which did not agglutinate and did not exhibit the characteristic morphological appearance, reassumed their original and typical morphological appearance of a vibrio and did consequently agglutinate. The organism in question could for the next 10 days be isolated from the water, always exhibiting the above-described characteristics, namely, loss of typical morphological appearance and loss of power to agglutinate. These properties were required after keeping them for a period of from 2 to 3 weeks on agar.

There is but one conclusion: Constant and consistent preventive measures should be employed, so as to obviate all possible danger. The foregoing experiments conclusively show that although such vibrios do not multiply in the native bay water, nevertheless they do in fact survive for from 7 to 47 days, and it is my contention that however diluted the feces containing vibrios might become, the mere presence of cholera vibrios in and of itself demands great and proper precautions.

Table IX—Comparative Viability of Various Strains

Strain	Nature of Water	Approximate Number of Vibrios Added	Increase or Decrease of Number on Days*																						
Laboratory	Sterile bay	149,500	1	3	8	14	18	21	28	3	5	162	92	154	162										
			+	−	−	−	+	+	+	+	+		+	−	−	−										
			−			−																				
Museum Natural History	Sterile bay		2	3	7	11	27	[illegible]	[illegible]	[illegible]	104	127	148	168	176	182	185	190	204	232	254	287			
	Sterile ocean	4,000,000	+	+	−	−			+	+	+	+	+	+	+	+	−	−	−	+	+	+			
Egypt	Sterile bay	60,000,000	7	16	26	32	39	47	50	51	60	73	90	102	108	137	159	190							
			−	−	−	−	−	−	−	+	+	+	+	+	+	+	−	−							
			−																						
Austria	Sterile bay	3,000,000	6	14	21	24	25	26	28	29	30	32	35	38	44	49	54	68	85	106	137				
			+	+	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+				

TREATMENT OF GONORRHEAL OPHTHALMIA.*

By CYRIL BARNERT, M.D.,

NEW YORK.

ATTENDING OPHTHALMOLOGIST, HEBREW INFANT ASYLUM; ADJUNCT OPHTHALMIC SURGEON, LEBANON HOSPITAL; CHIEF OF EYE CLINIC, FRENCH HOSPITAL; CONSULTING OPHTHALMOLOGIST, BARNERT MEMORIAL HOSPITAL, PATERSON, N. J.

For some time I have been desirous of bringing before the profession a method of treating gonorrheal ophthalmia which has been highly effectual in my hands. The results achieved by this method have been so prompt and decided as to render this usually hazardous disease practically innocuous, both in preventing the spread of the conjunctival infection to the cornea and deeper structures of the eyeball, and in minimizing the danger of its transmission to other eyes.

The basic principle of the treatment is the proper application to the infected tissues of a powerful phenol preparation which has the happy faculty of promptly destroying gonococci without injury in the least degree to the tissue cells. Metacresolaceticacidester, or cresatin, a synthetic combination originated by N. Sulzberger, Ph.D., of New York, is a phenol derivative of very powerful germicidal properties, entirely free from the corrosive, destructive action of the ordinary phenols. It shares with them, however, their marked analgesic action. Cushny ("Pharmacology and Therapeutics," 1910), states that "meta-cresol is less poisonous to mammals and less irritant, and at the same time seems to be more destructive to microbes than carbolic acid." Tollens (*Archiv für exper. Pathologie u. Pharmacologie*), and Meili (Dissertation, Berne, 1891), have shown that of the cresols, closely allied to carbolic acid, the metacresol is the least toxic and is less poisonous than carbolic acid.

My first experience with this drug was some five or six years ago, in the treatment of corneal ul-

*Read before the Society of Alumni of Lebanon Hospital, February 2, 1915.

cers, which we know to be usually of bacterial origin or subsequent involvement, and I was very favorably impressed with the rapidity with which these lesions became clean and healed. This led me to the reasonable deduction that this powerful, non-irritating antiseptic could be used successfully in other eye infections, and I began to employ it in my gonorrheal cases. This proved so satisfactory that I have long since adopted it as my routine treatment for gonorrheal ophthalmia.

The duration of gonorrheal ophthalmia under this method of treatment is 24 to 48 hours after the first application. In most cases but one application was found necessary; in none were more than two such treatments given. Gonococci were rarely found after the first application; where they did so appear a second application effectively disposed of them. After the cessation of the purulent discharge a mild astringent, such as a 1/3 per cent. solution of zinc sulphate, was ordered instilled for a few days.

A 25 per cent. solution of cresatin in albolin was found to possess definite prophylactic value, and is regularly employed in my institutional and private work in gonorrheal ophthalmia.

The technique is simple, but must be followed accurately to obtain the best results. The conjunctival sac must first be cleared entirely of secretion, by means of a stream of warm physiological saline or saturated boric acid solution, preferably through an undine. This is followed by the instillation of a drop or two of a 1 per cent. solution of holocaine or cocaine to prevent the slight irritation of the next step. Allowing a few moments for the anesthetic action to occur, a small cotton swab, mounted on a tooth-pick, is used to apply a drop of cresatin to the mucosa of the conjunctival sac. It is imperative to cover the entire surface of the mucous membrane in this application. No force is used, and particular care is exercised to avoid injuring the cornea. The after-treatment consists in keeping the conjunctival sac free should more pus form, and the repetition of the application, should occasion demand.

The following case records are typical:

Case I.—A. B., aged one week, seen in consultation with Dr. M. Zigler. Typical ophthalmia neonatorum, gonococci found. Conjunctiva thoroughly flushed, cocainized, and swabbed with pure cresatin. Marked improvement followed at once and cure was effected without complications. No further application was needed.

Case II.—Gertrude B., aged two weeks, referred by Dr. N. B. Martin. Gonorrheal conjunctivitis dating from child's second day. Treated in a maternity hospital until seen by me. Intense conjunctivitis, profuse discharge, chemosis, small ulcer of the right cornea. Gonococci present. The eyes were thoroughly flushed, cocaine instilled, and the mucous membranes painted with the drug, full strength. The corneal ulcer was also lightly touched with the swab. Warm boric irrigations and compresses were ordered. After twenty-four hours, mother returned and reported that the eyes had been free from discharge save for slight pasting of the lids after a night's sleep. A second application was made, after which the discharge did not recur. The ulcer of the cornea was found healed on the third day. No recurrence nor complications.

Case III.—Margaret F., nurse in charge of vaginitis ward of an institution. Most intense gonorrheal conjunctivitis; had to be escorted to my office, being blinded by rapid accumulation of pus and edema. Marked chemosis, conjunctival hemorrhages, and edema of the lids. Gonococci demonstrated. Routine application, as described, was made, and patient requested to wait until arrangements for her transfer to a hospital could be made. After some thirty minutes, and before the transfer could be effected, the patient announced that her eyes felt vastly improved, and requested permission to wait until the following morning at home. This was granted, and the following morning the patient reported that discharge had stopped a few hours after the treatment. The edema of lids and conjunctiva had disappeared over night. No gonococci could be found, but in view of the intensity of the infection, a second precautionary treatment was given. The following day the patient was given permission to return to her ward duty.

Case IV.—M. B. K., age 10 days; seen in consultation with Dr. M. Kutscher. Purulent discharge and edema of left eye dating from third day, followed by same condition in right eye three days later. Typical ophthalmia neonatorum; gonococci present. Treated as above described. The next day the eyes were clear; no edema or discharge. No further application needed.

Case V.—L. J., age 13 days, treated under my direction, shows advantage of adhering strictly to the technique described. Conjunctiva involved since third day of life; profuse discharge, intense edema, free conjunctival hemorrhage; gonococci present. The attendant modified my instructions, instilling a drop or two of 25 per cent. cresatin in albolin into the eyes instead of swabbing with full strength. After twelve hours discharge much diminished, edema less. Conjunctiva then swabbed again with the 25 per cent. solution. Next day both eyes were open, discharge absent in one eye, much diminished in other. A third treatment sufficed to clear the eyes entirely.

206 West Ninety-second Street.

TWO UNUSUAL STRAINS OF DIPHTHEROID BACILLI.

A PRELIMINARY NOTE.

By RALPH R. MELLON, M.Sc., M.D.,

ANN ARBOR, MICH.

It is merely my intention at this time to put on record in brief fashion some of the characteristics of two rather novel strains of diphtheroid bacilli. In a future article their characteristics, both cultural and biological, and their relation to other members of the same group, will be discussed more in detail.

The first strain was recovered from the lung of a patient on whom a diagnostic puncture was performed. The first generation grew very slowly on blood agar. About ten days later the patient died suddenly. Sections of the lung showed definite and interesting pathological changes; it contained many colonies of the bacillus whose relation to the condition is problematical at present.

Culturally, the organism shows a most remarkable pleomorphism. Under proper environmental conditions, it will grow in chains of cocci that are morphologically indistinguishable from the streptococcus. However, this form can be made to take on again the bacillary shape. It shows pronounced activity toward the different sugars, particularly glucose, lactose, dextrin, glycerin, saccharose, salicin, maltose, and inulin, all of which it ferments with acid but no gas production. Such a wide range of sugar fermentation has not been described in diphtheria-like organisms.

The feature of paramount interest lies in its pathogenicity for rabbits. They lose weight rather rapidly after injections of relatively small doses, and eventually die of septicemia. The most noteworthy lesions produced so far are acute suppurative arthritis, cholecystitis, and focal myositis. Subcutaneous hemorrhages have been inconstantly produced. So far, the bacillary form has not been recovered from the lesions, although the coccoid form has been found without difficulty, and has precisely the same qualitative sugar reactions as the strain injected. These localizations are identical

with those produced by certain strains of streptococci, but on this account I do not wish to be interpreted as having accomplished any transmutation in the biological sense. I am inclined to regard this phenomenon as one of extreme pleomorphism only. This diphtheroid gives promise of being a member of a group much more closely related to the streptococcus group biologically than has been known before. Usually we do not think of any similarity between them. Its proper relation, however, can be established definitely only by a study of its immunological reactions, which study is under way at the present time.

The other diphtheroid was isolated from a blood culture of a patient who showed very severe obstructive circulatory disturbances with a low type of fever, all of which followed negligent treatment of a severe wound in the foot, caused by a rusty nail. In addition, the patient showed marked albuminuria.

This organism has so far been a strict anaerobe, with fastidious cultural requirements in other respects. It is strongly gram positive, and strains readily with the simple dyes. It has, after several generations, become chromogenic and has shown ordinary pleomorphism. It is pathogenic to rabbits, injections of relatively small doses producing a high grade of albuminuria and rather rapid loss of weight. This animal's serum shows agglutinins and lysins in low dilutions.

Since the vast majority of diphtheroid strains are at present thought to be non-pathogenic, and in light of the speculation caused by Bunting's notion of their relation to Hodgkin's disease, the isolation of any pathogenic members of the group is of especial interest. A more comprehensive report will appear in the near future.

Medicolegal Notes.

Accident Insurance—Cause of Death, Accident or Disease.—In an action on an accident policy the plaintiff claimed that the insured's death was caused by a strain while attempting to lift a heavy stove. Two days afterward he was treated for pleurisy and three months afterward he died, the first physician who treated him testifying that death was due to Bright's disease, and a physician who was subsequently called in testifying that he found valvular heart trouble. It was held that death was due to causes other than an accident. If a diseased condition was caused by an accident, or existed prior to the accident and had no causal connection with the injury or death resulting from the accident, the accident is to be considered as the sole cause; but if the disease in question existed at the time of the accident and cooperated with the accident to cause a severe injury leading to death, then the accident cannot be regarded as the sole cause of death.—Robinson vs. United States Health & Accident Ins. Co., 192 Ill. App. 475.

Unlawfully Practising Medicine—"Masseur."—In proceedings under the Texas medical practice act for unlawfully practising medicine, R. E. Tyler testified that he went to the defendant's office and complained that he had appendicitis, and told the defendant that he had had a violent attack some five weeks before his call. The defendant told him he did not look like a man who had appendicitis, but that he was suffering from inflammation of the colon, and proceeded to treat Tyler for that affliction, saying he could cure him in a little while. He first gave Tyler an enema, saying it was necessary to wash out his stomach. He then had him lie down and rolled two pillows, placing one under his hips and the other under his chest, there being nothing under the center of the body. He then moved him up and down, pushing him clear to the table. After giving this treatment for a while, he placed Tyler on another table, and gave him an electric treatment. Without going further into the treatment, he told Tyler when the latter was leaving the office that he must eat nothing but soup and milk, and must leave off all heavy food, especially meat.

As a matter of fact, Tyler was not sick with any disease or disorder when he went to see the defendant, but went there at the instance of others to see whether or not he was practising medicine within the provisions of the act and making a charge therefor. He paid the defendant $3 for the treatment. A witness who went with him corroborated him. The defendant contended this made them accomplices. The court held that these men, knowing or believing that the defendant was practising medicine in violation of law, went there to detect him, and under no rule of law would their acts constitute them accomplices. Their testimony was clearly admissible.

Another witness testified that the defendant treated him for an affection of the hand and arm; that his hand just hurt, elbow ached, and muscles of the arm hurt. The defendant treated him for some time, and charged him $25. He gave the witness an electric treatment with a battery, and also gave him what is termed a "hot air" treatment, putting his hand in a "sweat box." He told him he could cure him, but he did not do so, although he underwent treatment for some two or three months. The defendant's contention was that he was a "masseur," and therefore did not have to obtain and register a certificate. As this was his contention, it was held permissible for the State to show that he was treating disease by other means and methods than that usually ascribed to a masseur, and the trial court did not err in admitting this testimony, nor in admitting evidence that he had an account at a drug store for medicines, and in one instance had prescribed and had furnished a salve for application to a sore on the leg of a patient.

The testimony of three witnesses for the defendant was held properly excluded. He did not state that he expected to or could have proven by these witnesses that the treatment given by him to Tyler, and which he admitted giving, was the treatment of a "masseur" in his particular sphere of labor. It was true he offered to prove by them that a "masseur" treatment was good for a certain character of ailments, but the fact that he advertised and held himself out as a "masseur" would not prevent the State from showing, if it could, that he treated his patients by other means than those customarily used by a "masseur" in his particular sphere of labor. The giving of an enema, treatment by electrical machinery, and by the use of a hot-air apparatus, do not come within the means and modes usually ascribed to the sphere of a "masseur" in the treatment of a disease, and as used by them aforetimes, and could not come within the exemption as defined by the Legislature in exempting a "masseur" in his sphere of labor.

The act provides that any person is "practising medicine" when he publicly professes to be a physician or surgeon, or offers to treat any disease, deformity, or injury by any system or method, or to effect cures thereof. The court held that one professing to be a "masseur" is a "physician" when he professes to cure diseases or disorders. And this need not be solely by administering medicines. The conviction was affirmed. Hyroop v. State, Texas Court of Criminal Appeals, 179 S. W. 876.

Revocation of License—State Board's Decision on Merits Not Reviewable by Certiorari.—Under the Colorado statute, Rev. St. 1908, sec. 6068, the Supreme Court of Colorado holds that the State board of medical examiners is invested with power to revoke a physician's license for procuring or aiding in procuring a criminal abortion, and where a sworn complaint is filed, charging such offense, and the accused appears and contests the proceedings on their merits, the board has jurisdiction of the subject-matter and the person. Since a tribunal has jurisdiction of a controversy whenever the law requires it to pass upon the questions of law and fact involved, a duty rests upon the State board of medical examiners under the statute, after hearing evidence as to the guilt or innocence of the accused, to decide whether the evidence is sufficient to convict. Where an inferior tribunal has jurisdiction to convict, as shown by the record, the inquiry upon certiorari cannot be extended to a review upon the merits, since upon every question but that of jurisdiction the action of the inferior tribunal is final.—Thompson v. State Board of Medical Examiners, Colorado Supreme Court, 151 Pac. 436.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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ANTIVENINE IN SNAKEBITES.

A RARE accident, rare at least in cities, occurred here last week. A keeper of the reptile house in the Zoological Park, on January 27, about 8 A. M., was bitten by a rattlesnake (*Crotalus atrox* of Texas) on his right hand, one fang penetrating deeply between the second and third metacarpal bones. The wound was sucked immediately and a double ligature applied. An hour later the physician of the park injected 10 c.c. of Calmette's antivenine, repeating the dose in another hour. In spite of these injections the hand and arm swelled to an enormous size, the pain was extreme, and vomiting set in. The patient was transferred to the German Hospital, and the next morning, as the symptoms had not improved, another injection of 20 c.c. of Calmette's serum was given. Fortunately Dr. Vital Brazil, the founder and director of the Serotherapeutic Institute of S. Paulo, Brazil, who had been attending the Pan American Congress in Washington, was found in his hotel and at once offered to inject about 20 c.c. of the anticrotalic serum which is manufactured at his Brazilian institute. This was done at 5 P. M. when the symptoms, with the exception of the swelling, subsided very quickly. The following day the hand was still much swollen and discharging a bloody serum from the incisions, but the swelling of the arm was less. On January 30 the arm was still somewhat swollen and discolored as though from a severe bruise, but the patient was feeling comfortable and exhibiting all the signs of quick recovery.

Venomous snakes are divided into two great families—the *Colabridæ venenosæ*, or Cobras, and the *Viperidæ*. With the exception of the beautiful coral snake, a sluggish and almost non-aggressive cobra, all the poisonous snakes of the United States belong to a subfamily of the vipers, the pit vipers, so called from a pit between the eye and the nostril. Most of them are rattlers, *i.e.* bearing a series of horny rings at their tail end; a few, like the mocassin and the copperhead, have a pointed horny tip at the end of the tail. They are scattered all through the United States and, although receding before advancing agriculture, are in unpleasant evidence in many localities. Compared with tropical countries, our mortality from snakebite is trifling (*e.g.* in Brazil the annual average of snakebites is estimated at 20,000, with a mortality of 25 per cent.), but the keeping of correct statistics would disclose quite a number. But, although the mortality is low, the other consequences are serious enough to attract the attention of the medical profession. Tedious suppurations, neuroses, and long continued emaciation are not rare.

Just as the poisonous snakes are divided into two main families, so their venom is of two types, the one abounding in neurotoxin (peptone of Weir Mitchell and Reichert), the other in hemotoxin (globuline of Weir Mitchell). These two toxins are undoubtedly the most important ingredients of all snake venoms. The more powerful of the two is the neurotoxin, which has a selective affinity for certain nerve cells of the medulla, those in the centers of respiration and deglutition. The other prominent ingredient, the hemotoxin, attacks the blood and the blood vessels; its various constituents are agglutinine, hemolysine, and particularly hemorrhagine, also a substance which destroys the bactericidal power of the plasma.* The combination of all these different toxins explains the well known symptoms of snakebite. But when we consider further that the venom of every snake differs from that of every other, each venom representing a mixture of varying percentages of toxins, and that the neural toxin of a cobra differs from that of a rattlesnake, the hemotoxin of a rattlesnake from that of a mocassin, etc., we shall not be surprised to find every snakebite followed by a series of varying symptoms.

The therapy of snakebite in former centuries, which offers an endless list of infallible remedies, proves the utter helplessness with which these accidents were confronted. It was only when the interaction of toxin and antitoxin began to be worked out, when, for instance, Behring gave to the world his diphtheria antitoxin, that Calmette of Lille, France, and almost simultaneously Fraser of Edinburgh, offered an entirely new mode of treatment with their respective antivenines. Calmette, formerly an army surgeon in Cochin China, worked almost exclusively with cobra venom, believing that this would suffice for all types of snake intoxication. Even when, later on, the reports from cases of viper poisoning were not so favorable, he insisted that his antivenine should be of great value in all cases, since it neutralized the paramount toxin of any venom, the neurotoxin, and thus gave the body a chance to overcome by its own resistance the less active toxins. While no doubt this is true to a certain extent, later observations have tended to confirm Behring's law "that every toxin requires its specific antitoxin." In the case reported above, grave symptoms persisted even after four injections of Calmette's antivenine, while the injection of Brazil's anticrotalic serum subdued them immediately.

The widespread existence of poisonous snakes is a constant menace to our rural population, and we are therefore faced with the problem of how to secure a supply of these invaluable antivenines. The tedious process of manufacture coupled with the

*Those who are interested in this subject are referred to the elaborate volume of Hideyo Noguchi on "Snake Venoms," and to the article by Langmann on "Poisonous Reptiles" in the forthcoming Vol. VII of the "Reference Handbook of the Medical Sciences."

comparatively small demand precludes private enterprise. It would therefore seem to be a matter for government supervision. The activities of the United States Public Health Service are many and various, but it would probably be feasible for the Hygiene Laboratory to add this to its already long list of investigations without impairing its usefulness in other directions. It should be borne in mind also that many of these questions of toxins and antitoxins are of highly scientific interest; that snake venoms are of great stability and equability, qualities the absence of which renders the working with other toxins so uncertain and so unsatisfactory. It is a field which offers much to interest the laboratory worker, especially the immunologist.

PREPAREDNESS.

THAT the resisting power of the body politic in this land will have to be increased if it is to be in condition to overcome the incursion of some foreign enemy before or soon after the present European epidemic wears itself out is a self-evident fact. That it is better to have this power of resistance constantly at its point of greatest efficiency, so that the threatened infection can be prevented from establishing itself, rather than to have to resort to the vaccine of conscription after the damage is partly done is also a self-evident fact, though it may be and is denied by certain prophylactic nihilists. If the present Congress does not increase the Army and Navy, the next most assuredly will do so. Most of the details of this increase do not concern medical men as such, but only in their character of citizens; they are, however, vitally concerned that the size and efficiency of the Medical Corps, in both services, shall be increased *pari passu* with the increase in fighting men and equipment. At the present time the number of officers in the medical services of the Army and Navy is far below what is required for a peace footing, below even what it was proportionately in 1861 at the beginning of the Civil War. The total number of available army surgeons, including those in the Medical Reserve Corps and the National Guard, is only a little over 2,000, comparatively few of whom have had adequate training or experience, whereas there should be at least ten times that number of men perfectly fit and adequate to meet any medicomilitary emergency.

Congress is notoriously indifferent, if not hostile, to the medical needs of the public service and will seldom listen to any calls for improvement in the medical corps of the Army or Navy, in the way either of an increase in numbers or of a betterment in rank and pay which would serve to attract good men. On the contrary, it seems, as in the Hay bill, now before it, which would abolish the Medical Reserve Corps of the Army, to be especially inimical to this branch of the service. It would no doubt sanction the erection of architecturally beautiful and medically useless military hospitals in every cross-roads village, but would economically refuse an appropriation to obtain the medical officers to run them. What we have to hope from a Congress whose members are not stimulated to action by repeated pricks from their constituents may be learned from what happened in 1901. At that time the Dodge Commission, appointed by the President to ascertain the cause for the sanitary débacle of the Spanish war, made its report in which it was urged among other things that Congress make provision for a larger force of commissioned medical officers, the necessity for such increase being amply proved. Congress thereupon passed an act for the reorganization of the army in which, in spite of this report and the recommendation of the Surgeon General, the proportion of medical officers was actually decreased, promotion was made more difficult, and the service in general was made less attractive. It was not until 1908 that the present good but still inadequate organization was effected.

It is therefore most probable, indeed practically certain, that Congress will ignore the Medical Corps, while providing for an increase in the Army, unless it is forced by the physicians of the country to take the necessary action. A beginning in the right direction was made by the Southern Medical Association at its meeting in Dallas last November. At this meeting the Secretary of War was petitioned to make adequate provision in the bill for the reorganization of the Army, about to be presented to Congress, for a sufficient number of medical officers, aggregating a proportion of at least 0.75 per cent. of the enlisted strength of the Army, and also to make provision in this reorganization for the expansion of the Medical Department at the beginning of war by calling into service all members of the Medical Reserve Corps. The Medical Society of the County of New York, at its meeting on Monday of last week, also gave forcible expression to the need of medical preparedness so as to avoid a repetition of the sad and disgraceful experiences in the war of 1898. These examples should be followed by every medical society in the country, and resolutions should be adopted and sent, with personal letters from individual members, to their representatives in Congress demanding an adequate and proportional increase in the Medical Corps, the expansion being largely in the higher grades so that the chances of promotion may be greater and the service be made more attractive to men of education and ability.

In addition to this, there should be greater activity in preparing those medical men in civil life, who may be called to serve in time of war, to perform the duties to which they may be assigned. A correspondence school for instruction of members of the Reserve Corps has been, or is about to be, established, and the knowledge so gained should be supplemented by practical instruction in summer camps and elsewhere during stated periods once or twice a year. In the general awakening to the dangers that threaten the peace of our country and to the parlous state of our defences, the medical profession must be ready to respond to any call and to meet any military emergency that may be presented to it. As we have before suggested, the physicians in civil life should take thought as to how they can do their part in case of war. There should be some plan of action determined upon before the emergency

arises. If the emergency does not arise no harm will have been done; if it does, much uncertainty and needless confusion will be avoided if each one has determined in his mind what course he will take. Those who can take an active part should announce their willingness to do so; those who by reason of family obligation, ill health, or age must stay at home can arrange to care for the patients of their colleagues who are called to the service.

REFLEX RESPONSE TO EMOTIONAL STIMULATION.

CERTAIN strong emotions within us call forth a quick, instinctive response. The outward manifestations of this response reveal its primitive nature and its similarity to that found in animal life. The researches of the physiological laboratory, therefore, may well serve to throw light upon its nature and its usefulness in the economy of life. How do the emotions influence the nervous system in its function of adjustment and adaptability to the conditions which call forth the emotion?

Walter B. Cannon (Bodily Changes in Pain, Hunger, Fear and Rage, D. Appleton & Company, 1915) has published the results of some experimental work, in which he has thrown some light on this problem. He has made some valuable contributions to the knowledge of the interaction of the sympathetic division of the vegetative nervous system and the secretion of the adrenal glands. He proves through varied experiments the sympathetic innervation of these glands, and their stimulation to secretion when the sympathetic nerves are under emotional influence. Further, he shows that the adrenin thus secreted exerts a direct influence upon the bodily organs concerned in the response to the emotions, while at the same time it cooperates with the action of the sympathetic system itself. The effects produced are a distribution of blood to those parts which are to be specially called into activity, increased blood pressure, hastening of coagulation, removal of muscular fatigue, increased respiratory power. There is also an increase of sugar supply in the blood, which prepares for unusual exertion. It is thus evident that the emotions so far control the nervous mechanism as to prepare for those reactions which are demanded by the situations in which the emotions arise. These reactions, though involuntary, are purposive, and it is on the ground of their utility that they have become established through the principle of "phylogenetic association."

This study gives us one phase of the intricate interaction and interdependence of the psychic activity and that of the vegetative level of the nervous system. It is suggestive of more extensive fields yet to be explored, in which we shall come to know more of this still obscure but fundamentally important subject. The study has dealt with certain more obvious emotions, but it will doubtless pave the way to a similar understanding of the deeper fundamental emotions from which these arise, as well as of their intricately finer and more complex developments. In short, it may be one step on the way to understanding the interaction of the vegetative nervous system and the unconscious no less than the conscious psychic life.

CHILD-LABOR PROBLEM IN RELATION TO HEALTH.

THE question of child labor has always been a vexed one. It is well known—indeed it could not be otherwise—that young children should not be employed in manual labor or forced to work for long hours under whatever conditions. In Great Britain child labor has been forbidden for a considerable time and naturally the results have been most satisfactory. In the report of the Surgeon General of the Public Health Service for the fiscal year ending June, 1915, child labor in Massachusetts is discussed. In January, 1915, the Massachusetts State Board of Labor and Industries requested that Assistant Surgeon M. V. Safford should be authorized to assist the board in the problems which confronted it with respect to the employment of child labor in the State, and he was accordingly detailed with the board under instructions contemplating a study of the effect of various occupations on persons during their period of adolescence. In May last under the direction of Dr. Safford comprehensive physical examinations were made of minors employed in the textile industries of the State, the examinations being in accordance with a prescribed scheme calculated to bring out and record any abnormal conditions possibly attributable to the individual's particular occupation or working conditions.

While sufficient data have not yet been accumulated to warrant positive deductions as to the effect or non-effect of the various kinds of work in the textile industries upon minors employed therein, enough has been done to make a prediction as to conclusions fairly safe in certain matters of practical interest. For example, an undue proportion of boys employed have been found to be under height and weight for the ages given, but such deficiencies have been found to bear no relation to the duration of employment in the textile industry. To some extent such deficiencies are more apparent than real and are to be accounted for by successful evasion of the State laws with respect to the age and home employment of minors. However, no conclusion can be come to until the investigations have been completed; but as far as these have been carried it would seem safe to assume that the deficiencies of intelligence and physical strength already discovered among child workers are owing in a greater or lesser degree to their employment, which, in effect, means that children should not be allowed to work.

EPIDEMIC SEPTIC SORE THROAT.

ANY physician who has had occasion to treat a case of septic sore throat will admit the seriousness of the condition and recognize the gravity of the complications which may develop. Unfortunately the treatment is of little effect and therefore the greatest stress must be laid on the prophylaxis. Krumwiede and Valentine were able to study an epidemic of two hundred and thirty-two cases and traced the source of the infection to the milk supply (*Jour. Med. Research*, 1915, XXXIII, 231). On further search they found that the beginning of the trouble was the appearance of a sore throat in one of the persons at the dairy and that from this person it spread to a milker and from him to

the cow. Streptococci isolated from one cow showed cultural characteristics identical with those isolated from patients although the cow gave no evidence of mastitis. On the other hand one cow in the herd which obviously had a mastitis, showed a streptococcus which was different and which probably had no relation to the epidemic. They show that the use of poured blood agar plates is quite essential for the recognition of hemolytic steptococci which are characteristic of the disease. This is strong confirmatory evidence, were it needed, that such milk-borne epidemics are primarily of human origin and that careful supervision of the personnel of the dairy is all-important. At the same time it emphasizes one of the dangers against which the inhabitants of this city are protected by the Health Department's regulation demanding the pasteurization of the milk supply.

The Avitaminoses.

It was inevitable that this term should be coined to express the old-new group of deficiency diseases due to defective alimentation. We naturally imagine that an avitaminosis must be general and never purely local, but it is by no means impossible that some sensitive organ may alone show functional impairment. The acquired nyctalopia of trench fighters may be a case in point. While this symptom has been regarded in some quarters as purely psychogenic, other ophthalmologists are accusing the unbalanced diet of the troops. In the *Muenchener medizinische Wochenschrift* for December 14, Wietfeldt records the fact that this night-blindness is much more marked in winter than in summer. With the beginning of May fresh vegetables come into use, and it is believed at present that the vitamines are contained in fresh fruits, fresh vegetables, and meat. Overcooking, however, can destroy the vitamines in these food articles. The author therefore recommends the use of fresh fruit juices to make good the defects of the commissary and field kitchen, especially in the winter months. The apple crop has been abundant and apple juice is available during the entire cold season. Citric acid lemonade, however, is an artificial product which contains no vitamines.

News of the Week.

Health Insurance.—There has recently been introduced into the State Legislature of New York a bill providing for compulsory health insurance for workers in the State, which aims to supplement the present State Workingmen's Compensation Law by giving medical attention and cash benefit to workers disabled by sickness as well as by accident. The plan differs in principle from the existing industrial accident compensation in that 40 per cent. of the cost of the health insurance is to be borne by the workmen themselves, 20 per cent. by the State, and 40 per cent. by the employers. The bill has been drafted in cooperation with the American Association for Labor Legislation and the American Medical Association and will cover any case of sickness or accident not within the scope of the present legislation. It will apply to manual laborers and to all others earning less than $100 a month.

New York City Death Rate.—During the week ending January 22 the deaths reported in New York City numbered 1,760, an increase of 302 as compared with the corresponding week of last year. The respective rates for the week were 15.99 in 1916 and 13.62 in 1915. Influenza, bronchitis, and pneumonia caused 501 deaths, which was 58 less than during the previous week, indicating that the epidemic of grip and pneumonia was definitely on the wane. The mortality from tuberculosis was lower than during the corresponding week of 1915, while that from heart disease and nephritis was increased by 41 deaths, and that from the acute infectious diseases by 7. During the first four weeks of this year the death rate for the city was 16.47, while for the corresponding period of 1915 the rate was 14.89.

Fire at Sanatorium.—The administration building of the Sanatorium Gabriels at Gabriels in the Adirondacks, N. Y., was destroyed by fire on January 18. The sanatorium is conducted by the Sisters of Mercy for sufferers from tuberculosis, and is entirely non-sectarian. Plans for a modern fireproof building to replace the one destroyed have already been prepared, and its construction will be begun as soon as sufficient funds, for which an appeal has been issued, are in hand.

Chemical Exports.—The exports of chemicals from the United States during the last year show a tremendous increase as compared with those during 1913, the last year of normal times. It is now estimated that the total value of the chemicals exported in 1915 will exceed $75,000, as against $25,000 in 1913. The chief articles in which the increases have occurred are acids, bark extracts, dyes and dyestuffs, and soda salts.

Change at Nurses' School.—The title of the Training School for Nurses at the City Hospital, Blackwell's Island, has been changed by Commissioner Kingsbury to the City Hospital School for Nursing. The commissioner has also abolished the three advisory boards of the school and has formed a single board made up of representatives of the three.

Mount Sinai Hospital to Extend.—A plan for the expansion of Mount Sinai Hospital, New York, into a complete general hospital was announced at a meeting of the Hospital Board of Directors on January 23. Of the $2,150,000 estimated as necessary for the proper development of the hospital, $1,400,000 has already been subscribed or contributed. The original plan of expansion, proposed three years ago, called for building expenditures amounting to $1,100,000, but since that time it has been found advisable to extend the operations. Buildings are now being constructed for the pathological laboratory, the servants' dormitory, a children's dispensary, and a new private pavilion, to be known as the Guggenheim Memorial, while plans for a new children's hospital and the change of the present children's pavilion into a semi-private ward building are being considered. The directors are also considering the establishment of a department of hygiene in connection with the out-patient clinic.

Philadelphia General Hospital.—Dr. S. D. W. Ludlum, Dr. S. D. Ingham, Dr. S. E. Gilpin, and Dr. A. C. Buckley have been appointed members of the Psychopathic Staff and Dr. Charles W. Schaeffer Laryngologist to the Tuberculosis Department.

Hospital Dedicated.—The new buildings of the New York Orthopedic Dispensary and Hospital at 420 East Fifty-ninth Street, New York, were formally dedicated and opened on January 31.

Personals.—Dr. Francis D. Patterson of Philadelphia has been appointed chief of the Division

of Industrial Hygiene and Engineering of the Bureau of Inspection in the Department of Labor and Industry of Pennsylvania, succeeding the late Dr. John C. Price.

Dr. LELAND E. COFER, assistant surgeon-general of the United States Public Health Service, has been nominated by Governor Whitman as health officer of the Port of New York. Dr. Cofer was assigned to the State's service by President Wilson after the recent death of Health Officer O'Connell to remain in charge pending the transfer of the quarantine supervision to the Federal Government from the State. A bill providing for the transfer and for the abolition of the position of health officer has been introduced into the Legislature, and Governor Whitman has sent a special message urging its passage.

Stony Wold Sanatorium.—At the fifteenth annual meeting of the Stony Wold Sanatorium, Lake Kushaqua, N. Y., which was held in New York on January 26, it was reported that during the year 114 patients had been accommodated, 369 applications had been received, and 221 patients treated. The expenditures of the year totaled $99,224. Mrs. James E. Newcomb was reelected president of the corporation.

Gifts to Charities.—A number of charitable institutions receive bequests under the will of the late Archibald M. Stewart of New York, among them the Presbyterian Hospital to which $5,000 is given.

By the will of the late Dr. Isaac Ott of Easton, Pa., his estate, bequeathed to his widow for life, reverts on her death to the University of Pennsylvania, for the establishment of the Isaac Ott chair of Physiology. Also by his death provision is made for the establishment of a memorial chair of physiology in the Medicochirurgical College through the will of his mother.

By the will of the late James Hay of Philadelphia bequests are made as follows: $25,000 to the hospital of the Protestant Episcopal Church at Philadelphia for the endowment fund, $5,000 to the Philadelphia Home for Incurables.

Two contributions amounting to $49,000 were recently received from anonymous donors by the Brooklyn Hospital for the $250,000 fund required to complete the new buildings. One contribution of $28,000 is to be used to finish, equip, and furnish the nurses' home; while the other of $21,000 will be used for the private ward pavilion. A large number of smaller contributions have also been received for the fund.

The Northern Dispensary, New York, receives a bequest of $5,000 under the will of the late Lambert Suydam of this city.

St. Luke's Hospital, New Bedford, Mass., and the Presbyterian Hospital and St. Rose's Free Home for Incurable Cancer, New York, receive $5,000 each by the will of the late Mrs. Clara E. Seabury of New York.

Bequests of $5,000 each are made to the Methodist Episcopal Hospital and the Norwegian Deaconesses' Home and Hospital, Brooklyn, N. Y., by the will of the late William Todd of that city.

By the death of his daughter, recently, the following bequests in the will of the late Jacob G. Neafie of Philadelphia have become operative: The Hahnemann Hospital, Philadelphia, $35,000; the Philadelphia Home for Incurables, $15,000; the Hospital of the Protestant Episcopal Church in Philadelphia, $10,000.

The Hospital of the Protestant Episcopal Church and the German Hospital of Philadelphia received bequests of $1,000 each under the will of the late Daniel W. Grafly of that city.

Lawsuit over "Autolysin."—A suit was entered in the Supreme Court of New York last week by Dr. Silas P. Beebe and Dr. A. Judson Quimby against Dr. J. Wallace Beveridge, who has been associated with them in the manufacture and sale of "autolysin" as a cure for cancer. Dr. Beebe and Dr. Quimby ask that the partnership which they had formed with Dr. Beveridge be dissolved and that a receiver be appointed to take charge of the concern.

The American Association of Medical Jurisprudence will meet in Washington, D. C., on Saturday, May 6. Dr. William A. Woodward has been appointed chairman of the committee of arrangements. The president of the association is Dr. D. Percy Hickling of Washington; the secretary, Mr. Charles P. Blaney, 26 Liberty Street, New York.

Harvey Society.—The sixth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-third Street, on Saturday evening, February 5, 1916, at 8.30 P. M., by Dr. Hideyo Noguchi of the Rockefeller Institute for Medical Research. Subject: "Spirochetes."

Western Reserve Medical Department.—The following new appointments in this school have been announced: Dr. J. Rogoff, formerly of the department of physiology and pharmacology, Vanderbilt Medical School, Nashville, to be instructor in experimental medicine; Dr. C. H. Fiske, formerly assistant in biological chemistry, Harvard Medical School, to be associate in biochemistry; Dr. R. W. Scott, formerly demonstrator of medicine, Western Reserve University, to be instructor in physiology.

University of Oregon.—The fund for the new buildings of the University of Oregon Medical Department, Portland, has been increased by a contribution from four of the business men of the city of $25,000, thus making available the $50,000 appropriated by the State. It is now proposed to raise an additional $100,000.

Medical Society Elections.—CENTRE DISTRICT-MERRIMACK COUNTY (N. H.) MEDICAL SOCIETY: Annual meeting at Concord on January 11. Officers elected: *President*, Dr. Burt W. Carr, Pittsfield; *Vice-President*, Dr. Loren A. Sanders, Concord; *Secretary-Treasurer*, Dr. Charles Duncan, Concord; *Censor*, Dr. N. L. Griffin, New London.

HARTFORD (CONN.) MEDICAL SOCIETY.—At the annual meeting held on January 3, officers for the ensuing year were elected as follows: *President*, Dr. Joseph E. Root; *Vice-President*, Dr. C. C. Beach; *Secretary*, Dr. Amos T. Harrington; *Assistant Secretary*, Dr. Howard W. Brayton; *Treasurer*, Dr. Philip D. Bunce.

FRESNO COUNTY (CAL.) MEDICAL SOCIETY.—Officers for 1916 were elected at the annual meeting on January 5, as follows: *President*, Dr. L. R. Willson; *Vice-Presidents*, Dr. H. J. Craycroft and Dr. J. H. Pettis; *Secretary*, Dr. Kenneth J. Staniford; *Assistant Secretary*, Dr. C. D. Sweet; *Treasurer*, Dr. T. M. Hayden.

COPPER COUNTRY (MICH.) MEDICAL SOCIETY.—At the annual meeting held at Houghton on January 3, the following officers were elected: *President*, Dr. P. D. Bourland, Lake Linden; *Vice-President*, Dr. John MacRae, Calumet; *Secretary-Treasurer*, Dr. G. A. Conrad, Houghton.

CINCINNATI (OHIO) ACADEMY OF MEDICINE.—

Officers as follows were elected at the annual meeting of the Academy held on January 3: *President,* Dr. Charles T. Souther; *First Vice-President,* Dr. D. T. Vail; *Second Vice-President,* Dr. J. E. Pirrung; *Secretary,* Dr. W. R. Abbott; *Treasurer,* Dr. A. G. Deury; *Librarian,* Dr. Archibald I. Carson.

Sumner County (Tenn.) Medical Society.—The following officers were elected at the annual meeting on January 13: *President,* Dr. T. Y. *Carter,* Westmoreland; *Secretary-Treasurer,* Dr. J. R. Parker, Gallatin.

Pima County (Ariz.) Medical Society.—At the annual meeting held at Tucson on January 11, the following officers were elected: *President,* Dr. C. A. Thomas; *Vice-President,* Dr. S. H. Watson; *Secretary,* Dr. T. R. Pratt.

Berrien County (Ga.) Medical Society.—At the annual meeting held at Nashville on January 13, the following officers were elected: *President,* Dr. Henry W. Clements, Ray City; *Vice-President,* Dr. J. G. Devano, Adel; *Secretary,* Dr. D. R. Carter, Nashville.

The Late Dr. Barrows.—At a meeting of the Executive Committee of the Medical Board of Bellevue Hospital, held Wednesday, January 26, the following minute was adopted: "The members of the Medical Board of Bellevue Hospital record with sorrow the death of their late associate, Dr. Charles Clifford Barrows. Dr. Barrows for more than twenty years was connected with the Gynecological Department of the hospital, in which he rendered untiring, skillful, and faithful service to the sick poor of the city. His achievements in surgical operations and his devotion to the best humanitarian interests of his patients won their gratitude and respect, while his geniality and kindliness endeared him to all those whose privilege it was to be associated with him. It is resolved that this record be entered upon the minutes of the Medical Board of the hospital and that a copy be sent to the family of Dr. Barrows, and to the *New York Medical Journal* and the Medical Record."

Obituary Notes.—Dr. Edward J. Collins of Washington, D. C., a graduate of the Department of Medicine, George Washington University, Washington, in 1892, died at his home in Chevy Chase, Md., on January 16, aged 66 years.

Dr. Z. Swift Webb, formerly of New York, a graduate of the College of Physicians and Surgeons, New York, in 1848, died at his home in Waterbury, Conn., from bronchial pneumonia, on January 18, aged 91 years.

Dr. James Tweddale of Washburn, Ill., a graduate of Rush Medical College, Chicago, in 1869, and a member of the American Medical Association and the Illinois State and Woodford County Medical Societies, died at his home on January 8, aged 83 years.

Dr. Jacob R. Cressinger died of uremia at Philadelphia, on January 6, at the age of 72 years.

Dr. Walter Louis Woerner of Lititz, Pa., died of pneumonia at Lancaster, on January 7. He was graduated from the Hahnemann Hospital and Medical College of Pennsylvania in the class of 1912.

Dr. Robert T. Neffner of Weisburg, Ind., a graduate of the Medical College of Ohio, Cincinnati, in 1902, and a member of the Indiana State Medical Association and the Dearborn County Medical Society, was drowned while trying to ford a swollen stream on horseback, on January 12, aged 35 years.

Dr. Robert Fred Nitsche of Dubuque, Ia., a graduate of Rush Medical College, Chicago, in 1877, died at his home, from bronchial pneumonia, after a short illness, on January 9, age 86 years.

Dr. Guy Holbrook, formerly of Lowell, Mass., a graduate of the Albany (N. Y.) Medical College in 1866, formerly an alderman and a member of the Board of Health of Lowell, and a member of the Massachusetts Medical Society, and the New Hampshire Medical Society, died at his home in Boston, on January 16, aged 70 years.

Dr. Alfred Ira Noble of Kalamazoo, Mich., a graduate of the Medical School of Maine, Portland, in 1886, medical superintendent of the Kalamazoo State Hospital for the last ten years, and a member of the American Medical Association, the Michigan State Medical Society, the Kalamazoo Academy of Medicine, and the Detroit Society of Neurology and Psychiatry, died in Detroit, after a short illness, on January 19, aged 56 years.

Dr. Meredith D. Jones of St. Louis, Mo., a graduate of the Jefferson Medical College, Philadelphia, in 1872, emeritus professor of otology in the American Medical College, St. Louis, and a member of the Missouri State Medical Association and the St. Louis City Medical Society, died at Chambersburg, Penn., of heart disease, on January 12, aged 67 years.

Dr. Charles Impey of Omaha, Neb., a graduate of the Medical Department of the University of Louisville, Ky., in 1874, and a member of the American Medical Association, the Nebraska State Medical Association, and the Omaha-Douglas County Medical Society, died suddenly from cerebral hemorrhage, on January 10, aged 63 years.

Dr. Eugene Mark Worthen of Plymouth, N. H., a graduate of the Dartmouth Medical School, Hanover, in 1901, and a member of the New Hampshire Medical Society and the Grafton County Medical Society, died at his home, after a long illness, on December 29, aged 43 years.

Dr. Arnold Eberg of Simsbury, Conn., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1879, died at his home, on January 16, aged 58 years.

Dr. Artemus Ward of Canaan, Vt., a graduate of the University of Vermont, College of Medicine, Burlington in 1881, died at his home, on January 3, aged 69 years.

Dr. Henry Blank of Milwaukee, Wis., a graduate of Rush Medical College, Chicago, in 1885, a member of the American Medical Association, the State Medical Society of Wisconsin, and the Milwaukee-Ozaukee Counties Medical Society, and for twenty years professor of orthopedic surgery at the Wisconsin College of Physicians and Surgeons, died at his home from Bright's disease, on January 12, aged 54 years.

Dr. John W. Strickland of Macclenny, Fla., a graduate of the College of Medicine, University of Georgia, Augusta, in 1899, died at his home, after a short illness, on January 15, aged 51 years.

Dr. Corwin W. Cornell of Knoxville, Iowa, a graduate of the Rush Medical College, Chicago, in 1871, and a member of the American Medical Association, the Iowa State Medical Society, and the Marion County Medical Society, died at his home, after a short illness, on January 19, aged 66 years.

Dr. James J. Durrett of Fairmont, W. Va., a graduate of the School of Medicine, University of Maryland, Baltimore, in 1897, and a member of the West Virginia State Medical Association and the Marion County Medical Society, died suddenly on January 20, aged 44 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE PUBLIC MEDICAL SERVICES; NAVAL, MEDICAL, SANITARY—EXPENDITURE OF HOSPITALS—SIR E. CASSEL'S CONTRIBUTIONS—EPIDEMICS—NOTIFICATION OF BIRTHS—MATERNITY—SHELL-FISH.

LONDON, Jan. 8, 1916.

THE time of year has been the chief subject of conversation during the week. Whenever friends casually met the prospect of the future would be alluded to by someone, though the majority turned rather to the past, which naturally provided a greater variety of topics. Of these the public medical services claim special attention from their close relation to the war which absorbs so much of our thoughts. The Naval Department has been carried on as systematically as usual, the Greenwich Hospital School has been transferred to the metropolitan area, and its staff considers the change an advantage. It brings them into contact with the societies and other centers of scientific work, enabling them in turn to report their own proceedings. In the Army Department Major Harrison gives an account of infected wounds treated by lactic acid. Lieutenants Black, Glenny, and McNee add clinical experiences of gas-poisoning to the extent of nearly 700 cases. Lieutenant Treadgold and Surgeon Reece investigated cerebrospinal meningitis as it prevailed among the troops and the public. The motor ambulance service has been greatly developed, ambulance trains being organized in the most complete manner.

The expenditure at our hospitals continues to cause some anxiety, and suggestions are made from various sources with the hope of diminishing it. Some of them have been tried fairly enough and others carefully watched, but the result has not been striking, and indeed with nearly 9,000 beds in daily occupation the total normal expenditure must be large. Last year those beds afforded relief to 134,025 patients, in addition to which 1,321,104 were attended in the several out-patient departments. The total expenditure for the year, including maintenance, administration, rent, rates and taxes amounted to £181,162, being a slight increase over that of the previous year, though the number of patients treated in the period was somewhat less. Among them were 5,478 engaged in the naval and military services. Besides all these the voluntary hospitals provide for still larger numbers. Many comparisons between the different institutions and the cost of working have been circulated but do not seem to excite much interest outside the administrative and medical staffs. The Red Cross work has been rather heavier by the leaving for active service of a large proportion of the members. The cost of working has been affected by the rise in prices of provisions, which renders comparisons with previous years of little value. There is also great uncertainty from week to week in the number of beds actually occupied, sudden, unexpected calls on the one hand compelling all of them to be in constant use, others being at times vacant in readiness to afford accommodations at short notice.

Sir Ernest Cassel's gift of £50,000 for hospitals and charities, which I reported to you, is being distributed in the same way as his former donation of a like sum, that is partly in direct gifts and partly through the King Edward Hospital Fund. The following are some of the amounts already allocated: £800, London Hospital; £500, Kings College; £1,000, Guy's; £300, St. Mary's; £750, Charing Cross; £600, University College; £500, Middlesex; £1,000, St. Bartholomew's. Special general hospitals have also been benefited and many provincial hospitals, both general and special. Sir Ernest has also entrusted the King Edward's Fund with £28,000, with which to increase grants already made by it during the past year.

The absence of members of the staff of hospitals who have gone to the front has been a feature noticed by a number of medical visitors to London, and the same observation applies to the public medical service. A number of the inspectors of the medical department of the local government board are working under the Army Medical Corps, among them the first assistant, Dr. Buchanan, member of the army's advisory committee, who went to the Dardanelles in July to aid in the prevention of epidemic outbreaks. Other inspectors have been engaged in supervising the supply of food products to the troops from Argentina, Brazil, and the United States. The cooperation of the civil and military authorities has been cordial and efficient from the commencement when the water supply, sewerage, disposal of excreta and such subjects were most urgent, and the local medical assistance was of the greatest value to the military officials. The local board and war office authorities from the outbreak of the war have been both engaged in preventing by every means the spread of infectious diseases, and their efforts have been largely successful, as shown by the slight incidence of those diseases, with one or two exceptions. Thus measles was epidemic at Bedford from October to February, during which period there were 534 cases, 63 proving fatal. Cerebrospinal meningitis attacked the troops stationed in different parts of the country early in the year and was a cause of some anxiety at the war office, but the vigorous measures adopted kept it under control. A memorandum concerning it was circulated among medical officers of health. In it special emphasis was laid on the isolation of patients and the supervision of contacts. So, early diagnosis being difficult, the board offered to undertake examination of cerebrospinal fluid sent to its pathological laboratory. Local authorities were recommended in other cases to arrange with local bacteriologists to examine swabs taken from contacts. The notification of measles and German measles was put in force throughout the country under the regulations relating to them of the Public Health Act, 1915. The extension of the notification of births was also the subject of an act passed to make the system of the adoptive act (1907) universal, *i.e.* notice to be given to the medical officer of health of all births. It also requires local authorities to make arrangements for the protection of mothers, of expectant mothers, and young children. The local government board issued in the summer a circular on maternity and the welfare of infants, indicating the scope of the work which ought to be undertaken. The government agrees to provide half the cost of schemes for maternity and child welfare approved by the board and has issued regulations under which grants for these purposes will be paid. Regulations of shellfish layings have also been made under the act which has given power to local authorities to deal with this subject and which, it is to be hoped, will do away with a danger to the public health.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 20, 1916.

1. The Treatment of Nephritis. Cadis Phipps
2. The Injured Employee and the Workmen's Compensation Law; Results of Impartial Examinations. Francis D. Donoghue.
3. An Outline for the Management of Cardiac Cases from the Out-Patient Department Standpoint. Mark H. Wentworth.
4. Notes on a Conference of the Medical and Social Aspects of Syphilis of the Nervous System. The Development of the Gold Sol. "Paretic" Reaction as Compared with the Cerebrospinal Syphilitic Type. H. C. Solomon and E. S. Welles.
5. A Non-Fatal Fracture of the Axis. Frederick W. O'Brien.

1. The Treatment of Nephritis. — Cadis Phipps reports a number of cases of nephritis, some treated by the usual methods and some treated with thyroid extract. He states that while the cases are too few in number to be of service in drawing any very definite conclusions they suggest the following statements: 1. Any rigorous system of diet may be so strict or continued so long that it may be distinctly harmful to the individual case. 2. More freedom in the allowance of protein than is recommended in the "text-book" nephritic diet may be of apparently great advantage in the individual case. 3. Thyroid extract has, perhaps, a great value in the treatment of nephritis, one of the commonest and, at the same time, one of our most hopeless diseases. 4. If given carefully, the administration of the drug is safe. 5. Thyroid medication in nephritis should receive more attention than has heretofore been accorded it.

2. The Injured Employee and the Workmen's Compensation Law; Results of Impartial Examinations. — Francis D. Donoghue calls attention to the fact that the Workmen's Compensation Act in Massachusetts has brought into existence not only a new method of adjudicating claims, but also has created a new and broader field for expert medical service. A clear statement of what is found, a correct diagnosis, and the visualization of an injured employee as he is, under working conditions, are essentials to the sort of medical report which is necessary in passing upon cases under the act. From impartial examination in numerous cases the writer finds that certain reasons stand out as an explanation of the absence in some cases of proper diagnosis, or of the proper application thereof. Among these are the tendency to overlook details and the relationship of various existent factors which later may be extremely important in passing upon subsequent conditions; a habit of mind acquired from examining cases under the old law tending to inhibit that process of deductive reasoning so essential under the theory of the compensation system, danger of failure to realize that a surgical cure is not necessarily a functional cure; failure to realize the importance of occupational diseases and other forms of incapacity due to working conditions and materials, since in such cases considerable care may be required to determine whether the industry is the primary or the secondary cause of disability, or in no way responsible. One point which the writer forcibly emphasizes is that oftentimes a long period of disability may be prevented if a little direct personal interest is taken in the cases of incapacitated employees by employers and surgeons. As complete a study of each case as time and conditions under which the examination is made will permit should be made.

3. An Outline for the Management of Cardiac Cases from the Out-Patient Department Standpoint.—Mark H. Wentworth emphasizes the importance of regulating the life of the cardiac patient and especially the need of proper home conditions. In severe cases in which bed treatment is required the diet is all important. The diet should be light, just enough to keep up nourishment without ever causing a sense of fullness or allowing gas to form. The lacto-cereal diet is best. This is made up of milk, custards, eggs, junket, crackers, sweiback, and toast. Meat should be given sparingly if at all, because the purin bodies tend to raise the blood pressure and the fibers are relatively slow of digestion. The writer gives a sample menu for five light meals a day.

5. A Non-Fatal Fracture of the Axis. — Frederick W. O'Brien reports this case because a fracture of the axis in itself is not often recognized in the living. This instance occurred in a boy seven years of age, in whose condition there was nothing remarkable except his carriage. He was unable to move his head without pain and supported his lower jaw along the ramus with his upturned hand. The Roentgen examination showed a complete fracture of the laminæ of the axis. Proper orthopedic support was provided and excellent union with complete recovery of function took place.

New York Medical Journal.

January 22, 1916.

1. Common Affections of the Eye. S. D. Risley.
2. Chronic Tonsillitis. Louis Fischer.
3. Dermatitis Facticia. Henry Kennedy Gaskill.
4. Problems of Syphilitic Reinfection. Mihran B. Parounagian.
5. Grippe and Overheating. William Brady.
6. Congenital Hernia. Walter B. Jennings.
7. The Allen Treatment in Diabetes Mellitus. Samuel H. Paley.
8. The Treatment of Obesity. Jacob Gutman.
9. The Metabolism of Tissue Autolysis. Bernard Oettinger.

1. Common Affections of the Eye.—S. D. Risley reviews the common affections of the eye, particularly those forms of injury, abnormality, or disease, which may fall first under the care of the family physician, such as ophthalmia neonatorum, foreign bodies on the cornea, lime burns, punctured wounds, glaucoma, and phlyctenular disease. In the matter of school hygiene he emphasizes the following conclusions: 1. Before entering school the possible presence of defective vision should be excluded and any existing error of refraction corrected. 2. The probability of harm resulting from the school life diminishes with every added year of age in all states of refraction, therefore our children are placed in school at too tender an age. 2. The cooperation of the family adviser in securing the examination of the eyes of every child before entering school would go far in securing the conservation of vision in the rising generation. Physicians should also discourage the entrance of children into school before the seventh or eighth year of age.

2. Chronic Tonsillitis.—Louis Fischer points out that chronic hypertrophic tonsillitis, with frequent exacerbations of fever, headache, vomiting, and anorexia, may be mistaken for gastric or gastro-enteric derangement. The intoxication is due to the absorption of the toxins from the pathogenic bacteria harbored in the recesses of the tonsils. In such cases the examination of urine shows that there is a large amount of acetone, and traces of albumin and acetic acid. No case presenting gastric symptoms should be permitted to pass with such a diagnosis until one has assured himself that there is no chronic inflammatory tonsillitis at the root of the trouble. The danger is not so much in the gastric disturbance, as in the possible endocarditis or nephritis which the repeated tonsillar infection is likely to cause. The treatment is surgical. The tonsils must be enucleated, and the whole of the diseased tissue removed. This procedure should be followed by general restorative treatment.

7. Allen Treatment in Diabetes Mellitus. — Samuel H. Paley relates the history of five cases of diabetes

mellitus treated according to the Allen method. From his experience with these cases he finds that a patient with sugar as high as 7 per cent. may become sugar free within three days when starved and given only whiskey. Beginning with small quantities of carbohydrates in the form of non-starchy vegetables in gradually increasing amounts, and later adding protein and fat, a tolerance can be established for the three food stuffs sufficient to maintain the metabolism of the patient and keep him free from glycosuria. Apparently an acute infection, as lobar pneumonia, or a chronic disease, as nephritis, is no hindrance to this form of treatment. The writer's patients took the treatment with no discomfort, except perhaps some weakness during the starvation period. Alcohol apparently had no deleterious effect.

9. The Metabolism of Tissue Autolysis. — Bernard Oettinger makes observations on certain phases of tissue autolysis, reviews opposing theories with reference to these phenomena, and concludes that a common systemic mechanism pertaining to reduction of the antitryptic index and consequent tissue autolysis underlies erythrocytal disintegration normally, peptic erosion or ulcer, and the intense jaundice, hemolysis, and extensive organ necrosis noted in profound toxemias. Methemoglobinemia appears as an invariable sequence of erythrocytal autolysis (hemolysis). The greater degree which makes it a dominant feature in some pathological conditions corresponds to the more intense autolysis of fixed tissue cells under the same circumstances. Certain observations suggest that the rôle of methemoglobin in body chemistry may proceed from the fact that it is an oxidizing substance possessing an elective affinity for the intermediate products of metabolism and hence within range of immunity reactions progressing favorably, a saving agency in respect to other oxidizing tissues. In conditions which comprehend an abnormally accelerated and therefore toxic hemolysis, the associated toxic methemoglobinemia may be viewed as one uncontrolled factor of a defense mechanism broken down.

The Journal of the American Medical Association.

January 22, 1916.

1. Cardiospasm. I. W. Held and M. H. Gross.
2. The Relation of Obstetrics, Gynecology and Abdominal Surgery to the Public Welfare. Thomas S. Cullen.
3. Edward Livingston Trudeau: In Memoriam. S. Adolphus Knopf.
4. The Diazo and Urochromogen Reaction in Pulmonary Tuberculosis. A. N. Sinclair.
5. Anaphylactic Food Reactions in Dermatology: Preliminary Report. Albert Strickler and Joseph M. Goldberg.
6. The Relation of Morphine to Postoperative Complications and Immunity. Benjamin Franklin Davis.
7. The Status of the Child in Obstetric Practice. Joseph S. Wall.
8. Drainage of Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis. Sherman F. Gilpin and Thomas B. Earley.
9. A Case of Hemiparesis, Ataxia and Astereognosis Associated with Arachnoidal Edema. Hansell Crenshaw and Charles M. Remsen.
10. Pasteurization of Mild Supplies as a Protection Against Typhoid Fever. Report of an Epidemic. J. C. Geiger and F. L. Kelly.
11. Subdeltoid Bursitis Associated with the Deposition of Lime Salts. Albert H. Montgomery.
12. Filaria Sanguinis Hominis: With Report of a Case. Louis Phipps.
13. Complete Exclusion of the Large Bowel: Submucous Free Fascial Transplant Method, with Ileosigmoidostomy. Alfred A. Strauss.
14. Purpura Hemorrhagica (Morbus Maculosus Werlhofii): Report of a Fatal Case of Unknown Origin. P. M. Kellogg.

4. The Diazo and Urochromogen Reactions in Pulmonary Tuberculosis.—A. N. Sinclair, from observations on 146 tuberculous patients, draws the following conclusions: 1. The only favorable change from normal (both tests absent) is to a negative diazo and positive urochromogen. (This would also mean that at an original examination it is the only favorable deviation from normal.) 2. A change from either negative diazo to either positive diazo is most unfavorable. 3. The appearance of both reactions is of most grave portent. Such patients generally die. 4. When there is a change from a positive diazo and a negative urochromogen, the only favorable one is a reversal (that is, to a negative diazo and positive urochromogen). When the change is to positive to both tests a fatal issue is prognosticated. On the other hand, a change to normal (contrary to what we would expect) is of very grave prognosis. If the urochromogen reaction does not appear concomitantly with the disappearance of the diazo (or at least in a day or two) the prognosis is of the worst. 5. The disappearance of the diazo reaction (when both tests have been positive) has not been observed as heralding a fatal issue. 6. The disappearance of the diazo may be grave or favorable—grave if the urochromogen does not take its place, favorable if it does. 7. The urochromogen reaction is probably of little value as a contraindication to tuberculin treatment and should it be of any value at all, the probabilities are that other factors show such treatment to be contraindicated better and earlier than the urochromogen reaction. 8. This also applies to the diazo reaction as a contraindication to treatment. 9. Should the urochromogen reaction eventually prove of any value in the tuberculin treatment, he believes it will be for a diametrically opposed purpose to that referred to (as a contraindication to beginning tuberculin treatment): in other words, its presence may be a valuable contraindication to discontinuing tuberculin treatment in cases to which all other signs point as arrested. On this point he has not sufficient material as yet to say definitely. He only states that it appears here to be of value, and he hesitates now to discontinue tuberculin in arrested cases which show this reaction.

5. Anaphylactic Food Reactions in Dermatology.—Albert Strickler and Joseph M. Goldberg relate their experiments with the extracts of various foods. They find that the most important factor in the study of anaphylactic reactions is the determination of what constitutes a positive reaction. They conclude that unless a reaction remains for forty-eight hours, it cannot be called positive. The element of time constitutes the most important factor in the determination of a positive reaction. The writers believe that the anaphylactic food reactions, when properly interpreted, are a valuable guide in determining the dietary factors operative in the production of diseases of the skin and that such reactions are specific. In any case in which food stuffs are suspected of being the cause of the pathological conditions present, the cutaneous tests offer a ready means of confirming or negativing the suspicion. The tests constitute a basis for the scientific regulation of the diet in such cases. The tests must be carefully and conservatively interpreted in order that one be not deceived by pseudo reactions. A positive reaction to a certain food stuff does not of necessity indicate that the morbid phenomena under consideration are due to this food stuff. Just as a syphilitic patient may develop a skin affection which is unrelated to his systemic infection, so a patient with a positive anaphylactic reaction may develop a cutaneous affection due to other factors than his diet. The writers also believe that further studies in anaphylactic food reactions may shed considerable illumination on the etiology of certain diseases of the skin. Many hundreds and perhaps thousands of patients must be studied before any general deductions can be drawn as to the relation between particular skin diseases and food poisoning.

6. The Relation of Morphine to Postoperative Complications and Immunity. — Benjamin Franklin Davis

states that because of the depressing influence of morphine on the general metabolism, many surgeons have been inclined to blame its use for a long list of disorders appearing the course of and following operations, especially operations done under general anesthesia. With the object of testing the reasonableness of this idea a study was made of the records of 469 patients operated on at the Presbyterian Hospital in Chicago and of the immunity curves (opsonic and lytic) of a series of morphinized animals, particular attention being directed to the possible relationship of morphin to postoperative shock, postoperative ileus (paralytic), postoperative acute dilatation of the stomach, postoperative retention of urine, and immunity. As a result of these studies he finds that the combination of morphine (from one-eighth to one-sixth grain) and atropine (from 1/150 to 1/120 grain) hypodermically before operations is of very little importance so far as the prevention of postoperative shock is concerned, and, in the general run of cases, plays a negligible part in the production of postoperative nausea and vomiting, tympanites and paralytic ileus, and postoperative retention of urine. It has practically no effect on immunity. Morphine alone, preceding local anesthesia, adds nothing to the efficiency of the anesthetic, and causes postoperative nausea and vomiting in 25 per cent of the patients. It deprives the operator of the cooperation of the patient which at times might be valuable. In view of the disadvantages of imposing one powerful medullary depressant, morphine, on another, ether, the preoperative use of morphine should be abandoned. Morphine in one-eighth to one-sixteenth grain doses to an adult of average size, repeated at intervals of not less than six hours, should not be denied patients whose postoperative suffering cannot be controlled otherwise.

8. Drainage of Cerebrospinal Fluid as a Factor in the Treatment of Nervous Syphilis.—Sherman F. Gilpin and Thomas B. Earley ask the question why, if either arsenic or mercury are present in the blood and produce good results in all other forms of syphilis, no such results are obtained in syphilis of the nervous tissue. The answer is given that after the administration of either drug by way of the mouth, skin, or blood vessels, neither drug was to be found in the cerebrospinal fluid. Why? Was it because the choroid plexus would not allow these substances to pass, or if they did pass into the cerebrospinal fluid, it must be by osmosis, and this does not take place because the pressure of the cerebrospinal fluid equals the pressure of the blood in the venous sinuses and capillaries? Was it not reasonable to think that if the pressure was reduced within the cerebrospinal cavity we may succeed in bringing foreign bodies through the capillary walls and thus the direct effect of drugs, such as arsenic and mercury, secured on the nerve tissue itself? Reports are made on three patients who were drained once a week, as much fluid being drained off as would flow. The writers realize that the report of these three cases proves nothing. They know that the time of observation is too short to eliminate the improvement in a case of paresis which may be due only to a remission, but they see that from a clinical and laboratory point of view these three cases are improved and they feel justified in making this preliminary report in order to stimulate work in this field. They have noted marked improvement in mental and physical health with lessening of the ataxic symptoms.

13. Complete Exclusion of the Large Bowel.—Alfred A. Strauss describes his free fascial transplant method, with ileosigmoidostomy for excluding the large bowel, when ileosigmoidostomy or colectomy is considered. It has long been recognized from Roentgen studies that ileocolostomy alone nearly always results in a certain amount of regurgitation of some of the contents along the colon and cecum, but he believes that a greater part passes by the ileosigmoidostomy along the ileum and follows its normal course in spite of the ileosigmoidostomy. For this reason many surgeons advise colectomy, and for this reason he presents this method. He concludes that this method of excluding the colon by submucous fascial transplant is very efficient and simple. Each end of the bowl can be easily closed off in between five and ten minutes. The operation is absolutely free from hemorrhage, or chance of infection. In the dog at least it does not seem to make any difference whether the closed-off colon is full of intestinal contents or not. The method has the advantage that the lumen can easily be reconstructed by a secondary operation. From the fluoroscopic study, he believes that, while some of the contents regurgitate into the colon, most of the contents found in the colon are due to the food passing by the ileosigmoidostomy along the ileum into the cecum and colon. It seems, therefore, that simple closure of the ileum below the ileosigmoidostomy would suffice in most cases, and this would be safe in man; whie, were both ends closed, the appendix must be brought out in a separate wound for appendicostomy, should the colon become distended.

The Lancet.

January 8, 1916.

1. The Fitzpatrick Lectures on Medicine, Magic and Religion. W. H. R. Rivers.
2. Contributions to the Study of Shell Shock; Being an Account of Certain Cases Treated by Hypnosis. Charles S. Myers.
3. The Advantage of Warm Anesthetic Vapors, and an Apparatus for Their Administration. Francis B. Shipway.
4. Flora of Wounds and Flora of Putrefaction. A. Distaso.
5. The Simpson Light; Its Nature, Mode of Production, and Application with a Preliminary Note on Its Therapeutic Properties. W. Douglas Harmer and E. P. Cumberbatch.
6. Hyperthyroidism as a Cause of the Irritable Heart of Soldiers. C. Percival White and Francis Hernaman-Johnson.
7. Sanitation in Billets and Camps. Adam White.

2. Contributions to the Study of Shell Shock.—Charles S. Myers reports a series of cases under headings which are determined by the most prominent disorders characterizing them, but there were certain disturbances common to all, namely, amnesia varying from complete obliterations of the past to obliviscence of the scenes occasioning and following the shock, severe headache, and a mental condition varying from slight depression to severe stupor. Disturbances of sensation and movement might be absent, or if present, were extremely variable. Twenty-three of these cases of shell shock were treated by hypnosis with the immediate result that 26 per cent. were apparently cured, 26 per cent. showed distinct improvement, 35 per cent. failed to become hypnotized, and 13 per cent. showed no improvement after hypnosis. The recoveries after hypnosis were not necessarily complete or permanent. Despite the slow progress recorded in certain cases, the writer has not the least doubt that the hypnotic treatment which these and other cases received proved a great assistance toward recovery, and would have proved of still greater value if it could have been occasionally repeated later. If hypnosis did nothing else in the treatment of shock cases, it prepared and facilitated the way to complete recovery.

3. Warm Anesthetic Vapors.—Francis B. Shipway points out the defects attendant upon the administration of cold ether by the open method and describes an apparatus by which he administers warm ether vapor. The superiority in this method lies in the fact that there is greater ease in breathing; there is a free airway and complete oxygenation; the loss of body heat is less and hence there is less shock; the patients appear to recover

a little more quickly, and it also seems that lung complications will be a little less frequent with this method. There is no need to warm the ether artificially in very warm weather above the room temperature; in cold weather 85° to 90° F. will give good results. The higher level is better for patients who are feeble or shocked, or for operations which involve much exposure, loss of heat, or much bleeding.

5. The Simpson Light.—W. Douglas Harmer and E. P. Cumberbatch describe the nature, mode of production, and application of the Simpson light. What is known as the Simpson light is the light emitted from an electric arc formed between electrodes of special composition. These electrodes are made by a special process from a mixture of the ores of certain metals, the chief one being a tungstate of iron and manganese, known as wolfram. The application of the Simpson light in therapeutic doses frequently produces an erythema, which appears five or six hours after exposure. A number of cases of various types of disease have been treated with very satisfactory results with the Simpson light, among them being rodent ulcer, lupus, asthma, vaso-motor rhinitis, nasal catarrh and rhinitis, and otosclerosis. The Simpson light seems to stimulate the healing of wounds. Cases of schrapnel wound have been benefitted by the treatment. When disease affects the deep parts or subcutaneous parts there is usually, though not always, no benefit. The method is still in its infancy and it is too early to form any opinion as to its value in the treatment of the different diseases. The first impression obtained, however, is a promising one.

6. Hyperthyroidism as a Cause of the Irritable Heart of Soldiers.—C. Percival White and Francis Hernaman-Johnson report three cases of irritable heart as illustrating the fact that many cases of irritable heart may be explained by a condition of hyperthryroidism, a sort of pre-Graves' condition, the rapid pulse, sleeplessness and tremor being the only signs present. Prolonged strain and shock are recognized as a predisposing cause of exophthalmic goiter and these factors are present in a marked degree in most instances of so-called soldier's heart. The treatment of "irritable heart" in soldiers has been decided of an "expectant" nature, and it would at least seem reasonable that in all cases in which there is a suspicion of hyperthyroidism *x*-rays should be tried, other suitable measures of course, not being neglected. In the opinion of the author's investigation and treatment on the lines they suggest will alter for the better the prognosis in the type of case known at present as "irritable heart of soldiers."

British Medical Journal.

January 8, 1916.

1. Researches on Phagocytosis. H. J. Hamburger.
2. The Absence of Proper Facilities for the Treatment of Mental Disorders in Their Early Stages. Bedford Pierce.
3. Peripheral Shock and Its Central Effects. J. Lynn Thomas.
4. Observations on Castellani's "Tetravaccine" and "Pentavaccine." G. A. Lurie.
5. Report of a Case of Severe Tetanus Successfully Treated by Antitoxin. T. P. Kilner.
6. Serological Tests in Dysentery Convalescents. J. C. G. Ledingham and W. J. Penfold.
7. Metastatic Endophthalmitis in a Case of Cerebrospinal Meningitis. A. Leonard Weakley.
8. The Domiciliary Treatment of Pulmonary Tuberculosis. G. H. Dart.

1. Researches on Phagocytosis.—H. J. Hamburger presents the results of an extensive study of the influence of various agents, such as small amounts of calcium, iodoform, chloroform, oxygen, and carbonic acid, on phagocytosis. He finds that small amounts of calcium have a stimulating effect on the phagocytes, increasing their motility and promoting chemiotaxis, and assumes that this action is based upon a hitherto unknown specific biochemical property of this metal. Iodoform also increases phagocytosis, by about 30 per cent, and chloroform 1 in 20,000 raises the phagocytosis power 40 or 50 per cent. Similar results were obtained with benzene, camphor, turpentine, alcohol, chloral, fatty acids, and Peruvian balsam. The writer has also attempted to ascertain to what extent phagocytosis depends on the oxygen percentage of the medium, comparing the degree of phagocytosis in common salt solution, treated with air, with oxygen and with nitrogen. The results of these experiments were quite unexpected; it appeared that the phagocytosis was greatest where the slightest amount of oxygen was present. The agreement between these results and the effect of withdrawal of oxygen on the respiratory center is striking. In view of this agreement between phagocytes and the respiratory center the question comes up whether other substances have likewise the same effect on both. Investigating the effect of carbon dioxide on the phagocytes, the writer finds that in weak concentrations carbonic acid increases the phagocytosis and that in high concentrations it has a paralyzing effect. Another substance having a highly stimulating effect on the respiratory center before paralysis sets in is potassium cyanide; it has the same effect on the phagocytes, stimulating in small doses, paralyzing in somewhat larger quantities. It seems all but certain that these phenomena must be connected with the property this substance has of obstructing the oxygen consumption of the cells. The writer states that the more he studies the biology of phagocytes the more he is convinced of their excellence as a simple object for the study of problems of a biochemical nature.

4. Observations on Castellani's "Tetravaccine" and "Pentavaccine."—G. A. Lurie used tetravaccine to inoculate 3000 persons, most of whom he was able to follow for two months after inoculation. Two injections of one-half c.c. Each were given at an interval of five to seven days. The injections were done subcutaneously in the arm. Both the local and general reactions were mild. The writer was able to keep in touch with 2000 of the inoculated persons for two months, and no case of typhoid, paratyphoid A, paratyphoid B, or cholera developed among them. The pentavaccine which the writer used was the typhoid paratyphoid A paratyphoid B cholera Malta fever. The vaccine was obtained from Dr. Castellani and 2000 individuals in the Uskub American Clinic were inoculated with it. The reactions, local and general, was not more severe than in individuals inoculated with the tetravaccine. The author's results with these vaccines are identical with those of Castellani, Mendelson, and Randon. He is of the opinion that these mixed vaccines should be used as a matter of routine in all countries where such diseases exist already or may be imported.

5. A Case of Severe Tetanus Successfully Treated by Antitoxin.—T. P. Kilner cites this case in order to call attention to the fact that insufficient patience and perseverance are exercised on many cases, and that one settles down too easily to the conclusion that all cases with a short incubation period are hopeless from the onset. In this case recovery occurred in spite of well-marked symptoms of the disease and a short incubation period (nine days). Large doses of serum were administered, 46,500 units in all. It was noted that on each occasion when the serum was given the patient's condition became temporarily worse. Gradually there was a relaxation of the muscular spasm and according to last reports the patient was making an excellent recovery.

6. Serological Tests in Dysentery Convalescents.—J. C. G. Ledingham and W. J. Penfold recall that in a

previous paper they announced that the subacute cases of dysentery admitted to the King George Hospital have all been due to infection by *B. dysenteriæ* Shiga. Since that time three other subacute cases have been found due to *B. dysenteriæ* and two to the Flexner bacillus. Recently a fresh batch of convalescents arrived, and the opportunity was taken to ascertain by agglutination tests with the serums of the cases what proportion of them had suffered from bacillary dysentery. They had now examined the serums of 103 of these cases, the stools in all excepting one being negative as to *B. dysenteriæ*, *Entamœba histolitica*, and typhoid organisms. They found that 49 or 47.5 per cent. of the convalescents had suffered from bacillary dysentery of the Chiga type. Forty-one of the cases showed either one or more of the following protozoa, namely, *Lamblia intestinalis*, *Trichomonas*, or *Entamœba coli*, The positive Shiga agglutination cases were not found to be more liable to harbor the above protozoa than the negative Shiga cases.

Berliner klinische Wochenschrift.

October 25, 1915.

Treatment of Pneumonia with Ethylhydrocuprein.—Loeb treated 30 cases of croupous pneumonia in the course of a year in a Garrison Hospital, making use of chemotherapy. The patients were from 17 to 30 years of age and with several exceptions were robust men. No mild cases are included in the series. Six patients only received symptomatic treatment—the first to be admitted. The remainder received the specific treatment, as a rule alone, but in a few cases with the addition of wine and digitalis. All went to show that the remedy antagonizes sepsis. It should be given early, as soon as chill, fever, pains in chest and cough have appeared, and without waiting for a full diagnosis. The author actively recommends this course to the general practitioner. By the second day a sort of crisis should occur, and in individual cases the crisis is complete. As a rule, however, there is a recrudescence on the third or fourth day so that the drug must be repeated. In one case the recrudescence consisted of the appearance of the disease in the entire opposite lung and approaching heart failure, which was antagonized by stimulants. It was surprising that this patient, with two crippled lungs, respiration of 48 and pulse of 120, nevertheless felt well and had no rise of temperature. The collateral overaction of quinine is sometimes in evidence, and then the author calls off the remedy for 12 hours.

Military Experiences with Infectious Diseases.—Grunmann gives an installment on this subject. He has had a good opportunity to contrast epidemic cerebrospinal meningitis in civil and military practice. In the former he had never seen a roseola or petechial rash, but his soldiers presented the latter in a highly generalized form, as seen also in petechial typhus. He cites an opinion to the effect that the disease in question cannot be a modern one, dating from 1805, as is claimed; and that it must have been merged in the epidemics of typhus or in the so-called petechial fevers of typhus type. In some of his soldiers the petechiae were by far the most striking clinical phenomenon. They even appeared on the palms and soles and conjunctivae. They appear at the very outset of the disease, whereas in typhus they are seen somewhat later. In regard to the nature of the meningeal disease this consists of a rise of nitracranial pressure due to increase of cerebrospinal fluid. This causes the headache, slow pulse, vomiting, vertigo and disturbances of innervation. Lumbal puncture relieves this train of symptoms. Other phenomena of this causation include increased vasomotor excitability, as shown incidentally by the frequency of dermographism. Herpes facialis was so typical that the author examined the contents of the vesicles for meningo cocei, but the results were negative. Changes in the intracranial tension due to the relative amount of cerebrospinal fluid are responsible for the irregular course of the disease. Internal hydrocephalus tends to appear in protracted cases. Intraspinal injections of serum may aggravate the symptoms, doubtless from the increase of tension caused. Subjectively, headache is the worst symptom, but it yields to lumbal puncture and morphine.

Berliner klinische Wochenschrift.

December 13, 1915.

Summer Diarrhea.—Marx considers these from the viewpoint of a bacteriologist. In the Western battle front diarrhea appeared last June, and was of a somewhat dysenteriform type. In a small per cent. only were the Y and Flexner bacilli found; the great majority showed no exogenous pathogenic cause, and the author does not regard the average summer diarrhea as an infectious entity having a specific cause, as is the case with dysentery or cholera. He is inclined to hold the bacillus coli responsible, the harmless and even benevolent saprophyte having for the nonce developed a pathogenicity. We must never forget that bacteriology is before all a subdivision of botany, and the teachings of the latter must hold good for it. If we had borne this in mind less time would have been wasted in studying alleged mutation forms of bacteria. The *B. coli* is remarkable for its variability, which is due to the special nutrient media upon which it is cultivated. But every plant shows variability under such conditions. These normal denizens of the intestine are chiefly atypical, and the more nearly normal the stools the fewer the number of atypicals. If a normal diet is varied—for example, should an individual eat a lot of unripe fruit—a change is seen in the coli form, which may be regarded as bordering on the pathological. How far removed is the latter from the dysentery bacilli? Of these only the Shiga forms a definite species. The Y and Flexner germs are much less satisfactorily differentiated. Botanically, they do not constitute "good species." In dysenteric stools we see species and subspecies, varieties and subvarieties. These we can cultivate and christen at will. The author is inclined, for simplicity's sake to see in these only phylogenetic offshoots of a *Protabacillus coli.* These variations are of the present, not the past, and occur continuously. In this wide significance must the hygienist regard bacteriology. Variation is a function of diet and dietetics is also a subdivision of hygiene. There should be an integration in bacteriology as a reaction from overstudy of variations.

Protective Inoculation against Typhoid.—Professor Hueppe mentions the cases of soldiers who had been successfully inoculated with fresh virus against typhoid, with two repetitions. The blood was rendered rich in immune bodies with high agglutinating power, yet they contracted clinical typhoid in a severe form and with fatal outcome. These soldiers who were fighting in the Carpathians were subjected throughout to prodigious physical activity and the native resistance must have been reduced. There is also a suspicion that something besides the usual Eberth's bacillus may have been active in the production of the disease. Nevertheless, even these Carpathian troops who derived so little protection, may have profited as a whole by inoculation because the incidence of typhoid was less

than could have been anticipated. In winter and especially during thaws when the troops were repeatedly chilled and at the same time underfed there was noticed an outcropping of various infectious diseases, to wit, influenza, pneumonia, meningitis, etc. The appearance of typhoid at this juncture, as diagnosticated chiefly by the continued fever and enlarged spleen, may, from analogy, have been an atypical form of influenza. The diagnosis of typhoid appears to have been clinical and not bacteriological.

Münchener medizinische Wochenschrift.

December 7, 1915.

Local Treatment of Meningeal Syphilis.—Gennerich sees no advantage in the intraspinal exhibition of salvarsanized serum, in comparison with injections of salvarsan *per se*, although not denying that later returns may change this view. The time is now ripe for three-year statistics of cases of meningeal syphilis treated with salvarsan. By the term meningeal syphilis the author denotes several distinct lesions, viz., a histological affection (relapsing meningitis), syphilis cerebrospinalis, and incipient metalues. In confirmed metalues only the good general condition of the patient justifies hope of benefit from treatment. The ordinary combined treatment—savarsan and mercury—as applied to constitutional syphilis, cannot exert any notable therapeutic action on meningeal lesions. That certain histological alterations in the pia are responsible for the eventual development of metalues is not due to any biological alterations in the spirochete, but results from the inaccessibility of this membrane to ordinary internal medication. The membrane should be the more accessible through the cerebrospinal fluid but here two inhibitory conditions assert themselves. First the spirochete may be just beyond access, and second, all depends on the proper concentration of salvarsan in the cerebrospinal fluid; by proper is meant suitability for the individual case. If the treatment does not benefit, it is quite possible for it to irritate. In the cord, salvarsan in improper concentration may even cause myelitis. The author has a long list of indications for dose based on symptoms, the results being uncertain at best in contrast with ordinary cerebrospinal syphilis in which they are often brilliant. In the present study the author dwells but casually on the so-called histological recurrent or relapsing inflammation of the pia. To merit this distinction, in the absence of autopsy finds, there should be a special cytological picture of the cerebrospinal fluid, which is not described in the article.

Results of the Mesothorium Treatment of 100 Cases of Cancer of the Uterus.—Baisch has used radium and mesothorium on these growths since February, 1914, and has controlled 100 cases in this manner during a fifteen months interval. Clinically three types of disease were treated, as follows: completely inoperable, barely operable, readily operable. The latter class does not comprise beginning cases, such as might be accidentally stumbled upon. Of the inoperable 43 cases treated by radiation, but one may be termed cured; of the remainder 20 have ended fatally, while 22 have not been improved. The cured case, isolated though it be, is a striking example of what mesothorium can do. In numerous other cases the remedy caused amelioration of symptoms, and delayed the outcome. Bleeding and fetor were checked and some of the women were able to return to their work. In general, it may be safely asserted that mesothorium (including radium) is the best known palliative. The second group of "not yet inoperables" was made up of 20 subjects who "stood on the borderline of operability." In 50 per cent. of these cases recovery ensued, while 4 patients are dead and 6 are not improved. The conditions of recovery differ from those in which surgery is the treatment, as recurrence after eighteen months of quiescence following mesothorium treatment is not likely to happen. There remain 37 cases of readily operable cancer in which mesothorium was the treatment. Of this number 28 are apparently cured, while there have been 5 deaths and 4 negative results.

Münchener medizinische Wochenschrift.

December 14, 1915.

Collargol in Sepsis and Acute Rheumatism.—Reichmann, who had good results several years ago, has within the past year used the remedy systematically in sepsis and in six cases of the latter has obtained from recoveries. The first case was one of proved streptococcus sepsis in a child aged twelve, following measles. A hematogenous meningitis was one of its manifestations. Collargol was injected with no decisive result. After a brief favorable course of the disease a high fever and polyarthritis developed. One wrist was about to suppurate when collargol was given in a vein with astonishing results. Renewal exacerbations made several other injections necessary but patient recovered cleanly. In the second case in a young child an otogenous meningitis first developed. The occurrence of bacteria in the blood was very doubtful but collargol was given for supposed bacillemia, and seemingly with the best consequences. The power of the drug over the fever curve was undoubted. The third case treated was of obscure nature. One lower extremity was swollen to double the natural size, there was marked anemia, the nutrition was miserable, and a high fever was present Blood cultures showed staphylococci and collargol was given by a vein. The temperature curve responded decisively. In the belief that pernicious anemia existed both salvarsan and Fowler's solution were given without much influence on the blood count. The femoral thrombosis gradually underwent involution. The fourth case is very briefly described. The bacteriemia was hypothetical, the supposition being that a septic process had developed after measles in a two-year-old child. In the two fatal cases there was evident bacillemia from staphylococci.

Direct Injections into the Heart in Desperate Conditions.—Szubinski relates three cases of intracardial injections, which were made to replace the ordinary intravenous injection in impending heart failure. A preparation of digitalis was used along with suprarenin. In addition intravenous and subcutaneous injections were made in the hope of maintaining the gain. The first of the soldiers treated had both legs shattered and had bled for two hours before transport from the field. There was no response to ordinary remedies. The pulse and respiration showed that death was imminent. The intracardiac injection caused a sudden brief rally—two or three minutes long—after which the old picture reappeared. The second patient was badly shot up with protrusion of most of the intestine through four openings, and shot fractures. The intestines were hastily replaced and the openings sutured. The patient seemed hopelessly shocked. There was a rally after the intracardiac injection and the patient became restless and partly sat up. He survived ten hours under ordinary subcutaneous injections of caffeine and camphor with Murphy's rectal drip. In the third case was one of wound of the head. There was Cheyne-Stokes breathing. Strophanthin and suprarenin were injected. There was a brief rally with death in fifteen minutes. It is possible that now and then these injections will save life.

Book Reviews.

POTTER'S COMPEND OF HUMAN ANATOMY. Revised by D. GREGG METHENY, M.D., L.R.C.P. and S. (Edin.), L.F.P.S. (Glasgow), Associate in Anatomy, Jefferson Medical College, Philadelphia. Eighth edition, with 139 illustrations; also numerous tables and 16 plates of the Arteries and Nerves. Price, $1.00. Philadelphia: P. Blakiston's Son & Co.

THIS well known compend is now in its eighth edition, and the work is said to have been rewritten. We have been unable to find in it any account of the spinal column, the intercostal veins, the patella. On pages 189 and 190 "foramena" occurs no less than eight times; but whether this is due to the eccentricity of the author or that of the printer we do not know. On pages 243 to 255 the "tables" and "plates" are most perversely arranged; thus, the student while attempting to master the seventh cranial nerve is confronted with a good diagram of the fifth nerve; and the diagram of the seventh nerve faces the description of the ninth, tenth, and eleventh nerves. For some dozen pages this annoying condition persists and reduces the value of the illustrations very much indeed. This is an important feature and one which cannot fail to make the book unpopular with the only class of reader likely to use it.

DIAGNOSTISCHE UND THERAPEUTISCHE ERGEBNISSE DER HIRNPUNKTION. Eine Kritische Studie, von Dr. WALTER PINCUS, Spezialarzt für Chirurgie. Berlin: Verlag von August Hirschwald, 1916.

THIS work was completed in 1914 and covers the work done since the methodical introduction of cerebral puncture in 1904. It is very largely a volume of case histories and should be of notable value to those who propose to devote themselves to cranial surgery. The chief affections considered are hydrocephalus and meningitis serosa, cranial hemorrhage, cerebral abscess and purulent meningitis. The diagnostic and therapeutic uses of puncture, the technique, and the dangers of hemorrhage, infection, and sudden change in blood pressure are fully considered. There is a brief closing chapter on negative puncture.

DISEASES OF INFANTS AND CHILDREN. By HENRY DWIGHT CHAPIN, A.M., M.D.; Professor of Diseases of Children, New York Post-Graduate Medical School and Hospital; Supervising Physician of the Children's Department, New York Post-Graduate Hospital; Consulting Physician to the Willard Parker Hospital; to the Randall's Island Hospital; to St. Agnes' Hospital, White Plains; to Convalescent Home for Children, Sea Cliff; and to the Hackensack Hospital; Ex-President of the American Pediatric Society; and GODFREY ROGER PISEK, M.D., Sc.D., Professor of Diseases of Children and Attending Physician to the New York Post-Graduate Medical School and Hospital; Professor of Diseases of Children, University of Vermont Medical College; Visiting Physician to the Willard Parker and Riverside Hospitals; Pediatrist to the Park Hospital; Consulting Pediatrist to the Darrach Home for Children and to the Union Hospital, Portchester. Third Revised Edition, with 179 cuts and twelve colored plates. Price, $3.25 net. New York: William Wood & Company, 1915.

THE value of this book as a teaching manual has been greatly enhanced by the greater compactness of the volume in its new form, with its 578 pages of thinner paper instead of the 636 pages of the previous edition, and with the description of the rarer conditions in a smaller type. At the same time the text has been thoroughly revised and considerable new matter has been added, such as protein-milk feeding, special diet lists for older children, the action of catalyzers, the Schick and luetin tests, and mental tests especially adapted for the early months of life. In addition to the numerous cuts there are twelve excellent colored plates. The volume may be recommended without reserve as a reliable and up-to-date manual of pediatrics.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Vol. IV, No. IV, August, 1915. Octavo of 216 pages, with 40 illustrations. Published bi-monthly. Price, per year, paper, $8.00. Philadelphia and London: W. B. Saunders Company, 1915.

IN this number of the Clinics the usual initial discussion in detail of some subject in the realm of surgical diagnosis has been omitted and the entire volume is given over to the discussion of clinical cases, thirty-two in number, covering surgical conditions in various parts of the body, from intracranial lesions to fractures of the bones of the foot. Among the most interesting cases considered are two of carcinoma of the lower lip and one each of tumor of the parotid gland, metastatic thymus tumor of the male breast, and acute hemorrhagic pancreatitis.

SYPHILIS AS A MODERN PROBLEM. By WM. ALLEN PUSEY, M.D. Professor of Dermatology in the University of Illinois. Price, 50c. cloth; 25c. paper. Chicago: American Medical Association, 1915.

WHEN a problem is brought out into the daylight, there begins to be some hope for its solution. Dr. Pusey's book is one of many attempts now being made to have the lay public face the problem of syphilis honestly, understandingly.

The book is a clear, dignified presentation of the facts. It gives first a history of the disease, how it was carried back to Europe from America by Columbus' sailors, and of its rapid spread over the entire world. The presentation of the course of the disease, in both the acquired and hereditary forms is not too technical. The chapters on the Prognosis of Syphilis, Syphilis and Marriage, and the Prophylaxis of Syphilis are those for which the book is really written, and will command the attention and thought of those who read. These chapters make clear how and why the problem must be attacked from its social aspect. The book should be widely read, and physicians will do well to increase its circulation as much as possible.

WUNDHEILUNG MIT AETHERISCHEN OELEN, von Dr. DANIEL WAGNER. Oberarzt des allgemeinen Spitals in Békéscsaba. Price, 2.50 M. Berlin und Wien: Urban und Schwarzenberg, 1915.

IT is perhaps enough to say of this work that it describes a partially secret remedy (the ingredients are given without percentages or modes of combination), which is for sale under a proprietary name, or rather series of names, for it is recommended for external and internal uses, the former including a liquid soap.

NEUE UNTERSUCHUNGEN ÜBER FLEISCHEXTRACT. Von Dr. LEBBIN, Nahrungsmittelchemiker. Price, 1.60 M. Berlin: August Hirschwald, 1915.

A praiseworthy attempt to answer the perennial question "when is a meat extract not a meat extract?" and "why?" Some of the most famous trade products fall far short of a practicable standard in certain of their ingredients.

DIE GEMÜTSBEWEGUNGEN, ihr Wesen und ihr Einfluss auf körperliche, besonders auf krankhafte Lebenserscheinungen. Eine medizinisch-psychologische Studie von Dr. C. LANGE, Professor der Pathologie in Kopenhagen. Zweite Auflage besorgt und eingeleitet von Dr. H. KURELLA, Nervenarzt in Bonn. Mit 1 Abbildung im Text. Price, M. 1.80. Würzburg: Kurt Kabitzsch (A. Stuber's Verlag), 1915.

THIS is a translation of the Danish physiologist, C. Lange's work on the Emotions, first published in 1885. The first edition of this translation appeared in 1887. This second edition has been carefully revised with but few changes; and certain additions contained in the French edition of Lange's work have been included.

It deals with a physiological theory of the constitution and conditioning of the emotions, their nature and influence over normal and pathological phenomena of life. Quotations from and discussions of the first edition of this book are to be found in William James's writings. (Principles of Psychology, Henry Holt.) The James-Lange Theory takes into consideration that bodily changes constitute a part of all strong emotional experiences and are in fact the real essence of the emotion. According to one, emotion is the cause of which the physical manifestations are the effects, and according to the other the physical manifestations are the cause of which the emotion is the effect.

S. WEIR MITCHELL, M.D., LL.D., F.R.S., 1829-1914. Memorial Addresses and Resolutions. Philadelphia, 1914.

THIS work is a collection of eulogies of an illustrious man by a number of lifelong friends and admirers, who are themselves distinguished. It is well that the record of work accomplished and an appreciation of the character and ability of so distinguished a member of our profession should be put in permanent form as a contribution to the history of medicine.

Society Reports.

SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Twenty-Eighth Annual Meeting, Held at Cincinnati, Ohio, December 13, 14, and 15, 1915.

THE PRESIDENT, DR. BACON SAUNDERS OF FORT WORTH, TEXAS, IN THE CHAIR.

High versus Low Degrees of Heat as Palliative Treatment for Advanced Cases of Cancer of the Uterus.—Dr. HERMAN J. BOLDT of New York City claimed for the galvanocautery treatment, first brought to his notice by the late Dr. Byrne, Brooklyn, New York, that it gave more satisfactory results in such cases than any other method of treatment with which he was acquainted, so far as his personal experience went. Radium and *x*-ray, even with the newer methods, had not been so satisfactory. The intravenous injections, or the intramuscular injections of various medicaments recommended for experimentation from time to time, and from which improvement or even cures had been reported, had not in his hands had any discernible good effect. Although the results that one saw reported from the use of radium were not short of miraculous, unfortunately, he had not been able to verify such miracles. Galvanocautery treatment had stood the test of time and it had been proved by clinical experience that patients properly trained thereby lived longer, and were free from distressing symptoms. It was a comparatively safe therapeutic agent when used in suitable cases; that was, for such patients in whom the disease had not already advanced too far, so that the bladder and rectum would probably not be injured by a thorough application. The claim of Dr. Percy that the application of lower degrees of heat, so low that a carbonization of the tissues was not caused, and applied for a much longer time, had a deeper destructive influence, appealed to the profession, and he gave it a thorough test for two years, although he did not see in any case a superior clinical advantage. Recently he had shown it to be a fallacy by an autopsy and a careful study of the tissues from a woman who had died eight days subsequent to the heat application for two and a half hours, according to the rules laid down by Dr. Percy. Here it was illustrated that directly beyond the cauterized zone there were actively proliferating cancer cells. Dr. Percy's experimentation was done on dead tissues and the destructive action did not penetrate beyond the superficial structure. He had proved beyond a doubt that the application of heat so low as not to char the tissues, although the dessication method be used precisely according to the directions of Dr. Percy, was of no more value in hindering cell growth in the depth of the tissues than high degrees of heat, as were formerly and were now again used by him. The technique advocated by him had, moreover, the advantage of being able to do the cauterizing in from twenty to thirty minutes, and he believed that the destruction of tissues was carried deeper, leaving only a shell of the cervico-uterine structures. The degree of heat employed by him was much higher than that which was advocated by Dr. Byrne. While the electrode was at a cherry-red heat when applied to the tissue by Byrne, this heat soon diminished; but he turned on more current and kept it at that degree while it remained in contact with the tissue, and when a fairly thick layer of carbonized structure had been produced, more current was turned on to raise the heat of the dome electrode to a light red. The electrode must be taken off to make frequent examinations during the process of burning, to determine how much tissue had been burnt out, and to burn off the layer of carbon accumulated upon the electrode. It required from one to two weeks for the carbonization eschar to be thrown off, and then there was a slight sanguineous oozing which might be controlled by the use of acetone, or a strip of styptic gauze might be packed into the cavity. But what was still better was now to resort to the desiccation process by the slow heat method. It was now not necessary to use the heat more than twenty to thirty minutes and now no carbonization must be caused; but one must be careful not to use too much pressure with the electrode, since, if the first treatment had been properly done, only a shell of cervicouterine structure was left. Opening of the abdomen was not necessary for the second cauterization or rather desiccation. For additional after treatment the use of radium was desirable since there was no doubt that it was of benefit to some cases of cancer. A capsule containing 75 mg. might be placed in the cavity and held by a gauze tampon for twenty-four to forty-eight hours. This was to be repeated once a week for several weeks. No patient, after the cautery operation had been done, should be permitted to be out of constant observation until the carbonized eschar had been completely thrown off and danger of a possible secondary hemorrhage dismissed. The ligating of the internal iliac arteries, as originally advised by Dr. Pryor, and oophorectomy as a preliminary step, were good procedures. He had been able to verify the claims made for the ligation of the arteries, in that it lessened the bleeding and the discharge in the cases of patients with so-called carcinoma of the uterus.

Moschcowitz's Operation—Inguinal Route for Femoral Hernia.—Dr. J. D. S. DAVIS of Birmingham, Ala., stated that if the same surgical factors were utilized in femoral hernia that are used in inguinal hernia, relapse would be rare. There were certain erroneous impressions regarding the crural route for femoral hernia that gave rise to disaster. The opinion was prevalent that the repair of femoral hernia by the thigh route was a simple operation; that the technique did not require anatomical exposure of the field of operation and that recurrence was rare. The statement that femoral hernia did not tend to recur after high ligation of the sac was without foundation, even with closure of the ring by the operation of Bassini or Fabricius with high ligation of the sac, a funnel-shaped projection of the peritoneum was always left which constantly tended to recurrence. If the same precautions were resorted to in femoral hernia that were utilized in inguinal hernia (high ligation of sac, secure closure of the internal ring from above, and aseptic wound healing) relapse would be as rare as in inguinal hernia. The inguinal route or approach rendered resection and anastomosis a very easy procedure compared to a resection in an operation by the crural route. The supplementary abdominal incisions so often necessary in resection when the crural operation was made, need not for a moment even be considered when the operation was made. When femoral hernia was attacked by a high incision (inguinal route) anatomic exposure of the femoral ring could be made from above, bringing into view Cooper's ligament, which was utilized in the closure of the ring. In the operation for the cure of femoral hernia by the inguinal route, the skin incision was not unlike that made for the Bassini operation, except when the sac was found adherent, when the incision might be extended down into the thigh so as to give room for extirpation of the sac. The next step in the operation was that of dividing the aponeurosis of the external oblique. The upper flap of the external oblique aponeurosis, the internal oblique and transversalis were held up by a retractor while a second retractor was placed under the lower flap of the external oblique aponeurosis, which retracted downwards, bringing Poupart's ligament into view. A tape or piece of gauze was passed beneath the round ligament or spermatic cord and used to retract the round ligament inwards, and in case of a male, the spermatic cord was to be retracted outwards, which gave a very good exposure of the field of operation, with its floor covered by the transversalis, a thin layer of fascia just over or next to the peritoneum. The transversalis was bluntly divided along the line of the border of Poupart's ligament, then picked up by the retractors and held with the other tissues, upwards and inwards, and outwards and downwards. This retraction brought the peritoneum with the constricted neck of the sac into view. The retractor was removed from the lower and outer flap to show the lower cut surface of the transversalis fascia attached to Poupart's ligament and its relationship to the peritoneum. If the deep epigastric artery should run an anomalous course, it would at this stage come into view, which might be retracted or cut between ligatures. The sac was retracted with its contents, or if this was impossible Gimbernat's ligament which forms the sharp margin of the constricting ring, might be cut with a blunt pointed herniotomy knife. The ligament was in full view, which made it practically impossible to encounter an anomalous obturator artery. If so, it was in view, and the hemorrhage could be promptly controlled; but in an operation by the crural route or by the thigh, Gimbernat's ligament must be cut blindly, endangering the obturator artery, from which a hemorrhage might occur that was very hard to control, or the sac might be opened just where it converged from

the neck, through which opening the hernial contents might be retracted and placed in the peritoneal cavity, and held by a sponge or pack. If the hernial contents were adherent to the sac loose in its bed the sac and contents could be pulled out of the hernial bed, converting a femoral hernia into an inguinal hernia, which made it convenient and an easy task to deal with sac and contents. If the sac was adherent to its bed a pair of artery clamps should be introduced down to the lowest point in the sac, then closed and withdrawn. If the sac did not evert on account of adhesions to the bed in which it lay, the lower skin flap might be retracted down over the thigh, or the inguinal incision might be extended downward on the thigh over the hernial protrusion, thus enabling the operator to dissect the sac free of adhesions. The sac was tied off and transfixed beneath the transversalis, and internal oblique muscles. It was tied off sufficiently high, and drawn up under transversalis and internal oblique muscles, so as to provide against leaving a protrusion or dimple or funnel-shaped projection of the peritoneum and safeguard against relapse. The inner and upper flap was retracted inwards and upwards, and the outer and lower flap outwards and downwards which exposed to full view the femoral ring bounded externally by the external iliac vein, femoral and internal epigastric arteries; anteriorly by Poupart's ligament; internally by Gimbernat's ligament covered by a reflection of the transversalis fascia, and posteriorly by Cooper's ligament. With a small curved blunt-pointed needle, threaded with catgut suture No. 2, Cooper's ligament which could be seen—a dense, tough, white, glistening, fascial membrane—covering the horizontal ramus of the pubis, was pierced just internal to the iliac vein, and then the needle was carried through the lower flap of the transversalis fascia, and the edge of Poupart's ligament. Two or three sutures were now similarly placed internal to the first. The last one and the most internal suture picked up Gimbernat's ligament. Tying all these sutures approximated Cooper's ligament and Poupart's ligament which effectually closed the hernial orifice. The operation was now to be completed as if an inguinal hernia by the Bassini method. The internal oblique and transversalis muscles and the flap of the transversalis fascia were sutured en masse to the overshelving portion of Poupart's ligament, making a bed for the spermatic cord in the male. The round ligament in the female was never transplanted. The external oblique was next closed over the cord—lapped or imbricated—and the skin was closed with buried catgut No. 1 suture or with a silk or horsehair button-hole suture.

A Clinical and Experimental Study of Postoperative Ventral Hernia. — Dr. WILLARD BARTLETT of St. Louis thought that the causes of postoperative ventral hernia were incisions in defiance of anatomical and physiological principles, improper wound closure, needless drainage and tamponade, postoperative increased intraabdominal pressure and wound infection. Experiments on dogs produced no sign of hernia where one layer was preserved. Hernia resulted where a defect was produced in all layers, except skin or skin and peritoneum, successful repair of those being made by inversion of the opposite sheath, overlapping of both sheaths, or fascia lata transplantation. Complete defects were immediately repaired with transplants of fascia, sheath transplants, or the reflection of opposite sheaths. To restore the abdominal wall in those hernias, only one to three fibrous layers were depended upon. The experiments proved that postoperative hernia depended upon two factors, namely, a weak wall and hernial tendency. In the human subject the hernial tendency was corrected preoperatively by reducing intraabdominal fat and intestinal contents, with rest in bed, liquid diet, and free catharsis. The best postoperative procedure left the sac intact, utilizing the sac wall and scar tissue, but, if necessary, the abdominal contents might be reduced. If there was undue tension on the reconstructed wall, or interference with the movements of the lower ribs, failure was sure. Choice of operation depended upon the site of the lesion, the size of opening and hernia, the condition of surrounding tissue and general condition of the patient. The varieties of operation were overlapping, reconstruction, flap inversion, filigree and free transplantation. Kirschner prefers fascia lata because of its easy accessibility and quantity, its strength, inelasticity, adaptability, and tendency to heal in. One reinforcing suture line outside or one inside and outside, a complete defect, practically insured success. The after-treatment was of vital importance, dealing chiefly with meteorism or straining of any kind. In the clinical series of seventy-eight operations, seven results were not known, two treated with filigree were failures, four recurred after the overlapping method, while the others were all complete cures.

Adenomyoma of the Round Ligament and Incarcerated Omentum in an Inguinal Hernia Forming One Tumor.— Dr. THOMAS S. CULLEN of Baltimore reported his first case of adenomyoma of the uterus in March, 1895, and since then he has been much interested in adenomyomata. In 1896 he reported his first case of adenomyoma of the round ligament. Since that time a number of adenomyomata of the round ligament had been detected. When analyzing the umbilical tumors recorded in the literature he encountered quite a number that had been variously diagnosed. Those tumors were found only in women, tended to swell at the menstrual period, and occasionally discharged a little blood at the period. On section some of them contained small spaces filled with old blood. Those tumors proved to be adenomyomata of the umbilicus. More recently adenomyomata of the rectovaginal septum had been noticed. Cuthbert Lockyer and Jessup had each reported two cases, and the author had four. In 1889, Dr. Wm. W. Russell reported a most interesting case where a large amount of uterine mucosa was found in the hilum of the ovary. We might find adenomyoma of the uterus, the round ligament, the rectovaginal septum, or in small umbilical tumors. Nearly three years ago he operated on another adenomyoma of the round ligament. The patient was forty-three years of age, and complained of a lump in her groin for several years. This was very firm and appeared to be cystic. It was about 4 cm. long, 2 cm. broad and somewhat lobulated. She also complained of pain in the appendix region. He first made an incision and found the rectum firmly adherent to the left ovary over a considerable area. The adhesions were gradually loosened and the raw area on the bowel closed. He then examined the omentum and found that it passed down through the hernial opening near the right internal inguinal ring and then directly out into the adipose tissue of the anterior abdominal wall. The omentum was cut off at the internal ring, tied, and pushed out of the way. The extraperitoneal portion of the omentum was left *in situ*. The peritoneum over the appendix which showed evidence of old inflammation, had adhesions passing off from it in various directions. After closing the abdomen he made an incision over the tumor in the right inguinal region. The tumor was adherent to the skin. The skin was dissected back and the mass cut away from the fascia. There were numerous cysts, some filled with clear colored contents, others with slightly turbid fluid, and quite a number with chocolate-colored fluid, strongly suggesting adenomyoma. After dissecting away the lower portion of the tumor, which was also adherent to the fascia, he now lifted up the omentum from the hernial opening. The hole left near the internal ring was slit-like in form and about 1 cm. long and 4 cm. broad. It was closed with kangaroo tendon. To dissect back the fascia and do an orthodox operation was out of the question because of the large defect that would have been left. At most points good firm scar tissue existed. He closed the wound with through-and-through silkworm gut sutures. Accurate skin approximation was made with fine, black silk. The lower angle of the wound was drained with protective. The patient made a good recovery.

Early Tuberculosis of the Cervix.—Dr. CULLEN also reported this case. The patient was a colored woman, twenty-five years of age, who complained that fecal matter had been discharging through the vagina for two years. She had been married six years but had never been pregnant. Her menses began at 19 but for the last five years she had had no periods. At operation the resident gynecologist, Dr. J. C. Neel, found the uterus in retroposition and the bladder adherent to it above the internal os. The sigmoid was adherent to the vesicouterine flexion, just above the level of the internal os. The right tube and ovary had become twisted over the anterior surface of the uterus. The bladder and tube were freed and the fistula between the vagina and rectum cut across. The small opening in the sigmoid was closed. The uterus, which contained several myomata, was removed, a complete hysterectomy being done. The laboratory diagnosis was bilateral follicular salpingitis, uterine myomata, tuberculosis of the endometrium, and tuberculosis of the cervix. Tuberculosis of the cervix was rare, and such an early stage as was here depicted he had never seen before.

President's Address: The Great Professional Problem

of the Present Decade.—Dr. BACON SAUNDERS of Fort Worth, Texas, said that many private sanatoria were conducted on the highest scientific plane in the most sanitary, efficient, and ethical manner, and were, therefore, beyond the pale of criticism. But, unfortunately, it was also true, be it said to the everlasting shame of men and women boasting of the insignia and parading in the habiliments of medicine, that probably somewhere from 30 to 50 per cent. of the privately-owned and secretly operated pseudo-sanatoria were hotbeds of dishonesty and veritable culture fields of immorality. In short, fit hibernating places for his satanic majesty and all his devilish hosts. He wondered if those in power realized what a travesty on public benefaction it was when in almost every State of this glorious Union of ours, anybody, no matter who, so long as he went by the sobriquet of "doctor," could get a charter under the great seal of the State, for anything and no questions asked, provided the bantling was called by the name of "sanatorium." In the fullness of time, when the great heart of medical men really and sincerely beat for human welfare and happiness, there would come some power whose duty it would be to see that that disgraceful state of affairs was made impossible.

Results of Operations for Exophthalmic Goiter.—Drs. E. STARR JUDD and J. D. PEMBERTON of Rochester, Minn., selected for study cases that had been operated on more than five years ago (1909) for exophthalmic goiter, because it was difficult to say when a case of exophthalmic goiter had been cured. Their report embraced 121 cases which they were able to trace by repeated examinations or correspondence. This study revealed the fact that about 46 per cent. of the cases operated more than five years ago had remained entirely well and showed no evidence of their old symptoms; about 23 per cent. were practically cured, although a slight trace of their old trouble persisted or temporarily returned under severe nervous strains, etc.; between 4 and 5 per cent. were somewhat improved by operative interference, while about 5 per cent. reported that they had received no benefit. The series did not include merely selected cases, but embraced all the cases operated in 1909 that they were able to keep in contact with either by subsequent examination or correspondence. They ligated the superior thyroid vessels in some patients simply as a preliminary measure and advised them to return in three weeks for thyroidectomy, and in some instances so much improvement followed this procedure that they did not come back; however, they observed that late recurrence of symptoms was more frequent among patients who had simply been ligated than among those who had had resections of the thyroid gland. Frequently, in mild cases ligation of the superior thyroid vessels was all that was necessary. Several patients who had resection of the gland, had since reported the birth of normal children; one woman had borne three normal children. Seven of the twenty-one patients who died were never able to leave the hospital and were extremely toxic at the time of operation. The remaining fourten patients lived an average of 14.1 months after operation, and death probably ensued on account of the irreparable damage in the heart, liver, and kidneys, due to continued intoxication. A more general education of the public resulting in earlier interference in those cases would greatly increase the percentage of cures.

Unilateral Hematuria Associated with Fibrosis and Multiple Microscopic Calculi of the Renal Papillæ.—Dr. R. L. PAYNE, JR., of Norfolk, Va., referred to previous experimental work by him in which the chiefly developed vascular lesions were eliminated as a cause of symptomless unilateral renal hemorrhage. He reported a case of symptomless unilateral hematuria in which bisection of the kidney showed macroscopically a normal cortex or parenchyma, but every papilla presented a cherry red appearance so typical of angioma. The kidney was removed and careful miscroscopic studies disclosed an absence of pathological findings in the cortex or parenchyma proper, but the papillæ showed definite chronic inflammatory changes. These changes consisted of (1) An overgrowth of connective tissue. (2) Multiple microscopic calculi. (3) Dilated capillaries with the small calculi in close apposition or the capillaries surrounded by the connective tissue proliferation. (4) A network of dilated capillaries on the surface of the papillæ, many of which were ruptured with free blood escaping. These numerous, though small, varices, were evidently the source of the hemorrhage and the inference was that the numerous calculi, aided by the connective tissue they had originated, succeeded in causing an obstruction to the venous return with a subsequent dilatation of the capillaries, and resulting varicosities.

Pancreatic Cyst.—Dr. JOSEPH RANSOHOFF of Cincinnati presented the history of a case of pancreatic cyst, with what he believed to be the unique symptom of hematuria. The tumor was situated in the left upper quadrant, projecting into the loin, distinctly fluctuating and of slow growth. When first seen it was nearly as large as an adult head. Cystoscopic examination showed a bloody stream of urine issuing from the left ureteral orifice. Indigo-carmine injection demonstrated equal function on the part of the two kidneys. Ureteral catheterization and radiographing of the renal pelvis were refrained from an account of the weakened condition of the patient at the time of examination. The barium bovilac injection per rectum showed the colon normal. A diagnosis was made of cystic sarcoma of the left kidney. Lumbar exposure of the kidney showed it to be normal. Median incision then displayed the cyst of the pancreas, projecting between colon and stomach with the spleen six or eight times its normal size. The hematuria disappeared after the operation. The pressure of the pancreatic cyst on the renal and splenic vein had produced the hematuria and the enlargement of the spleen. The pancreatic matter of the cyst was demonstrated by the presence of the three pancreatic ferments, alkaline, proteinase, anylase, and lipase. There were also little masses of saponified fat. So far as he knew, the case was unique, since search of the relevant literature had failed to show a similar case.

Dr. FRANCIS R. HAGNER of Washington, D. C., said there was one point we ought to consider, and that was, in splitting a kidney from pole to pole many of us did not realize we were doing a partial nephrectomy on that patient. He had had two or three patients who had had that done some ten years previously, and the destruction of the kidney from that incision was really remarkable. Possibly one-fourth or even more of the kidney was destroyed by that incision. As to Dr. Ransohoff's case, he believed the hemorrhage was due to pressure on the renal vein. Recently he had a patient upon whom a prostatectomy was done three years ago, and he came back with hemorrhage from the left ureter. He catheterized the ureter and found a stricture just at the entrance of the ureteral orifice, while on the other side, the urine was clear. This stricture was dilated and a catheter passed up to the kidney. The urine was still clear, and the next day hemorrhage stopped. This patient had had three recurrent hemorrhages in that way, but after dilating the ureter the hemorrhage ceased.

Dr. BRANSFORD LEWIS of St. Louis stated that later studies indicated that focal infections from various parts of the body, in spite of there being an ascending infection from an infected bladder, gave rise to infection of the kidneys and hematuria. He recalled one case in which an infected tonsil was removed with benefit to the kidney condition.

Dr. JOHN T. MOORE of Houston, Texas, had had one case of cyst of the pancreas about the size of one's head, that did not give rise to hematuria.

Dr. RANDOLPH WINSLOW of Baltimore reported a case of exstrophy of the bladder operated on nearly thirty years ago, and gave the subsequent history of the case.

Giant Ureteral Calculus; Anomalous Development of the Genitourinary Tract.—Dr. IRVIN ABELL of Louisville reported the following cases: Case I, male, white, aged 32; date of first observation, August 17, 1915. Personal history negative for acute severe illness and venereal infection. Patient applied for relief of pain in his back of ten days' duration. Irregular left lumbar pain first noted at 18; at 28 there was a similar pain on the right side. Latterly pain recurred monthly but never sufficiently severe to require opiates, and until present attack persisting only a day or two. Heretofore, relief followed rest, hot baths, hot water bottle and coitus. Between paroxysms urinary frequency, four to five times daily; during an attack once to twice daily. Blood noted in the urine on a number of occasions. Present attack had continued without remission for ten days. Examination revealed patient thin, but well developed and muscular; pulse 100; temperature 100.2° F.; heart and lungs normal; right kidney palpable, tender, apparently large as medium-sized grapefruit. Left kidney not palpable; no tenderness on that side. Urine muddy-colored; acid, specific gravity 1020; marked trace of albumin, occasional blood and pus

cells, calcium oxylate crystals, amorphous phosphates and a moderate number of bacteria. Cystoscopy showed the bladder practically normal; left ureteral orifice appeared normal, catheter readily entered renal pelvis. Orifice of right ureter edematous, catheter encountering obstruction at 2½ cm. Urine from the left kidney showed no albumin or pus, an occasional blood cell. Blood count normal. Radiography disclosed a calculus in the pelvic portion of each ureter; left moderate size; right extended from the sacroiliac joint to meatus. A diagnosis was made of bilateral ureteral calculi, and right-sided hydronephrosis. Operation was performed August 19, 1914. A bilateral gridiron incision was made, enlarged downward by incising the rectal sheath; the peritoneum was displaced mesially, and the ureters approached extraperitoneally. There was considerable thickening about the right ureter; it was separated with difficulty from the surrounding structures. The ureter was excised at the pelvic brim; the calculus removed by traction. A similar procedure was done on the left side. Ureteral incisions were closed by interrupted catgut. The external wounds were drained by strips of rubber sheeting. The postoperative history was uneventful, the patient resuming work at the end of the third week. The right calculus oblong, with distinct curve at either extremity; length 7½ cm.; circumference 7 cm., weight 24 grams. The left zone was more ovoid, and weighed 2 grams. Case II. Female, white, aged 19. Date of first observation, September 3, 1915. Patient married three years, no pregnancy nor menstruation. No acute illness until the present. Ten days previously there was acute lower abdominal pain, nausea, vomiting, abdomen distended, tender; temperature 101° to 103.5° F.; pulse 110 to 120. Lesion was regarded as appendicits by the attending physician. Symptoms subsided within a week. September 2, 1915, patient had a similar attack and was admitted to the hospital the following day; pulse 120; temperature 103° F.; abdomen markedly distended, exquisite tenderness of the lower zone. While her figure was typically feminine, examination revealed absence of vagina; external genitals normal in appearance. Urine acid, trace of albumin, slight sediment, few blood cells, many pus cells, and rod-shaped bacilli. Blood count; hemoglobin, 90 per cent.; white cells, 30,500, and polynuclears 82 per cent. There was a tender mass in the left pelvis. A median incision disclosed the pelvic kidney in front and to left sacroiliac synchondrosis. The right kidney, uterus, tubes, and ovaries absent. Operative finding; pyelitis in single pelvic kidney. Three weeks later urine from the ureter and bladder negative upon culture. Radiography disclosed renal pelvis normal in size and shape; a single ureter 3 or 4 inches long. Cystogram showed the bladder pressing upon kidney, the latter producing variation in normal vesical outline. The rectum in the right pelvis.

In Cases of Symptoms without Gallstones, What Disposition Shall Be Made of the Gall-Bladder?—Dr. LE GRAND GUERRY of Columbia, S. C., said his own personal results showed that in about 30 per cent. of the cases of gallstones without symptoms operated on, we failed to get permanent symptomatic relief. It is evident that 75 per cent. of the cases are cured by simple drainage of the gall-bladder, since the figures they had obtained showed that from 25 to 30 per cent. represented the cases that were not relieved. Manifestly it would be unwise and unnecessary to subject the 75 per cent. that could be cured by the simple method to the greater risk of a more serious operation. As we saw it, out of every 100 cases, 75 remained well after cholecystotomy, and 24 per cent. were not relieved permanently. In what cases shall the gall-bladder be removed? He did not feel that the advocates of cholecystectomy in those cases had completely made out their case. He was willing to grant that a certain percentage of those cases would be relieved by removal of the gall-bladder, the so-called strawberry gall-bladder, the cases in which there was an infection of the gall-bladder itself, but as we had already seen, probably a good many of those cases could be caused by conditions other than infection of the gall-bladder wall. Of the five cases he had operated on before the gall-bladder had been removed, the results had been as follows: in two cases the patients died on the third and fourth day after an effort on his part to establish communication between the common duct and the duodenum or stomach. The third case was alive two months after with a permanent biliary fistula. The other two cases were well, one two and the other three years after an anastomosis between the common duct and the duodenum. Accepting the work of Archibald, it would seem reasonable that the division of the sphincter of the ampulla had a certain definite field of usefulness. Archibald had so treated his cases experimentally with good results. He believed that certain of those cases were best treated by the establishment of a permanent communication between the gall-bladder and duodenum. Lastly, his feeling was that that disease was like most other diseases, there were no hard and fast lines to be drawn, and that the best results would be obtained by a judicious selection of the operation to suit the individual case.

Cholecystostomy versus Cholecystectomy.—Dr. CHARLES H. MAYO of Rochester, Minn., stated that great progress had been made in surgery of the gall-bladder during the past twenty-five years. Diagnoses, instead of gallstones as in the past, were now as descriptive of the condition as cholecystitis, cholecystitis with stones, cholecystitis without stones (the inflammatory condition which produced them having subsided), or with duct and pancreatic complications. That there was still an opportunity for improvement in the treatment was shown by the fact that 370 patients with gall-bladder and gall-duct disease seen at their clinic during July, August, September, and October, 1915, 48 had been previously operated on, some of them twice, for the same disease. The mode of infection was still under discussion, the role of the portal circulation, permitting bacteria to make a frontal attack on the mucous membrane, if such vulnerability could be considered, was probably more common than ascending infection through the ducts. The experimental researches of Rosenow, however, had proved that the more common method of invasion was the rear attack at the base of the mucous epithelium of the gall-bladder, by bacteria conveyed through the general circulation. Cholecystostomy and the removal of stones cured symptoms of mechanical obstruction. Cholecystostomy did not cure chronic cholecystitis and could not restore the destroyed walls of the gall-bladder, or free the gall-bladder from adhesions. For these and for all cases in which infection was the major feature either with or without stones, cholecystectomy was the better method of treatment. In large groups of cases the mortality would be lower than that which followed cholecystostomy. Chronic pancreatitis with gastric symptoms might persist following cholecystectomy.

The Advantage of Separate Suture of the Mucous Membrane in Gastric Surgery.—Dr. RICHARD A. BARR of Nashville stated that the mucous and submucous coats of the stomach formed a very tough and substantial structure. It was very easy to divide the peritoneum and the muscle down to the submucosa and to separate them from it without cutting through. In the region of the pylorus a submuscular resection of the submucous and mucous coats might be made with less technical difficulty than was encountered in doing a pylorectomy, and in many cases served much the same purpose. In pylorectomy and partial gastrectomy division down to the submucosa and suture of this structure and the mucosa before dividing them prevented soiling, gave very satisfactory control of hemorrhage, and the completed suture line was much less rigid and less thick than that gotten by the usual method. The dissection of a flap of overlying peritoneum and muscle from ulcers lying on the anterior wall, with cauterization of the ulcer, suture of the submucosa with infolding, and replacement of the flap was already an established procedure.

Caudal Anesthesia in Genitourinary Surgery.—Drs. BRANSFORD LEWIS and LEO BARTELS of St. Louis stated that this was the method of anesthesia proposed and first used by Läwan and was based on the use of saline injections into the sacral canal suggested in 1901. It was the nerve-blocking method of local anesthesia applied in the sacral canal, using a combination of novocaine, potassium sulphate, and adrenalin as the local sedative fluid. At the time of the making up of the report they had used the method in eighty-five cases, and with such success that they felt justified in making a report. This method was to be distinguished from that of spinal anesthesia in that the solution was not injected into the spinal canal. The spinal canal was separated from the sacral canal by the cuff of dura mater which closed down on the cauda at about the first segment of the sacrum. An injection of fluid, therefore, into the sacral canal, did not reach up into the spinal canal. The object of the injection served to obtund the sensibilities or anesthetize the nerves issuing from the anteriar sacral foramina that form the sacral plexus. One of the most important nerves of

this plexus was the pudic distributed to the bladder and prostate and other genitourinary organs. By anesthetizing this nerve, an anesthetic condition of the organs mentioned was secured. Directions for preparing the solution were given, and their experience with dosage was detailed. It was found preferable to use larger quantities of weaker solution, rather than small quantities of stronger solution to obtain the anesthetic effect. It was found that the pressure effect of the anesthetizing fluid was strongly influential in securing success. From 50 to 90 c.c. of the fluid was now being used. The particular value of the method lay in the very debilitated, decrepit and aged patients that required major work in genitourinary surgery. Prostatectomies done suprapubically, the removal of vesical stones, and cystoscopies in hypersensitive individuals, had all been done with marked success and comfort under this method of anesthesia.

Some Observations on Local Anesthesia.—Dr. HERBERT P. COLE of Mobile, Ala., presented a résumé of his major operations performed within his clinic during the past two years. This group included 185 abdominal operations upon the appendix, gall-bladder, intestines, ovaries, and uterus. He reported one case of nephrectomy, three radical cases of amputation of the breast for carcinoma, two cases of decompression of the skull, and one exenteration of the orbit for sarcoma. Seven abdominal operations were performed during pregnancy without maternal mortality. Seven major operations were performed upon children under two years of age, with one death from bronchopneumonia twelve days after establishing a Littre artificial anus in a child three days of age. Forty-seven cases were operated upon between the ages of fifty and eight-seven; with a mortality of 4.5 per cent.—two deaths, the deaths occurring in one case on the eighth day following enterostomy, and the fifth day of ileus and peritonitis in a patient sixty-five years of age. The second death occurred on the fourth day following drainage, and the sixth day in peritonitis in a patient sixty-eight years of age. He concluded that the selection of local anesthesia as the anesthetic of choice in the cases offering grave mortality risks was a factor of safety too potent to be neglected.

Hyatid Cysts of the Liver with Report of Two Cases. Dr. GEORGE BEN JOHNSTON of Richmond, Va., had had two cases of hydatid cysts of the liver during the past two years, and about six months ago another case was reported in a Richmond Hospital. This was remarkable because of the fact that prior to 1913 only two cases of tenia echinococcus infection were reported from Virginia, and 250 from the United States and Canada. The Virginia cases occurred in Alexandria and Staunton. There was, however, another case that was infected in Virginia, but was reported from Buffalo by Cary and Lyons. Their two cases came from the rural districts and they were frequently exposed to infection both from dogs and from meat which was not properly inspected. The case that was operated on in Richmond several months ago occurred in a foreigner who had lived in this country only a short time. Their cases, however, were not from the region in which the epidemics in hogs had been reported. They had in mind those infected regions and were waiting to see if there would be a relative increase in infections of the tenia echinococcus type amongst their patients living in those localities. Surgery was the only method of treatment for this condition. Wherever possible, it was always best to remove the cyst *in toto;* if that was impossible, to remove as much of the cyst as possible and drain, and if this was impossible to aspirate the cyst.

Intussusception in Infants.—Dr. LEWIS S. MCMURTRY of Louisville said that intussusception was essentially an accident in infancy, since three-fourths of the cases obtained in children under two years of age. In a series of 300 cases collected by Grisel, 204, that is 68 per cent., occurred in breast-fed infants under one year of age. Of all the varieties of intestinal invagination the ileocecal was by far the most common, and almost invariably was found in cases of infants and young children. Grisel concluded that in infancy 82 per cent. at least were of this variety. In dealing with a case of suspected intussusception in a baby, the physician should, if possible, decide the diagnosis before leaving the house. He should study the case closely, give it immediate attention, and weigh each symptom carefully. The fate of the patient depended upon early diagnosis. When abdominal section was done success would depend more upon the operator's expedition and skill, with refinement of manipulation, than perhaps in any other abdominal operation. The young infant was easily shocked. It was very important that the invagination should be reduced by pressure from the apex of the intussusception, so that it was pushed out from within instead of being pulled out. The appendix should not be removed unless absolutely necessary, and every effort made to abbreviate the operative procedure. In his own experience he had found chloroform preferable for anesthesia. It was well known that after release of the invaginated intestine there was a tendency for recurrence of the invagination. To prevent this several operative procedures had been utilized. One was to shorten the mesentery by securing it in a position parallel to the intestine. Eliot adopted the method of attaching the disinvaginated intestine to the parietal peritoneum by a few sutures of catgut. This later method proved satisfactory in his cases. Every addition to the operation that was not absolutely necessary should be omitted, and every moment of time should be conserved in the patient's interest. Even with the best judgment and skill, the mortality of the operation during the first twenty-four hours stood at 40 per cent. When an irreducible invagination was found, the best procedure perhaps was to establish an artificial opening in the intestine and wait until a later date for the resection of the invaginated bowel. There was, however, but little choice between this and resection of the intestine at the time, since both procedures were followed by an extremely high mortality. He reported four illustrative cases of intussusception in infants under one year of age. Two late cases were not operated upon and both died. One was recognized early, operation done and recovery insured; another came late, and unless there was an error of diagnosis, patient recovered without operation.

The Operative Treatment of Pyloric Obstruction in Infants with a Review of Sixty-six Personal Cases.—Dr. WILLIAM A. DOWNES of New York City stated that this report included sixty-six cases operated upon in five and one-half years. All presented the characteristic symptoms. A tumor was palpated in every case before operation, and this finding was verified at the time of operation. This experience threw new light upon the etiology or pathology of the condition. The theory best explaining the symptom-complex was, that a true malformation was present at birth consisting of an abnormal thickening of the circular muscle of the pylorus, and to this was added an edematous condition some ten days, or later, after birth. The edema probably resulted from the increased activity of the stomach necessary to force an increasing amount of food through the narrowed and elongated pyloric lumen. Gastroenterostomy was performed upon 31 of the 66 cases, the remaining 35 being operated according to the method of Rammstedt. This latter method consisted of making a longitudinal incision 2 to 3 cm. in length, which was carried through the serosa and hypertrophied circular muscle fibers down to the mucous membrane. This incision was well liberated. Of the 31 cases in which gastroenterostomy was done there were 11 deaths—a mortality of 35 per cent. of the 20 discharged as cured, 2 afterwards died of gastroenteritis and 1 died of diphtheria. The remaining 17 were well and had developed normally. Röentgen ray examination showed the stomata working satisfactorily, and little or no bismuth passing through the pylorus. Of the cases dying in the hospital—a number began to vomit late in their convalescence, reoperation and autopsy offered no satisfactory explanation for the return of symptoms. After this unsatisfactory experience it was decided to give the partial pyloroplasty of Rammstedt a thorough trial. Consequently, this operation had been done in the last 35 cases. In this series there were 8 deaths—a mortality of 23 per cent. Of the 27 discharged as cured, 2 had died since leaving the hospital, the remaining 25 were well extending over a period from a few weeks to one and one-half years. In no case had there been a return of the symptoms. The general condition of the babies submitted to the two types of operation averaged the same. A number in each series were almost moribund at the time of operation, and this accounted for the immediate mortality. The cases operated according to the Rammstedt method vomited less and were easier to feed after operation. The advantages of the partial pyloroplasty over gastroenterostomy were time consumed for operation, the former requiring less than half that necessary to perform the latter, the operation required much less surgical skill than gastroenterostomy, and the continuity of the gastrointestinal tract was preserved. Röentgen ray ex-

amination one and one-half years after operation and autopsy on case dying three months after operation demonstrated the fact that the stomach functionated normally, and that the tumor entirely disappeared after this procedure.

Colon Resection and Its Indications.—Dr. FRANK MARTIN of Baltimore submitted the following summary: (1) Cancer of the colon was an undisputed surgical problem, and it should be dealt with by widespread resection, the sooner the better. (2) in analyzing the results of colon resection for other than malignant causes the most careful and critical judgment should be exercised and no case reported favorably unless the case had been under the strictest surveillance for a considerable period. (3) The operation was distinctly of the major type and should be undertaken only in obstinate and exaggerated cases. (4) It was distinctly too hazardous to be undertaken purely for the relief of constipation alone. (5) There were dangers attending it and they should not be lost sight of. (6) Theoretically, the colon was a part of the human anatomy which could be dispensed with without inflicting serious damage. In most cases a considerable portion of the colon was left, the sigmoid, and in a good many cases a part of the descending colon, which was sufficient to compensate for and take on the function of the portion that had been removed (7) Thirst was not complained of in any of his cases in spite of the physiologists pointing out this as one of the theoretical dangers. (8) The chief dangers that we had to keep before us were the operation *per se*, and the immediate and postoperative obstructions that were liable to follow.

The Use of Iodine in Combating the Peritonitides.—Dr. J. A. CRISLER of Memphis said that his large experience in the use of this drug and the clinical manifestations after its use in these cases, led him to firmly and conscientiously believe that the infected fluids that were free in the cavity were at once sterilized, and that the absorption of toxins, which after all, was the *sine qua non* mortuary factor of peritonitis, was immediately terminated for at least twenty-four hours. Also an outpouring of serum and of new phagocytes was immediately encouraged. He was strengthened in this belief by the fact that a high temperature in these cases almost invariably fell in a few hours down to normal or nearly so. Furthermore, there was an abundant serous drainage following, which was in excess of usual drainage common in other methods. This tended to disgorge and in a measure wash out the subserous cellular tissues, which might receive some beneficent antiseptic effect through a process of osmosis directly from the iodine that had come in contact with the inflamed serosa. In his investigations of the elimination of the iodine element, it had never appeared in the urine earlier than the eighteenth hour after its use in the abdomen, and then only in very small quantities. The height of elimination was attained about the seventy-second hour. He conjectured from this study that the absorption of toxins was held in abeyance for a like period. All the facts brought out by these studies, including clinical, physiological, and chemical, combined to show the truth of this assertion. During this period there was developed in the patient an autoresistance and toleration, quite sufficient to overcome the disease. From December 1, 1914, to December 1, 1915, he operated in 678 abdominal cases with 23 deaths. In this number of operations he had 104 pus cases. In other words, slightly over 15 per cent. of all of his abdominal cases were due to pus in the abdomen, either localized and walled off, or free with no effort at walling off. In this latter series he had one death, this patient reaching him in a moribund condition and utterly hopeless.

Typhoid Perforation; Peritonitis.—Dr. FRANK D. SMYTHE of Memphis stated that the positive indications for operation in connection with typhoid fever were: (1) Typhoid after the first week, usually the third, with sudden pain in the abdomen, severe, persistent, growing progressively worse, and muscle spasms. (2) Pain, at first local, rapidly extending, with or without nausea and vomiting. (3) Tenderness upon pressure, local and general. After reporting a case of typhoid perforation with unusual and interesting history, he stated the points of special interest were: 1. Diagnosis of peritonitis. 2. The man felt sufficiently well to engage in a wrestling match as a matter of choice when the perforation occurred. 3. He had not lost a day from his work nor missed a meal. 4. The only evidence of trouble prior to perforation was an estimated loss of about 10 pounds in weight and a feeling of malaise two weeks preceding the operation. 5. That immediately operation was urged by his family physician. 6. The diagnosis of peritonitis was made from the pain in the abdomen, its severity and persistence plus rigidity. 7. Tenderness upon pressure. 8. Collapse. 9. Vomiting early with intermittent nausea. 10. Widal made daily for seven days and proved negative. On the third day after operation blood culture was made with negative result, and on the eighth day a positive Widal was obtained.

Plastic Operations for Acquired Deformities of the Face.—Dr. J. SHELTON HORSLEY of Richmond, Va., called attention to the fact that plastic operations on the face were usually not life-saving procedures, and relieved not only the discomfort and mental anguish of the patient, but also the patient's associates who must daily view the deformity. Plastic surgery of the face required a kind of ingenuity to meet unusual conditions and to make things fit. The age and health of the patient must be given due weight. While general principles could guide in certain groups of cases, each case was a law unto itself. Therefore, a paper on such a subject must deal largely with reports and illustrations of individual cases. Dividing the face regionally, he reported three cases of deformity of the forehead following the loss of a portion of the anterior wall of the frontal sinus. The infundibulum was probed, and if not sufficiently large, gauze was run through it. Then small skin flaps were taken from the margins of the defects and turned in, cutting the pericranium farther out than the skin so it could be overlapped like a double-breasted coat. The raw surface was covered by sliding flaps from other portions of the forehead. A deformity of the eye caused by fracture and displacement of the portion of the bone to which the inner canthus was attached was corrected by replacing the bone and shortening the upper lid. Deformities of the nose were corrected by grafting bone from the rib or by sliding a flap including mucous membrane and cartilage from the septum of the nose. Large openings in the cheek were closed by transplanting a flap from the forehead with the attached anterior temporal artery dissected out and transplanted in the new position. Defects in the lip were corrected by various methods. When the whole thickness of the lip was involved, as after noma, flaps which included mucous membrane were slid up from the cheek. In other instances flaps were transplants from the neck or from the arm. When the arm was used the pedicle was cut in about two weeks.

Salpingitis Secondary to Appendicitis.—Dr. JAMES E. MOORE of Minneapolis said that a number of years ago the writer's attention was first called to the possibility of appendicitis being the cause of salpingitis by the following case: A single woman, aged thirty, was brought from one of the smaller cities of Minnesota to Minneapolis for operation with a diagnosis of salpingitis. She was taken to a gynecologist who firmly believed that the only cause of salpingitis was infection from the gonococcus, and in the absence of any evidence of infection in the vagina and the presence of an imperforate hymen concluded that it was impossible for the patient to have salpingitis, and discredited the attending physician's diagnosis. The patient was then brought to the author, who found that the patient gave a history of repeated attacks of inflammation in the lower abdomen and pelvis, and by rectal examination a solid mass could be made out in the pelvis. The vagina was healthy and hymen intact. There was no history of disease or unnatural discharges from the vagina at any time. The diagnosis of salpingitis was confirmed, although the possible cause was not understood. Operation was performed, evidence of repeated attacks of appendicitis were found, with the appendix closely adherent to the right ovary and tube, and both tubes distended with pus. The appendix and tubes were removed, and the patient fully restored to health. It was evident that the infection had not extended to the uterus, because it was left and had never caused symptoms. This led the writer to conclude that this was a case of salpingitis secondary to appendicitis. This occurred many years ago at a time when facilities for careful bacteriological examinations were not at hand, so that there was no means of knowing what bacteria were present. Since that time the writer had observed a number of cases that had confirmed his conviction that some cases of salpingitis were due to an infection from the peritoneal side caused by an appendicitis, but only two more cases were cited to emphasize the point the author was trying to make. The author believed that these cases demonstrated that infection of the Fallopian tube

might occur from the peritoneal end, and that when it did it was usually due to appendicitis. He believed that it should be accepted as an established fact that a certain small percentage of cases af salpingitis were due to appendicitis, so that when looking for possible causes of a pelvic inflammation we might take this fact into consideration.

Pseudomucinous Cysts of the Appendix and Ruptured Pseudomucinous Ovarian Cysts. — Dr. FRED WARREN BAILEY of St. Louis reported two cases of pseudomucinous cysts of the appendix, one case complicated by ruptured pseudomucinous ovarian cyst. The uncomplicated case was present in a young man, aged twenty-five, who had undergone a drainage operation for acute suppurative appendicitis thirteen months previously. There had been at intervals a mucopurulent discharge from the sinus which persisted since the first operation. The patient had suffered several attacks simulating acute appendicitis and lost weight rapidly. Patient had temperature of 100° and local signs of acute appendicitis. Operation revealed clubbed appendix with constriction 1 inch from its tip. A smooth-walled spherical tumor, which proved to be a pseudomucinous cyst, had pushed its way through the wall of the appendix. Between this tumor and the tip, the lumen was patent for the distance of 1 cm. Between the tumor and the cecum, the lumen was patent and undergoing an acute inflammatory process, accounting for the acute symptoms. The appendix and distal loop of ileum were surrounded by omental sac and bathed in pseudomucinous exudate. The appendix was removed, the pocket sponged and treated with 3 per cent. iodine. The sinus was dissected and the wound closed without drainage. Recovery was uneventful. Case 2 was one of ovarian cyst, capacity four liters, which had evidently ruptured several weeks prior to operation, with no definite symptoms except general abdominal tenderness and rapid loss of weight. About two liters of pseudomyxomatous material was removed from the abdominal cavity, large masses having adhered to abdominal viscera. The appendix was 7 cm. long and 2.5 cm. in diameter. The wall was translucent, smooth, tense, and fluctuant. There was a small opening near the tip from which gelatinous material exuded. The contents of the ovarian tumor and appendix proved to be pseudomucin. The diseased structures were removed, the abdomen thoroughly irrigated with saline, and closed without drainage. Patient had right side inguinal hernia which was repaired under local anesthesia on the tenth day. She was discharged from the hospital thirty days from date of entry, and had improved in health steadily since. There was no record of malignancy following ruptured pseudomucinous cysts of the appendix, but the danger was far greater in those of ovarian origin. No diagnosis of the condition was made previous to operation. He believed protection against such tumors lay in early exploration of all surgical abdominal lesions.

Genital Elephantiasis Following Extirpation of Inguinal Glands.—Dr. J. T. WINDELL of Louisville reported two cases, as follows: Case 1.—Mr. N., aged 37, single, date of first observation June 25, 1911. The patient then presented an enormous elephantiasic enlargement of the scrotum and penis which he said began early in 1910. The scrotum measured 16 inches in circumference; the penis was 11 inches in length, and at its largest part 12 inches in circumference. The patient contracted syphilis in 1903, and according to his statement, he had been under antisyphilitic treatment continually since then. Two surgical operations had been performed for the removal of enlarged and infiltrated inguinal glands, one in 1905, and the other in 1909, but for what character of pathology the patient did not know. Dense fibrous tissue scars, adherent to the underlying structures, were present in both inguinal regions. The scar tissue was more abundant in the left groin, which probably explained the greater scrotal enlargement on the corresponding side. Local treatment consisted of an appropriate suspensory apparatus and antiseptic dressings. At no time was there any acute inflammation of the penile tissues; but the scrotum, owing to the continuous exudation of lymph from its surface, at times became infected and exhibited evidence of acute inflammation, which was relieved by suitable antiseptic applications. On July 10, 1911, the Wassermann reaction was three plus. The patient was treated for several months by mercury in its various preparations and modes of administration, and later by salvarsan. November 11, 1913, Wassermann reaction two plus. Twelve days after the administration of salvarsan, December 7, 1913, there occurred considerable swelling, pain, and redness of the left arm around the elbow joint, sufficiently severe to cause the patient to remain in bed and require the constant attention of a trained nurse. Such manifestations following the injection of salvarsan must be exceptional, and were difficult to explain excepting upon the hypothesis that there existed a local lymphatic or vascular abnormality preventing prompt elimination of the drug. The symptoms subsided within six weeks, and there was no similar recurrence following subsequent salvarsan injections. Salvarsan was again administered on March 29, April 14, and May 10, 1914. September 2, 1914, Wassermann reaction one plus. There had been no reduction in the genital hypertrophy; the supportive bandage had been continued. The patient was in excellent physical health. He had consulted several eminent authorities, all of whom had agreed that surgery was not indicated. Case 2.—Mr. B., aged thirty, single. On September 10, 1912, three months after bilateral inguinal adenectomy for enlarged and suppurating glands, probably of tubercular origin, the patient presented an immense hypertrophy of the penis. It was unaccompanied by redness or pain, and the scrotal tissues were apparently uninvolved. Several deep scars were present in each groin from the previous operations. Having in mind the unfortunate cases just reported, it was thought that this was another of a similar character, and the diagnosis was made accordingly. An appropriate suspensory apparatus was applied, and the patient was requested to report three days later for further observation and treatment. However, he failed to return, and from information subsequently received, it appeared that the penile hypertrophy subsided within two or three months.

Ulcer of the Jejunum with Report of a Case. — Dr. ROBERT C. BRYAN of Richmond, Va., said that his experience in surgery of the stomach and with one case of ulcer of the jejunum hardly justified the presentation of a symposium of classical features which might be dignified with the title "Diagnosis of Ulcer of the Jejunum." Keen stated that if more attention were to be given to oral sepsis and to the gastric condition of hyperchlorhydria relapse of ulcer might be prevented. Apparently ulcer of the jejunum was found associated with other pathological states of the upper alimentary tract. Since so little was known and understood about primary ulcer of the jejunum, it might be said that these associated conditions should be more readily translated and diagnosed by the routine laboratory procedures, and when so worked out and accounted for, the remaining untoward expressions might be laid at the door of a suspected ulcer of the jejunum. Gastroenterostomy being one of the causes of jejunal ulcerations, one should hesitate to perform the operation for primary ulcer of the jejunum. In appropriate cases excision, resection, or enterectomy were apparently the operations of choice.

The Estimation of Resistance Prior to Surgical Operations.—Dr. A. C. SCOTT of Temple, Tex., stated that many puzzling situations could be cleared up and an occasional disaster averted were we to systematically enter into our records something which tended to group and emphasize the various elements of lowered resistance and pit the net resistance remaining against the factors involved in each operation to be overcome, being mindful of the fact that in every surgical operation two forces were pitted against each other, one tending to destroy life, and the other engaged solely in an effort to save it. For the purpose of illustration, he would select three factors which might enter into an operation, any one of which might be severe enough to result fatally in a person possessing normal resistance. He referred to hemorrhage, trauma, and inhalation anesthesia, each of which had been measured experimentally. Other factors more difficult to measure were fear, pain, and muscular effort. The physiological effect of each of these factors was modified by the time consumed. On the side of resistance we had an unlimited number of factors concerned in lowering the standards. They seldom appeared singly and often many of them would be combined in a single individual. They might be roughly classified as follows: Constitutional weakness from inheritance and environment; previous debilitating diseases of any character; recent trauma by either injury or operation; starvation, drug habit, and psychic depression. The maximum or ideal resistance was illustrated in a fully developed adult whose breeding, habits, and environment had been conducive to the acquisition of a complete, well-balanced and functional-

ly perfect organism. The ill effects of the anesthetic were rapidly multiplied as the patient's resistance was lowered from various causes. This applied to all the operation factors. As the resistance was progressively lowered each factor of the operation which tended toward fatality was increased in varying proportions as the fatal percentage was approached. Perhaps the most uniformly marked deleterious effect of each operation factor was to be observed in those cases whose resistance was decidedly lowered from some form of toxemia. In no department of medicine was the teamwork of an efficient staff of examiners and laboratory workers of more value than in the work of estimating a patient's resistance prior to contemplated surgical procedures. The importance of systematic examination for the purpose of noting the various things which might lower resistance was parallel to that made for diagnostic purposes.

Sarcomata in Unusual Situations.—Dr. HUBERT A. ROYSTER of Raleigh, N. C., stated that among his records he had found six cases in which sarcomata were discovered in unusual locations, either growing from tissue rarely the seat of such growths or exhibiting other characteristics out of the ordinary. The first one was fibrosarcoma of the sheaths of the musculospiral and median nerves. The second, rhabdomyosarcoma of the trapezius muscle. Three, fibrosarcoma of the breast. Four, single-celled sarcoma of the abdominal wall. Five, lymphangiosarcoma of the coccygeal region. Sixth, myosarcoma of the buttocks.

The Treatment of Lymphosarcoma with Radium.—Drs. HOWARD A. KELLY and CURTIS F. BURNAM of Baltimore pointed out the differences between lymphosarcoma and Hodgkin's disease, and the various leucemias, and excluded those latter conditions for consideration in the near future. They drew attention briefly to the life history of lymphosarcoma, beginning as a local infection and growing more or less rapidly, metastasizing, and finally invading the lymphatic system, more or less, of the whole body, and invariably causing death in a period of from several months to a couple of years. Surgery had always stood impotent in the presence of lymphosarcoma, even in such an accessible region as the neck, and when located in the breast or abdomen it was, of course, even beyond the dream of surgical relief. It was Nicholas Senn, who, in 1903, opened up the great question of the ray therapy of these affections. The authors presented a series of twenty cases, all but two identified by a microscopic examination of the tissues, and all the cases submitted to Dr. Kelly's clinic for treatment by surgeons from various parts of the country. Most of the patients were in an extremely advanced stage of the disease and twelve of them had been operated upon, and those with one exception were sent as a last desperate hope with rapidly recurring masses in the neck. Out of that group of twenty, thirteen, or 65 per cent. were apparently cured. Six cases had died of the disease, five of that group had been operated upon, and all were advanced bad cases but one. On the basis of this experience they believed that lymphosarcoma ought not in the future be operated upon, but should be subjected to radium therapy at the earliest possible moment. The results were found to improve if the cases were obtained early, and they confidently expected to increase their percentage of recovery from 65 up to 90 per cent. or over. The amounts of radium used varied from 441 to 2,000 mgs. distributed over different areas for several hours and repeated at intervals of weeks or months. While in the early cases the diseased area alone was treated, in the later cases the entire lymphatic system of the neck, axillæ, and torso have been included. There were several instances of primary extensive lymphosarcoma of the mediastinum. Those also responded just as readily as those more superficially placed. In view of those results and the rescue by radium of this most distressing malady from the realm of the incurable, all future cases should be given the benefit of a thoroughgoing radium treatment at the earliest possible moment.

Subcutaneous Dermic Fistula in the Treatment of Ascites.—Dr. WALTER C. G. KIRCHNER of St. Louis related his experience with the Oberst operation, employing certain modifications of technique. In principle, the operation consisted in the employment of a pedunculated portion of the skin from the abdomen, which was buried subcutaneously in such a manner that a flap projected into the abdominal cavity. Thus no substance foreign to the body was used in providing continuous drainage.

Conservative Pelvic Surgery.—Dr. FLOYD W. MCRAE of Atlanta said he had done conservative operations on 338 women. Of this number he had been able to get reports to date from only ninety-three—thirty-two of whom had reported pregnancies. Practically all had gone to full term and been delivered of healthy children. One woman had had three children, another two; another had had three or more induced abortions. Another was delivered of a living child by cesarean section on account of uremic convulsions. Both mother and child were not in good health. He had written the 198 cases that he had not kept in touch with, and hoped to receive definite information from many of them to incorporate in his paper before publication. Of the 338 women, seventeen had had subsequent operations done by him or other surgeons. He had only included in this record the women whose pelvic organs were left in a state compatible with possible future pregnancies. It did not include individuals whose tubes or uteri were removed, or where partial hysterectomies were performed precluding pregnancy. In his work he had resected cystic ovaries, preserving all healthy stroma, suturing accurately with fine catgut. He had endeavored to so separate adhesions, embedded ovaries and tubes as to leave the least possible area of raw surface; hanging up prolapsed ovaries, plicating the ligaments, so readjusting uterus, tubes, and ovaries as to approach as nearly as possible the normal arrangement. A very large majority of those women had been relieved of their suffering and restored to all the privileges and enjoyments of healthful womanhood.

Gangrenous Abscess of the Lung.—Dr. D. F. TALLEY of Birmingham, Ala., reported a case of gangrenous abscess of the lung in a young married woman after the birth of her first child. It was now more than 10 months since the operation was performed and patient was in perfect health. All cases of abscess and gangrene of the lung should be opened and drained unless the abscesses were multiple and inaccessible. Tuffier cured two cases by lung compression, by tacking in fat and omentum intrapleurally over the diseased area, but this method seems inadequate for most cases as there is need for actual drainage, and there might be a sequestrum of necrotic lung that must come away before the abscess can close.

Fracture of the Femur.—Dr. ALEXIUS MCGLANNAN of Baltimore reported fifty-five cases of fracture of the neck of the femur that had come under his personal observation in the past eight years. Of that number thirty-six recent fractures and seven old fractures were treated, and twelve patients were not treated. In all cases full abduction, with downward traction and inward rotation, was the position obtained in the reduction of the fracture. The full abduction was assured by fixation of the pelvis by abducting the sound leg, and the inward rotation by lifting the trochanter forward. Impaction was separated in six cases, and in the seventh was not disturbed because the impaction occurred with abduction of the thigh. This was a unique observation. Various forms of fixation were used from firm plaster of Paris cast to loose tying up of the thighs. Direct extension by ice tongs was used in three handicapped patients, one of whom died. Nailing the fracture was done twice. For the old cases, bone graft was used once, nailing twice, removal of head once, subtrochanteric osteotomy twice, freshening fragments once. Of the recent cases, four died, and in one the fracture failed to unite. One of the old cases resulted fatally, and one patient still walks on crutches seven years after treatment. Treatment was refused by two young adults, with vicious union. Ten patients were not treated on account of feebleness, circulatory, pulmonary, renal, or nervous symptoms. Two were living several years after the injury, aged 88 and 90 years respectively. Delirium tremens and evidence of drug addiction, or uremic manifestations, make the prognosis grave. Loss of control of bladder or rectum seems to indicate an inability to stand fixation. The effect of the healed fracture on earning capacity was noted in ten cases, the average loss being 15 per cent. after a period of disability lasting from six months to one year and three months, with an average close to one year. The occupation of those patients included hotel manager, restaurateur, farmer, housekeeper, seamstress, laborer, tailor, motorman, and market driver.

Treatment of Fractures.—Dr. W. P. CARR of Washington, D. C., related his experience and results in 7,000 cases treated in the Emergency Hospital and compared his results obtained by conservative methods, which experience had proven safe and efficient, with those of

other surgeons using other methods. He concluded that fractures were not generally treated as well as they were twenty years ago for the following reasons: There was generally (1) too ready resort to amputation; (2) too ready resort to open operation; (3) too great liability to choose a faulty method of operating. He believed this condition of affairs had been brought about by a too great dependence upon the *x*-ray before reduction and fixation and too little use of it afterward and a consequent neglect of surgical anatomy and muscular action in various fractures. He strongly condemned operation of any kind when not really necessary and believed it to be necessary in comparatively few fractures. When operation became necessary he advocated the use of one or two wire loops to prevent shortening and condemned any method looking to rigid fixation in alignment. He presented numerous skiagrams to show bad results following the use of Lane plates and thought they had come into use because surgeons did not understand the simple mechanical principles involved in the use of wire nor the physiological principles of bone growth and regeneration. He thought there was a generation of younger surgeons coming in who, under the teaching of Mr. Lane and others high in authority, or through a misapprehension of their teaching, had made it their practice to operate upon nearly every fracture coming into their hands, and that it was our duty to teach them that this was not necessary except in unusual cases, to urge a greater study of surgical anatomy and of non-operative methods which in nearly all cases should be tried for a week or so before operating. If, at the end of a week, it was found by measurement, palpation and *x*-ray examination, that they could not maintain good position of the fragments, it was still time enough to operate, and to better advantage than at first. The patient lost no time for preparation of the tissues for union had been going on during this week and they were also in better condition to resist infection. The only indications for the operation were for reduction in those cases where it could not otherwise be done and to prevent shortening or to prevent muscular action from tilting or pulling some short fragment into bad position. Operation of any kind should never contemplate the prevention of angular deformity or rotation which could be perfectly controlled in other ways, preferably by casts. He emphasized the importance of getting extension and counter-extension in applying casts in non-operative cases and in such a way as to prevent rotation.

Cysts of the Appendix.—Dr. JOHN T. MOORE of Houston, Tex., stated that during the present year he operated upon a patient with a cyst of the appendix of the pseudomyxomatous type. He had previously operated upon two others which he reported in detail, and through the courtesy of Dr. Hamilton, he was able to report a fourth case operated upon by him. This year he had had a cyst case of the type mentioned by Matas. One would be inclined to think that cysts of the appendix ought to be of very frequent occurrence, but if one was to judge from his own experience and that of the reported cases, the condition was not very common. According to Castle, in an analysis of 13,158 post-mortem examinations, twenty-nine cases of cystic appendix were found. Two conditions seemed to be necessary to cyst formation: (1) A partial or complete blocking of the lumen. (2) The contents must be sterile or almost sterile. The lumen might be only partly blocked to allow a sufficient pressure to destroy the lining epithelium. But with a communication with the intestines the material was apt to become infected, and thus lead to the formation of a pus appendix, with necrosis of its walls. Such cases were too acute to allow cyst formation. The process must be a slower one. The epithelium must be only slowly impaired so that the cells were allowed to functionate somewhat.

Granulosis Rubra Nasi.—A. Winkelried Williams reports the case of a girl, aged 13, who had suffered from the condition since early childhood. Her nose was red and the skin wet with sweat. There were hyperidrosis and lumpy swellings (sweat-gland abscesses) in the armpits. The hands and feet were cold and moist. The localized hyperidrosis of the cartilaginous part of the nose was very marked until about two months ago. A few deep-seated papules, under the diascope, gave the appearance of something between a hidrocystoma and lupus. The patient was now much better, in fact, she was getting toward the age when recovery usually takes place.—*Proceedings of the Royal Society of Medicine.*

Miscellany.

The Stereopticon Loan Library of the U. S. Public Health Service.—The stereopticon loan library established by the United States Public Health Service consists of over 2,000 views, the majority of which are original, dealing with the aspects of various public health problems. Additions are constantly being made to the collection. The slides are classified by diseases or subjects, the following being the respective divisions of the library: Alaska, Children and Children's Diseases, Health Exhibits, Hoookworm, Indians, Leprosy, Living Conditions, Malaria (including the malarial mosquito), Milk, Miscellaneous Subjects (sewage disposal, fumigation and cleaning of railway cars, and views relating to Rocky Mountain spotted fever), Mouth Hygiene, Parasites and Organisms, Pellagra, Plague, Rural Schools, the activities of the U. S. Public Health Service, Smallpox, Trachoma, Tropical Diseases, Tuberculosis, typhoid fever, yellow fever. The slides are loaned to physicians, health organizations, educators, welfare workers, and others, without cost. Persons desiring slides should advise the bureau as to what subjects they are interested in so that the proper catalogues may be forwarded. The slides should be selected by number, and the request made upon the application blank. If desired, the Public Health Service will undertake to make the selection, provided the applicant will state what he wishes to illustrate. There is no arbitrary limit within which the slides are to be returned, but as the demand far exceeds the supply, it is expected that they will be returned at the earliest possible moment. It is expected that slides broken by careless handling or packing will be replaced; these to be ordered from the government contractor by the U. S. Public Health Service and the bill therefor to be paid by the borrower. It is requested that in returning the slides a letter of transmittal be forwarded, stating the approximate number of persons to whom the views have been shown. Photographs, from which it is possible to obtain slides of public health interest, will be gladly received and promptly returned.

New and Appetizing Foods.—German ingenuity is again evidenced in a despatch to the New York *Sun*, which quotes the *Berliner Tageblatt* as describing a valuable new food produced by the director of the municipal slaughter house at Graz. He has succeeded in extracting the albumin from ox blood in such a manner that the odor and taste of the blood are entirely removed. The result is a yellowish powder which has been tested under the name "haematalb" in the hospital at Graz and elsewhere, and is said to have proved to be an excellent substitute for chicken.

Inaugural Dissertations of the University of Kiel.—The *Münchener medizinische Wochenschrift* for November 23 gives a list of forty-one inaugural dissertations of Kiel University for six months of the past year. It may be a coincidence or due to war conditions that no less than twenty-eight of these articles, or 70 per cent., are devoted to neurologic and psychiatric subjects. The organic and functional neuropathies are about equally represented. Several papers each are devoted to intracranial tumors, hysteria, choreatic psychoses, paresis, alcoholism, and melancholia and scattered ones on traumatic neuroses, paranoid, familial psychosis, encephalitis (following measles), abscess of the brain, multiple sclerosis, stigmata of degeneration, and epilepsy.

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Original Articles.

ROCKY MOUNTAIN SPOTTED (TICK) FEVER.

REPORT OF AN INVESTIGATION IN THE BITTER ROOT VALLEY OF MONTANA.

BY HENRY C. MICHIE, JR., B.S., M.D.,
CAPTAIN, MEDICAL CORPS, U. S. ARMY,
AND
HOUSTON H. PARSONS, M.D.,
GLENDIVE, MONT.
ASSISTANT SURGEON, NORTHERN PACIFIC RAILROAD.

IN presenting this paper we wish to make a résumé of Rocky Mountain spotted (tick) fever, using all available data, and to incorporate the essential results of eighteen months' research on this disease, as it occurs in the Bitter Root Valley, Montana. The laboratory work was carried on in the laboratory at Fort Missoula. Patients were seen and studied through the courtesy of local physicians in Missoula, Victor, Stevensville, and Hamilton, and one patient admitted to the Post Hospital at Fort Missoula. This investigation covered a period from July, 1911, to January, 1913, but was unavoidably interrupted at that time by extensive army maneuvers. The delay in summarizing the work was due to the probability of continuing the investigation and completing many unfinished experiments.

In all, five strains of virus were studied; No. 1, obtained through the courtesy of the U. S. Public Health Service, Washington, D. C.; Nos. 2, 3, 4 were transferred to guinea pigs from patients; No. 5 was obtained from Dr. McClintic, U. S. P. H. S., working at Victor, Montana. In comparing these various strains the following conclusion was drawn: No. 1 was carried through three generations and discontinued as unsatisfactory. Nos. 2, 3, and 4 were intraperitoneal transfers of two cubic centimeters of blood into guinea pigs from human cases, during the first week of the disease. These strains were carried on separately from pig to pig. In no case was the strain interrupted by a mixed infection. The virulence was comparatively low at first, increasing with passage; gangrene was absent at the first transfers, but usual after about the fifth transfer. The incubation period grew shorter, smaller amounts of virus were used in continuing the strain (this being essential to prevent the early death of the animal), and the animal generally showed a more severe type of infection with increased passage. The University of Chicago has carried a strain in pigs for more than two years, but we do not know their results. Most of the work in Fort Missoula was carried on with strains Nos. 2, 3, and 4. Strain No. 5 was the most virulent, it was isolated from the wood-tick, found infected in nature by Dr. McClintic. It had been passed through one or two pigs before we received it. Whether this happened to be an unusually virulent strain, or whether the direct transfer into pigs from the tick produced the more severe type of infection, we are not in position to say.

On account of lack of space clinical charts of patients and of guinea pigs will be generally omitted, only a summary being given with as correct an interpretation as possible. Reference to the disease as it occurs in other States was obtained from former articles and by letters received directly from the secretary of the State Board of Health of the various States. Other references to cultures and staining will not be made on account of their negative character, but, briefly stated, every culture medium of which we have been able to find an account was made and tried. These included the spirochæta medium (Noguchi), hemoglobin, placenta juice, egg, exudate (hydrocele and pleuritic fluids), and Bass's plasmodium medium. Many were tried anaerobically and aerobically, and at temperatures from that of the ice-box to 45° C. Some in continuous light (electric), others in absolute darkness. These cultures were checked by microscopic and macroscopic examinations. Animal inoculations were made when deemed advisable. Of the stains and staining methods, every stain and method, both common and rare, that we had access to, was tried. Many extemporized stains were prepared and used; smears of blood, aqueous humor, synovial fluid, smears of bone marrow, liver, spleen, kidney, adrenal gland, brain, lung, muscle, testicle, ovary, epididymis were made, stained, and examined. Sections of organs were made and stained by Levaditi's method. Besides the ordinary methods, staining was done by electricity (electrolytic); staining was also done under great pressure, using a specially constructed apparatus with several different stains. Various fixing methods were used, also fresh specimens were examined. Daylight, electric, and dark field illumination, also variously colored diaphragms were used with the microscope. Many interesting artefacts were observed and proven to be such by control methods. We can give the *Piroplasma hominis* theory of Anderson no support. The finding of trypanosomes in the blood of normal gophers, as stated by Stiles, was confirmed by Prof. M. J. Elrod, of the University of Montana. We are inclined to think that further examination of concentrated blood specimens and the transfer of infected blood into species markedly different from the original (donor) will reveal interesting results.

From the standpoint of spotted fever the Bitter Root Valley of Montana is of prime importance, and it may be advisable to describe it briefly. The valley is L shaped; commencing at Darby, it runs due north for fifty miles to Missoula, where it makes a right angled turn to the west for twenty-five miles, ending at Frenchtown. The boundaries

are ranges of the Rocky Mountain Chain. Those on the west and south, the Bitter Root Mountains, are very high and rugged, reaching an altitude of 10,000 feet (Mt. Lo Lo), capped with perpetual snow. The foot-hills rise more suddenly on the west and south; there is also more timber in these regions, and wild animals and ticks are more abundant. On the east and north, the slope of the foothills is gradual; there is more cultivation, fewer ticks, and the mountains are of a lower altitude, probably none over 6,000 feet. The valley proper is bisected from beginning to end by the Bitter Root River, running due north and then west. This river is crossed in numerous places by bridges and fords, and is probably not more than 150 feet wide at the broadest place. The valley is thickly settled for this section of the country; there are small towns every five or ten miles along the river and railroad. The soil is wonderfully fertile, and was formerly the bottom of a huge lake. This latter is shown by a characteristic subsoil of about forty feet in places. Beach marks are prominent on the surrounding mountains, and the rocks are invariably smooth and round as seen in the river bed. There are many small, clear, and swift streams crossing the valley and feeding the river. Vegetation is abundant, with a great variety of wild flowers, a beautiful display of colors following each other in sequence. Commencing about April the fields are yellow with dandelion, turning later to purple with wild hyacinth. By June the landscape has again changed its hue, this time to pink, due to the blossoms of the "bitter root." The Flat Head tribe of Indians, who formerly settled the Bitter Root Valley, named the river, plant, and valley. This tribe has for years used the roots of this plant for medicinal and economic purposes. Annually they migrate into the valley from the reservation to collect these herbs. After gathering the specimens they grind them to a pulp by means of an improvised stone mortar and pestle, roll this pulp into balls, and store it for future use. The Indians use this in the form of a porridge or tea for all ailments. Dr. Parsons, on investigating the plant chemically and physiologically, finds that it contains a bitter principle of no therapeutic action other than that of a bitter tonic. The plant disappears after a few weeks, the fields in turn becoming green, and then brown as the dry season approaches with the increasing temperature.

Mosquitos are numerous during the warm months, bedbugs and the body louse are not uncommon in places where they are usually found. The human flea (*Pulex irritans*) is comparatively scarce, but fleas are found in abundance on wild animals. The surface and underlying soil are not teeming with insects as seen in the Southern States, and in places long under cultivation.

The following mammals are found in the valley and neighboring mountains: Badger, black and brown bear, yellow-bellied and white bellied chipmunk, coyote, domestic cow and cat, dog, black-tail and white-tail deer, elk, domestic goat, mountain goat, horse, mountain lion, white-footed, meadow, and domestic mouse, martin, mink, porcupine, domestic and wood rat, rock-cony, cotton-tail, and snowshoe rabbit, domestic and mountain sheep, swine, rock, pine, and columbian ground squirrel, woodchuck, weasel, and wolf.

Synonyms.—Rocky Mountain Spotted (Tick) Fever, Black Fever, Spotted Fever of Montana, Blue Disease, Rocky Mountain Fever, Spotted Fever of Idaho, Piroplasmosis hominis, Tick Fever of the Rocky Mountains, and Black Measles.

Definition.—An acute febrile disease of unknown cause, occurring endemically during the warm months in the Bitter Root Valley of Montana, Snake River Valley of Idaho, and in other Rocky Mountain States; is characterized clinically by a sudden onset with a chill and continuous fever, enlarged spleen, early albuminuria, slow pulse, pain in the head, neck, back, and joints, especially wrists and ankles, and a characteristic eruption spreading over most of the body including the palms and soles. Pathologically it is characterized as a hemorrhagic septicemia, and is transmitted by the tick, *Dermacentor venustus.*

History.—Nothing is known of the early history of Rocky Mountain spotted fever in the Rocky Mountain States. The first published account is contained in the Annual Report of the Surgeon General of the Army, 1896, when Captain M. W. Wood, Medical Corps (now Lieut. Colonel, retired) gave an account of this disease as occurring near Boise Barracks, Idaho; this information was transmitted to the Surgeon General on the regular monthly sanitary report. According to early settlers, it appears that spotted fever has been known in the Snake River Valley of Idaho as far back as 1873, and in the Bitter Root Valley of Montana since 1890. These dates by no means represent the first appearance of the disease in these places. The Bitter Root Valley was settled by the Nez Percé and Flat Head tribes of Indians, who remained there until about 1890. It is a fact that in an Indian settlement, history dates back no further than the memory of man. It was after the transfer of these Indians to the Flathead Indian Reservation, some forty miles distant, and after the valley became settled by the white man, that tick fever became of great importance. It seems probable, however, that spotted fever existed among the Indians while they resided in the Bitter Root Valley. An old Indian chief of these tribes, who lived many years in the valley, tells us that at certain times of the year (spring) the Bitter Root Valley was visited by evil spirits, and that it was particularly hazardous to visit certain canyons at this time, as for instance Lo Lo canyon. It is now well known that tick fever appears very soon after the advent of the first warm days of spring. We also know that there are localities in the valley which are heavily infected, for example west of Florence. The connection between facts known at the present day and the statements made by the old Indian Chief would indicate that the disease existed in the Bitter Root Valley at least seventy-five years ago. However, there is no authentic report of a case so far back, and there are no records of cases having existed among the Indians. After this territory was evacuated by the Indians and taken up by the white man, about 1890, we get a history of "black measles" occurring every spring and summer, affecting a few persons, nearly all of whom died. This too must have been tick fever.

As spring approaches, the snow on the foothills and in the valley begins to melt, causing the streams to become swollen, and low lands marshy. These warm days do more: ticks that have remained quiescent during the colder months, now appear by the millions. They can be found in all stages of development, larvæ, nymphs, and adults. They may be found on all animals roaming the fields, both wild and domestic; they are also found on plants,

especially hay. It speaks for the keen insight of some of the early settlers, either in Montana or in Idaho, who, associating the appearance of ticks with the appearance of tick fever, so named the disease; and to differentiate it from African tick fever affecting man, and Texas cattle (tick) fever affecting cattle, as well as because of its peculiar distribution and the mottled skin eruption produced by it, it was named "Rocky Mountain spotted (tick) fever." The first detailed description of the disease was written by Dr. E. E. Maxey in 1899, on "The So-called Spotted Fever of Idaho."[25] His description was very accurate, and the definition formed by him stands to-day. In 1902, Dr. R. Gwinn published an account of spotted fever, as occurring in the Klondike, Alaska.[17] Dr. McCullough, of Missoula, Montana, read a paper on the disease before the Montana Medical Association.[27] During the summer of the same year, Wilson and Chowning of the University of Minnesota visited the Bitter Root Valley to study tick fever. As a result of their investigation they attributed the cause of the disease to a "babesia"; believing this hematozoon to be parasitic on the squirrel (*Spermophilus columbianus*) and to be accidentally transmitted to man by the wood tick (*Dermacentor venustus*). They offered no experimental evidence to support their statement. However, squirrels and ticks are numerous in the valley during the spotted fever season.

In 1903, Anderson of the United States Public Health Service investigated the disease, supported the tick transmission theory, and described a Piroplasma, the *Piroplasma hominis*.[2] Stiles, in 1905, from his zoological investigation, discredited the tick transmission and the *Piroplasma hominis* theories. At that time he described a trypanosome as occurring in the blood in normal gophers.[35] The trypanosome theory was supported by Ashburn of the Army.[4] Ashburn and Craig of the Army Medical Corps, in 1908, published an excellent paper on this disease and tsutsugamushi, pointing out their differences.[6] In this paper they accepted the tick transmission theory of spotted fever. In 1906, King found proof of tick transmission, and from 1906 to 1910 the late H. T. Ricketts of the University of Chicago, through untiring efforts and through most scientifically conducted investigations, completed a monumental piece of work, and laid the foundation for all subsequent campaigns on this disease.[31] He proved the tick transmission, the similarity of Montana and Idaho strains, found naturally infected ticks on animals, and proved that these ticks remained infectious through their entire life cycle; he disproved the trypanosome, piroplasma, water, and miasm theories of the disease.[31] He demonstrated the immunity conferred by one attack and the susceptibility of the rhesus monkey and guinea-pig. He produced an immune serum and demonstrated its limited value, demonstrated the effect of inoculation with virulent blood on the gopher and rabbit, opened the first scientifically planned investigation of spotted fever, and laid out plans for tick eradication, which plans were left unfinished by his sad death from typhus fever, in 1910, at Mexico City.[31] The credit for having transmitted the disease from man to man by the tick is due to McCalla and Brereton, at Boise, Idaho.[28] McClintic of the U. S. P. H. S., in 1911, commenced his investigation of spotted fever, locating his field laboratory at Victor, Montana, the most densely infected area of the Bitter Root Valley. He found infected ticks in nature, and carried the disease along in many guinea pigs. His efforts were largely directed toward tick eradication and search for a chronic source of the infection in some lower animal of the valley. He constructed large vats and dipped domestic animals in an arsenical preparation to destroy the ticks that were liable to be dropper around the buildings.[28, 29] He recommended burning the fields and clearing away underbrush in order to destroy many ticks. He also trapped and killed thousands of small wild animals. There were fewer cases in the valley that year, eight in number, with seven deaths, including the able investigator himself, who was presumably bitten in his laboratory by an experimentally infected tick. Frick of the U. S. P. H. S. took up the work where his colleague McClintic left off, and has found that ninety per cent. of ticks that get on sheep, die, presumably due to the lanoline. He is now interested in grazing sheep over the valley in a well planned manner as a means of tick eradication.[15]

Other persons who have furnished valuable information on spotted fever are Anderson, R.,[3] Banks, N.,[7] Bishopp, F. C.,[8] Cooley, R. A.,[11, 12] Davis, B. F.,[13] Hineman and Moore,[18] Henshaw, H. W.,[19] Hunter, W. D.,[20] King, W. W.,[21] Maver, M. B.,[23, 24] Pearce, R. A.,[30] Spencer, W. O.,[33] Wood, M. W.,[41] Kieffer, C. F.[43]

Geographical Distribution.—Spotted fever is remarkably endemic and spreads slowly. The first detailed account of this disease was given by Dr. E. E. Maxey of Boise, Idaho, in 1899, and since that time it has been reported in the Klondike, Alaska, and in many places among the Rocky Mountain States. According to the information furnished by the secretaries of the health boards of the States west of the Missouri River, it is believed that the following statistical table is as accurate as can be made at the present time. To the best of our knowledge experimental work has been done on Idaho and Montana strains only, and although we do not question the accuracy of reports of the disease in other places, we do know that a correct diagnosis is sometimes impossible without laboratory facilities. The vast majority of the work was done on the strain found in the Bitter Root Valley. In 1908, Maxey, then secretary of the State Board of Health of Idaho, collected data on three hundred and eighty cases occurring in that State during the year. This was done through letters of inquiry to every physician practising in the State.[25] Spotted fever is not known to exist in other parts of the world, and although one of its names is quite similar to African tick fever, there is no similarity between the two diseases.

The following table shows the distribution of Rocky Mountain Spotted Fever in the States west of the Missouri and Mississippi Rivers:

Washington: Grant and Lincoln Counties.

Oregon: Southeastern portion of the State (Crook, Grant, Malheur and Harney Counties).

California: Lassen County.

Idaho: (See map).

Nevada: Humboldt and Washoe Counties.

Montana: Missoula, Ravalli, Granite, Powell, Park and Carbon Counties.

Wyoming: Generally distributed over the State.

Utah: Box Elder County.

Arizona: (Not reported.)

Colorado: Garfield County.

New Mexico: Absent.

North Dakota: Absent.

South Dakota: Absent.
Nebraska: Absent.
Kansas: Absent.
Oklahoma: Absent.
Texas: Absent.
British Columbia: Absent.

Montana reported 12 cases during 1914, 9 cases in 1913, 8 cases in 1912, with 7 deaths in 1912.

Idaho reported 386 cases in 1914, with 15 deaths, by months, as follows: March, 21 cases, with 1 death; April, 97 cases, with 2 deaths; May, 154 cases, with 6 deaths; June, 86 cases, with 4 deaths; July, 25 cases, with 2 deaths; August, 3 cases, with no death.

Nevada reported 12 cases during 1911 and 1912, with no death, and 9 cases during 1913 and 1914, with no death.

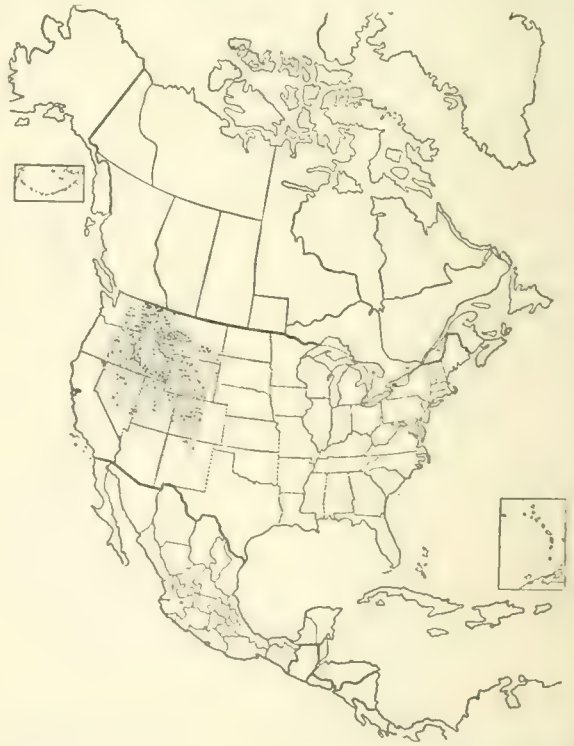
Dr. Ralph Falk, Secretary, State Board of Health, Idaho, has admirably tabulated the cases occurring in that State during 1914, 386 in number, with 15 deaths. The geographical and numerical distribution is shown in the accompanying map of Idaho.

Just why there are so many more cases in Idaho than in Montana is not known, and why the mortality is about 3 per cent. in the former, and 75 per cent. or more in the latter is still unsolved. Neither is it known in which State the disease first appeared. Reference to the geological map will show the two infected areas communicating through Lo Lo Canyon, a pass in the Bitter Root Mountains. It is in this canyon that the most virulent type of the disease occurs, and it is probable that here lies the connecting link between the two States.

Zoological Distribution.—Spotted fever has not been found to exist in nature in any lower animal, in either the acute or the chronic form. All late investigators have worked along this line, believing it to be the keynote to the situation. It is possible to infect a few of the lower animals by inoculating them with virulent blood. Among these the rhesus monkey and the guinea pig reproduced the disease quite similarly to that found in man. White and black rabbits are partially immune, the gopher, a semi-cold blooded animal inhabiting the valley in large numbers, may be infected and later the strain recovered, but as this animal does not run a constant temperature in health (it varies from 98° to 102° F.) and does not manifest the disease acutely, it is a very unsatisfactory animal for experimental work. White mice, domestic cats, and dogs are reported immune.[29] The horse possesses a certain amount of immunity, but has been used to produce an immunizing serum. The following small animals of the Bitter Root Valley have been found susceptible to transfers of virulent blood: Ground squirrel (*Tamias striatus*); rock squirrel (*Spermophilus cinerascens*); woodchuck (*Arctomys monax*); yellow-bellied chipmunk (*Tamias luteiventris*); and the wood rat (*Neotoma cinerea*). The ground squirrel, rock squirrel, woodchuck and chipmunk were found susceptible to a single bite of an infected wood tick.[28, 29]

Etiology.—The specific cause of spotted fever has not been determined. Since the mode of transmission is through an arthropod, a biological carrier, and on account of certain similarities to other protozoan diseases, it is very probable that the cause when isolated will be found to be a protozoon. A great deal may be said of the predisposing causes, but briefly, man does not possess natural immunity to spotted fever, and any condition that makes him liable to be bitten by an infected tick is a predisposing cause to this disease. The only means of transmission now known is by the bite of a tick. Experimentally lower animals are inoculated with the hypodermic syringe subcutaneously

Map of Idaho, showing the number and distribution of cases of Rocky Mountain (tick) fever during 1914, 386 cases with 15 deaths.



Distribution in the United States of the Rocky Mountain spotted-fever tick, *Dermacentor venustus*. The large dots show localities where the species has been collected. The small dots indicate the probable range of the tick. (Original.) U. S. Bureau of Entomology.

or intraperiotoneally, and in nature man is inoculated subcutaneously by the bite of an infected tick. These ticks live entirely on blood, and although they are only occasional feeders, they must feed before each molt. During the act of feeding the hypostellum is plunged into the skin and an irritating fluid ejected from the salivary glands. This fluid causes a local hyperemia, and retards blood clotting; the tick now feeds. Since the infection is in the salivary gland of the tick, as proved by Ricketts,[31] it is plainly manifest how man is infected.

The ticks (*Dermacentor venustus* and *D. modestus*) are very generally distributed throughout the Rocky Mountain States, as shown by the map. These are the species that Ricketts and McClintic found infected in nature, and the species with which the transmission was proved.

Although there are other species in the infested zones, and there is limited experimental evidence that ticks from several Eastern and Southern States may transmit the infection, this contention has not been proved.[24]

The life cycle of the tick is in four stages: egg, larva, nymph, and adult. The time required to complete this cycle varies from a few months, under the most favorable circumstances of feeding and thermal conditions, to two years, as determined by Mr. M. V. King of the United States Bureau of Entomology, working near Florence, Montana. Males and females, feeding on warm blooded animals, mate and copulate, and fertilization takes place. After engorging with blood, which usually requires several days, the female drops from its host and remains quiescent for about two weeks, when ovipositing commences. A cream colored mass of several thousand eggs is laid, and the female dies. After about a month, at summer temperature as that in Montana, the eggs hatch, small "seed ticks" or larvæ appear. They are light yellow in color, have three pairs of legs, no sexual apparatus or spiracles. The larvæ are about the size of a common pin's head; they gradually become darker in color, and attach themselves to some animal, usually a small one. They feed for about a week, then drop off to molt, which takes about a month. Nymphs emerge from this molt with four pairs of legs and spiracles, but no genital apparatus; these nymphs are about 2 x 4 millimeters in size, but the species cannot be determined at this stage. Like the seed ticks, the nymphs seek a host, and becoming attached, feed for about a week and drop off. After remaining active for several weeks, a white shell forms over the nymph, and it then enters upon the second molting period, which under the most favorable conditions is completed in about a month. When the tick emerges, it is a fully developed adult, ready to recommence the cycle. We have kept nymphs and adults in the laboratory over a year without feeding, but larvæ must be fed or they die. Molting occurs only subsequent to feeding. By laboratory experiments Moore[42] has shown that the minimum time required for the tick to infect a guinea-pig was one hour and forty-five minutes, the average time being ten hours; that it requires about twenty-four hours for the normal tick to become infected from a pig suffering from the disease. This has its practical bearing on the possibility of finding the insect before it becomes attached and infects the individual. Ricketts has proved that both males and females can transmit the infection, that the infected female transmits it to about 50 per cent. of her progeny, and that eggs, larvæ, nymphs, and adults of an infected female contain the virus.[31]

It is not definitely known in what stage the tick hibernates, but very probably as a nymph. As the first few warm days of spring appear, the small animals, especially ground squirrels and gophers, put in their appearance. Shortly afterward ticks become very plentiful. King has shown that the ground squirrel emerges from its hole free of ticks, but soon becomes infested by them. From about April to July each year ticks are abundant; very few can be found after August, although we have found some in October. This period corresponds to the tick fever season. The first case in 1912 was reported on April 31, and the last on August 25. There was another case reported to us from Hamilton on September 26, but this patient died the following day, and the diagnosis was not confirmed by the guinea-pig test. This last case was exceptionally late in the season. Although ticks of various species are found the world over, it will be noticed that the spotted fever fields are from about 40° to 47° north latitude, and from about 2500 to 4000 feet above sea level. Another characteristic of the disease is that it is confined to definite areas, a perfect endemic disease. For example, spotted fever appears every year on the west side of the Bitter Root River, and very rarely is there a case on the east side, and when such occurs the history of a visit to the west side can usually be obtained. There are fewer ticks on the east side and Frick explains this by the greater number of sheep grazing there.[16] There is free communication between the two sides of the river by means of bridges and fords; men, animals, and materials cross freely. Not only is the disease confined to the west side, but almost to certain places, like west of Hamilton, Victor, Florence, Stevensville, and in Lo Lo canyon. And it is to be kept in mind that this is a disease of the country; all cases developing in a city are in persons who have recently been to the country.

Race, age, sex, habits, and occupation play no part in the acquisition or transmission of the disease other than the liability to being bitten by an infected tick. We are unable to find any evidence of spotted fever affecting a negro, but this may be due to the scarcity of the race in infected districts. Heredity apparently plays no part in the spread of the disease, and there is no such thing as chronic spotted fever in man. One attack establishes a well defined and prolonged immunity in man as well as in the rhesus monkey, guinea-pig, gopher, and rabbit. There is no available record of a second attack in man; repeated attempts to infect guinea-pigs, once they have recovered, have failed. Ricketts showed that the young of immune female guinea-pigs possessed a certain amount of immunity, and that this was not due to the milk ingested by nursing.[31] We too have found it unreliable to use the offspring of immune pigs as they strongly resist infection and the resulting experiments are untrustworthy. Therefore, it is quite probable that children of a mother rendered immune by an attack of spotted fever possess a certain amount of immunity.

Symptoms.—Premonitory. After an incubation period of three to eight days the disease is suddenly ushered in with a chill or a feeling of chilliness, pain in the head, neck, back, and joints, especially in the wrists and ankles, with malaise, anor-

exia, increased rapidity of pulse and respirations, constipation, irritation, and inflammation at the site of the tick bite. Persons are frequently bitten in heavily infected districts, and it is to be remembered that one cannot differentiate the bites of infected from non-infected ticks by the appearance of the lesion.

Initial Symptoms.—The pains continue, and the large joints which exhibit no swelling or redness, become exquisitely painful on the slightest movement. About the fourth day, counting from the first day of the fever, a deep-seated macular eruption appears on the wrists and ankles, which spreads to the palms, soles, forearms, and calves. The eruption becomes darker and spreads to the dependent portions of the body. Often it is petechial and becomes confluent, forming spots of a dusky hue, about an inch in diameter. This latter feature is more commonly seen on the back and appears late in the disease. The eruption is not elevated, does not itch, and does not disappear on pressure. The pulse is slow compared with the temperature; there is an initial rise in the pulse rate; a pulse of one hundred or more is a bad sign in the later stages of the disease. It is full and of good tension, but becomes dicrotic toward a fatal termination. The temperature rises suddenly to about 102° F., and continues to rise daily with but slight remissions in the morning, until about the seventh or eighth day, when it reaches about 105° or 106°. In favorable cases there is a fall about the ninth or tenth day, ending by lysis in a very slow convalescence. Patients show signs of toxemia very early in the disease, as evident by the headache and arthritic pains, as well as by stupor and apathy, which usually give way to muttering delirium, carphologia, and subsultus tendinum by the fifth or seventh day. Slight catarrhal pharyngitis and conjunctivitis, as well as nausea, are common at the beginning. Vomiting is usually a late sign and appears when the disease has assumed a hemorrhagic nature. We have seen "black vomit" (partially digested blood) on the ninth day, but it may occur earlier. The tongue presents the same appearance as seen in severe febrile diseases. Constipation is present as a rule and continues well into convalescence. The circulation is sluggish, with engorgement on the venous side. This produces a peculiar cyanotic appearance of the face, especially about the mouth, is quite characteristic, and occurs early in the disease. Nephritis appears early; albuminuria with a reduction in the amount of the urine occurs almost from the start. In severe cases great numbers of granular, and sometimes blood casts, are found in the urine. These continue through the severe febrile period; suppression of urine, and retention or incontinence are of frequent occurrence. The spleen is palpable early, is greatly enlarged and hard—not the enlarged soft spleen seen in typhoid fever. In unfavorable cases the skin becomes hyperesthetic, there is incontinence of urine and feces, temperature remains high, brain symptoms increase, icterus appears, first seen in the conjunctiva and then becoming general; the eruption is more profuse and confluent, with a purplish hue, pulse exceeding 110 (in the adult), and death follows within twenty-four hours.

In cases that recover, the temperature falls by lysis between the ninth and fourteenth day; morning remissions and evening rises are often experienced as late as the sixth week of convalescence. The urine increases in amount, the eruption fades with a fine desquamation, the mental condition improves, and pains disappear. Convalescence is very slow and the mental condition of patients recovering from spotted fever remains sluggish for a long time after the disease has subsided. The macular eruption can be brought out by hot baths, even months after the temperature has returned to normal. A late symptom is gangrene of the prepuce, scrotum, and testicle, sometimes of the faucial pillars. In such cases the testicle first becomes quite painful, then adherent to the scrotum. This complication is said to be more common in Idaho than in Montana, on account of the longer duration of the disease in the former State. It is common in guinea-pigs, and like the incubation period, varies with the virulence of the virus.

The blood is a valuable guide to the diagnosis; it becomes darker in color from the start, due to destructive processes and poor aëration; the coagulation time is also increased. There is an initial increase in the number of leucocytes, this number later falling below ten thousand, where it remains in favorable cases. A sudden increase in the leucocytes late in the disease is a very serious sign. We have found a count as low as one thousand the day prior to death, and a rise to 28,000 three hours before death in the same case. Another feature is the increase in the large mononuclar and transitional cells. Myelocytes are often present, and occasionally one finds a nucleated red cell. In severe cases there are leucocytes that do not resemble any in the usual classification, these and have been accounted for by us as "unclassified." In the seven cases of human blood examined during 1912, the "Arneth Index" was a reliable guide to the patient's condition.

Arneth Count.

Name of patient: Westerman

Date	Group I	Group II	Group III	Group IV	Group V	Group VI
May 15, 1912	7	47	33	70	12	1
May 16, 1912	7	53	4	76.5	6	1
May 17, 1912	5	58	35	80.5	2	0
May 18, 1912	9	61	22	81	8	0
May 19, 1912	3	57	34	80	2	1
May 20, 1912	5	60	31	80.5	2	0

Blood Chart

Leucocyte Count.

May 15, 1912	11,800	May 18, 1912	7,000
May 16, 1912	11,000	May 19, 1912	1,000
May 17, 1912	6,000	May 20, 1912	28,000

Differential Count.

Date: May 1912

	15	16	17	18	19	20
Large lymphocytes	6	3	4	0	**2	4
Small lymphocytes	2	3	1	0	0	2
Large mononuclears	10	11	27	11	15	25
Polymorphonuclear neutrophiles	65	75	47	68	55	32
Transitionals	5	4	11	17	16	18
Eosinophiles	1	1	0	0	0	0
Mast cells	0	1	0	0	0	0
Unclassified	1	2	5	2	10	15
Myelocytes	2	0	5	2	2	4
Nucleated red cells	0	0	0	P*	P*	P*

*Present.

**Leucocytes were extremely scarce on May 19, 1912, and the above count is based on forty cells after one hour's search.

The count on May 20, 1912, was made three hours before death.

Eosinophiles were reduced in number or entirely absent in all cases examined during the attack; an increase of eosinophiles is a favorable sign. The red count is not affected; hemoglobin usually 100 per cent., and sometimes darker than the hundred mark on the Talquist scale. It is very difficult to determine the coagulation time accurately, but after working with normal blood, and using the same apparatus under conditions as similar as possible, we found the coagulation time of diseased blood to be invariably increased to sometimes twice the normal time, which we estimated to be four minutes.

The virus is contained in the blood from the appearance of fever until the temperature reaches normal; after that time we have been unable to transmit the disease. In order to keep a strain going in guinea-pigs, the transfer should be made at the height of the fever. Transfers should be made before death, or mixed infection is very apt to occur. According to Ricketts, and confirmed by us, the virus is present in the red cells, white cells, and serum. The serum was obtained free of cells by an electric centrifuge, at 3,500 revolutions per minute, examined, and injected into pigs. Red cells were separated in a sodium citrate solution by the centrifuge method, removed by the means of a pipette from the bottom of the tube, washed eight times in normal salt solution, examined, and injected. White corpuscles were more difficult to obtain in a free state. This was done by injecting aleuronat into the pleural cavity of an infected rabbit. In twenty-four hours the irritation had caused an accumulation of leucocytes that were most carefully removed through the chest wall without contamination or without being mixed with blood from the incision. These cells were washed several times, examined to see that they were free of red cells, and a normal guinea-pig was inoculated with them. These tests were made with controls in each case, and checked by immunity tests and postmortem findings. Lymph also contains the virus[31].

The liver and spleen were also shown to be infectious after having been macerated and washed several times, the mass taken up in salt solution as an emulsion, and injected. Spleen, liver, and blood of a guinea-pig suffering from spotted fever were fed separately to normal pigs, without the latter showing any evidence of infection. These same animals were not immune, as shown by subsequent inoculation. It, therefore, does not seem possible that man can be infected by the mouth, and for this reason we decided that examination of the stools was not indicated. Animals manifest the disease in from two to five days when inoculated intraperitoneally, and in five to ten days when inoculated subcutaneously; man is infected subcutaneously by the tick. The incubation period also varies with the virulence of the virus, and the degree of virulence also shows variations. The virus is far more virulent in Montana than in Idaho, and in our experience increases with passage through pigs to about the tenth transfer. By this time the incubation period has become shorter, the disease more severe, and death occurs earlier. Such animals almost invariably manifested gangrene of the scrotum. After the tenth transfer the disease seemed to become milder. Dr. McClintic furnished us with a strain obtained from a naturally infected tick. This was the most virulent of the five strains used in the experiments; we found it necessary to use small amounts of blood in making transfers (about 2 minims) in order to prevent the early death of the animal. The virus is not destroyed by storage in the ice-box for a week, and requires 55° C. for twenty minutes in order to destroy it (Ricketts). It will not pass through a No. "N" Berkefeld filter in twelve hours. Virulent blood serum was diluted with salt solution, and pigs inoculated with the filtrate. Where the animal manifested the disease prior to filtration, the results were negative after filtration. There is no difficulty in transmitting the disease from man to guinea-pigs during the height of the disease. We accomplished this many times, using both whole and defibrinated blood. The disease as it occurs elsewhere than in Montana, is of considerable less virulence. The eruption and toxemia are less marked, the disease is less acute, more prolonged, mortality lower, gangrene and other complications more common in Idaho than in Montana.

Pathology.—Gross Pathology. The following data are based on the observation of seven human cases, with complete postmortem findings in three, and on numerous complete autopsies on guinea-pigs. We disagree with the authorities on the subject of "early and complete rigor mortis." It has been our experience that rigor mortis comes on slowly, that the animal heat leaves the body slowly, and that decomposition sets in early. Local embalmers support us in this statement; some of them claim to have had cases where marked decomposition had set in before the corpse was cold or rigid. The most conspicuous features in viewing a body dead of spotted fever are the general saffron color of the body and conjunctiva, due to the intense jaundice, very little emaciation, lividity of the area around the mouth, small petechial and macular spots over the body, more marked on the arms and legs, and prominent bluish confluent blotches on the dependent portions of the body. The face remains free of eruption, and macules only are seen on the palms and soles. On incising the skin, the dark color and fluidity of the blood is very noticeable. We have not noticed any enlargement of the superficial lymph nodes in man, although it is quite common in guinea-pigs. The site of tick bite can usually be found in the form of a papule, surrounded by an hyperemic zone. The cerebrospinal nervous system has not shown sufficient and constant lesions to account for the marked brain symptoms. Organs of special sense have shown nothing abnormal. This has also been the case with the lungs and pleuræ, except for occasional complications, pneumonia being not an uncommon sequela. The right heart and large veins are engorged, left heart comparatively empty. The heart muscle is darker in color and softer than normal, occasionally showing hemorrhages under the visceral pericardium. Diaphragm negative, stomach, intestines, and omentum show no constant change except jaundice; occasionally small hemorrhages are seen in the intestinal walls. Spleen, liver, and kidneys are the organs mostly affected. The spleen is always enlarged, often twice or more the normal size, is dark in color, firm, and friable, bleeds freely on section, and its tissue is disorganized. The liver is also darker than normal, bleeds freely on section, is uniformly enlarged, and bile stained; gall-bladder shows nothing abnormal. The kidneys, too, are acutely enlarged, and hemorrhagic throughout the entire organ. All of these organs show subcapsular hemorrhages. Adrenals

are enlarged and hemorrhagic. Bladder and prostate negative. Gangrene of the scrotum and prepuce was seen in three of the cases treated by us; testicles adherent and hyperemic, tunica vaginalis showing acute inflammation, epididymis soft and jelly-like. Gangrene of the pudenda and ears was often seen in pigs, but not after the first transfer of human blood. Testicles of guinea-pigs are not constantly seen in the scrotum, they are at times in the abdominal cavity, but the changes are more common when the organs are down. Both the ovaries and testicles are hyperemic in pigs. All our human cases were men, so there was no opportunity to observe human ovaries. The pancreas shares in the acute congestion. Bone marrow is darker in color than normal and somewhat fluid in consistency.

Microscopic Pathology.—We have done no microtome work on this disease other than the preparation of tissue by the Lavaditi method of examining for spirochetes. Quoting Le Count of the University of Chicago,[22] "The changes are of two sorts, those connected with the occlusion of vessels and the more diffuse lesions affecting the entire group of organs. The diffuse changes are hyperplasia of lymphoid tissue, and cloudy swelling and acute fatty changes in organs commonly the seat of such lesions in acute infectious diseases; the focal lesions are more varied in their nature since they include not only the process leading up to the inclusion of vessels, but the results of such obstruction, necrosis in different degrees, and the hemorrhages responsible for so many of the clinical and gross anatomic features of the disease, as well as for the name 'spotted fever.' In sections of skin, liver, spleen, kidney, and adrenal, both vascular occlusion and the necrosis resulting from obstruction were present." In guinea-pigs the disease seems quite similar to that in man. Skin manifestations are not the same, but an eruption is sometimes noticed on white pigs. The question naturally arises, if tick fever were to occur in full blooded negroes, could it be diagnosed?

Diagnosis.—A sudden onset with chill and fever, pain in the neck, back, ankles, and wrists, without redness or swelling, and the history of tick bite in a spotted fever section will immediately cause one to suspect the presence of this disease. The fever is continuous and higher each day; by the fourth day an eruption appears on the ankles, wrists, soles, and palms, with a slightly cyanotic appearance about the mouth. Repeated chills throughout the disease are common. There is early albuminuria, the spleen enlarges rapidly, and occasionally there is abdominal tenderness. The initial leucocytosis, with increase in the large mononuclears and reduction in eosinophiles, along with the absence of malarial plasmodia will differentiate the disease from malaria. The eruption, sudden onset, arthritis, and negative Widal reaction, will rule out typhoid fever. The most difficult disease to differentiate tick fever from is typhus fever. The eruptions are quite similar, but as a rule appearing first on the ankles and wrists in spotted fever, and on the abdomen and chest in typhus. The meninges are constantly involved in typhus, but give negative findings in spotted fever. The temperature rises more suddenly in typhus and ends in a crisis between the tenth and fourteenth day of the disease, usually preceded by a pseudo-crisis, and ends by lysis in spotted fever. The pulse is rapid in the former and slow in the latter. Guinea-pigs are very susceptible to spotted fever, while quite resistant to typhus. Typhus is transmitted by the body louse, spotted fever by the tick. The similarity of clinical symptoms is quite evident in the two diseases, suggesting a close relationship; however, that the two are not one and the same disease is shown by cross immunity tests.[21]

Treatment.—There is no specific treatment for spotted fever, and as in diseases caused by protozoa, immune sera are a failure both as a prophylactic and in the actual treatment. Ricketts produced an immune serum, using the horse, and this work was later carried on by his co-workers at the University of Chicago. It was used on guinea-pigs and on human cases without encouraging results, and is of no practical value.

The patient should be put to bed and a brisk purge should be given, a bowel movement being secured daily by purgatives or enemata. Sponge bath for temperature over 102.5° F.; although the temperature frequently does not respond to hydrotherapy, and the hypersensitiveness of the patient causes him much discomfort during the bath, he invariably feels better after the sponge. The diet is to be exclusively liquid, so as to increase the fluid intake and to tax the system as little as possible. On account of the early, persistent, and serious nephritis and profound toxemia, as much water should be taken as possible, at least one quart a day, and preferably in the form of lemonade. Salines by rectum are beneficial. Quinine, coal tar products, arsenic, atoxyl, continuous warm boric acid baths, and many other drugs have been tried and discarded as worthless. Sodium cacodylate, first used on spotted fever patients by Dr. Kellogg of Stevensville, Montana, and reported on favorably, was thoroughly investigated by McClintic on guinea-pigs, and by ourselves on pigs and human patients. We discarded the drug as being not only worthless in the treatment of spotted fever, but harmful.

Salvarsan was used in two human cases, the first during the spring of 1911. This patient was moribund when the drug was administered, and death followed very soon, making it impossible to draw any conclusion. It was repeated in May, 1912, in a human case about the seventh day of the disease. In both cases it was administered intravenously. Within one hour after the drug was given in the latter case the patient was in a perceptibly worse condition, became delirious, pulse rate increased, temperature rose, jaundice appeared, and a great diminution in the amount of urine followed. Within twelve hours the patient was deeply jaundiced, pulse 120, temperature 103.5°, eruption more profuse on the legs, forearms, back, also confluent in large blotches of deep blue color on dependent portions; leucocytes 10,000; spleen enlarged to one-half the distance from the ilium; blood picture as seen in the history of Harry Van H. following. The conditions rapidly became worse, and death followed within twenty-four hours after the administration of the salvarsan. It was quite evident that salvarsan was harmful in this case, and we strongly advise against its use in spotted fever. It was apparent that there were contra-indications to its use, namely, nephritis, myocarditis, and brain symptoms, but at that time sodium cacodylate—also an arsenical preparation—was being reported on favorably.

A quiet room with subdued light and an ice cap to the head for cerebral symptoms are comforting

to the patient; intermittent hot applications to the painful joints, with as little movement as possible, also give the patient some relief. One should guard against the patient getting out of bed on account of the extra strain on the heart, and start cardiac stimulants when the pulse goes over 95 in an adult. Digitalis is good, but slow in action. If strychnine is used, it should be given at short enough intervals to maintain the stimulation, and not allow a reaction to set in; about one-thirteenth of a grain should be administered every five or six hours. The urine should be measured and the amount kept to at least thirty ounces in twenty-four hours, this being the main avenue of excretion in spotted fever. The mouth should be cleansed frequently, and the use of the bed pan should be insisted upon. Of all drugs used by us, or seen used, sodium citrate gave the most promising results. Unfortunately, we did not commence using it until past the season and were unable to try the drug on human cases, but it was tried on guinea-pigs and rabbits, until the investigation was interrupted by army maneuvers. Several animals were so treated, guinea-pigs subcutaneously, rabbits subcutaneously and intravenously. The effect was very noticeable, the temperature dropped, the attack was shortened, and there was a marked general improvement noticeable in the animal. On several occasions, where the animal would set back in a corner, fur roughed, eating nothing, and very sick looking, it would make a marked improvement within twenty-four hours following this treatment. In seven animals so treated, none died, while the mortality in untreated animals, using the same strain, had been about eighty per cent. In another case, five per cent. sodium citrate solution was mixed with virulent blood and allowed to stand twelve hours at room temperature, then injected subcutaneously into a normal guinea-pig; this did not prevent the disease, but it ran a mild course, while the control animal died. (See experiment, pig No. 44-C.)

Pig No. 44-C

Date, 1912	Day of Disease	Temperature, Degrees F.	Date, 1912	Day of Disease	Temperature, Degrees F.
Aug. 22	Inoculated	103	Aug. 30	2d	104 8
Aug. 23		102.8	Aug. 31	3d	104.6
Aug. 24		103.8	Sept. 1	4th	104 8
Aug. 25		102.2	Sept. 2	5th	103 8
Aug. 26		101.4	Sept. 3	6th	102.4
Aug. 27		103	Sept. 4	7th	102
Aug. 28		102.2	Sept. 5		102 4
Aug 29	1st	104	Sept. 6	Recovered	102 6

Pig No. 56-C was inoculated subcutaneoously September 23 with one c.c. of virulent defibrinated spotted fever blood and immediately thereafter five c.c. of two per cent. sodium citrate solution was administered; on September 29, four c.c. of three per cent. of the sodium citrate; September 30, five c.c. of three per cent.; October 1, four c.c. three per cent.; October 2, five c.c. three per cent.; October 3, five c.c. three per cent.; October 4, seven and one-half c.c. three per cent., to see if this would prevent the attack. The animal developed spotted fever, but the disease ran a milder course than in the control, which died.

We can offer no explanation at this time for the beneficial effects indicated by this limited number of experiments, but we feel justified in recommending that the administration of sodium citrate be pushed from the first to the limit of tolerance in man, and that the drug be given intravenously. We recommend this on the ground that it has offered promising results in a limited number of cases among lower animals so treated, that it is harmless when properly used, and that there is no other drug known that offers the slightest encouragement. It is safe to give sixty c.c. of a five per cent. sterile and freshly prepared solution intravenously. This dose can be given twice daily. Even larger doses may be administered in very grave cases. Intravenous medication is safe and simple, and the citrate can be given with a syringe or any apparatus for intravenous medication. The introduction of a small amount of air is of no importance.

Pig No. 56-C

Date, 1912	Day of Disease	Temperature, Degrees F.	Date, 1912	Day of Disease	Temperature, Degrees F.
Sept. 23	Inoculated	102.8	Oct. 1	3d	105.2
Sept. 24		102.8	Oct. 2	4th	104.8
Sept. 25		102.6	Oct. 3	5th	104.2
Sept. 26		101.8	Oct. 4	6th	104.2
Sept. 27		102.8	Oct. 5	7th	103.2
Sept. 28		102.8	Oct. 6		102.2
Sept. 29	1st	104.2	Oct. 7		102.2
Sept. 30	2d	106 2	Oct. 8	Recovered	102.2

Prophylaxis.—The only means of transmission now known is through the bite of an infected tick, and this is the way man becomes infected. The tick is a slow feeder, and Moore says that from one and one-half to ten hours are required for the tick to attach itself; it crawls around a great deal before becoming attached; therefore, if persons in tick-infested zones would carefully search their bodies for these pests in the morning after rising, at noon-time, and before going to bed, the chances of contracting spotted fever would be very limited. When the tick is found, remove it at once; if the head is embedded, place a drop of carbolic acid on the head and pull out the mouth part. If this breaks off, remove it with a penknife, then inject a drop of one-half official strength of iodine (3½ per cent.) into the wound. The great difficulty is that most of the cases of spotted fever occur in persons who sleep in their day clothing, and in such cases the tick is not found possibly for days after its attachment. We find that an ointment composed of spirit of turpentine, one drachm; bichloride of mercury, one grain; sulphur, one drachm; lanolin, one ounce, when rubbed into the skin of man or guinea-pig will apparently prevent the tick from attaching. This too could be used by persons going into thick infested zones during the tick season.

Prognosis.—The death rate in the Bitter Root Valley is about ninety per cent. in persons twenty-five years of age or over; it is lower in younger people, thus varying directly with the age. It is said to be about three per cent. in Idaho. The vast majority of patients, as was also the case with guinea-pigs in our experience, die on or before the ninth day. If life can be sustained until the fourteenth day, recovery is quite certain with the Bitter Root strain. The danger signs are, jaundice, pulse over one hundred (in adults), leucocytes over 10,000, absence of eosinophiles, deviation of the Arneth Index to the left, marked diminution of urine, and profuse and confluent eruption. We believe that a short incubation period forecasts a bad prognosis. We are further inclined to believe that patients infected with the Bitter Root strain and

showing the above syndrome never recover. After a case of spotted fever is diagnosed, each of the above signs is a fair index as to the patient's condition, and taken collectively they furnish the most reliable basis for the prognosis from day to day.

Complications.—Nephritis is probably present in all cases; myocardial degeneration and pneumonia occasionally occur. From the brain symptoms it would appear that meningeal irritation is present in all cases, although the postmortem fails to reveal any changes in the brain. Gangrene of the scrotum, testicle, prepuce, and faucial pillars sometimes occurs, more commonly in Idaho. Of late, paralyses have been reported following tick bites,* but we have seen no paralyses attributable to this cause.

Epidemiology.—The keynote to this phase of spotted fever cannot be struck with certainty until after the cause of the disease has been determined, some exterminable chronic source discovered, or some practical means of tick eradication arrived at. The disease is confined to small and scattered areas; where it first appeared and what caused this dissemination cannot be ascertained. Whether it actually exists in some of the localities claimed, may be doubted, as in some cases there is no experimental evidence to support the assertions, and the diagnosis of spotted fever is open to question where the eruption is not marked and no laboratory proof is at hand. A typical case can easily be diagnosed clinically. It may be possible that spotted fever first appeared in Idaho and spread to the Bitter Root Valley through Lo Lo Canyon, a pass in the Bitter Root range, and to other sections by the run of wild animals, or the shipment of domestic stock, these animals carrying with them the infected ticks. Idaho furnishes by far the largest number of cases, and the disease may have existed there longer. This, however, does not satisfactorily explain the great differences in virulence between the Idaho and Montana strains. Much work has been done in search for a chronic source from which the tick receives the virus, but with disappointing results. Ricketts and McClintic added greatly to our knowledge along this line. Both found infected ticks on wild animals, found certain wild animals susceptible and others resistant to infection by the infected Dermacentor; but neither found an animal that actually harbored the virus.

The fever season corresponds to the tick season, both commencing about March or April, and ending about June or July. Seed ticks are found generally on small mammals, while adult ticks are found on the large ones, including domestic animals. Ticks are much more abundant in underbrush, woodland, and in untilled fields. Cleared and cultivated fields are comparatively free. Therefore, the clearing, burning, and cultivation of these infested zones has been recommended as a means of tick eradication. The fact that spotted fever exists in sparsely settled localities makes the tilling of such fields a tremendous proposition. Burning is not practical because the combustible material is either wet from the melted snows or the rain, or is green at the time when burning would do the most good. At the time when burning would be feasible, fire would endanger the national forests and cause great economic losses. Dipping of domestic animals in specially constructed vats filled with an arsenical parasiticide was carried out by McClintic in 1912, near Victor, Montana, with good temporary local effects. All of these means have serious drawbacks, but may be used locally to reduce, as far as possible, the number of infections, until some more thorough and practical method is discovered. Spotted fever will not be eradicated by the means referred to, but to save a single human life they are worthy of consideration. Frick's experiments with grazing sheep, showing that ninety per cent. of ticks die after getting on sheep, are encouraging and well worth serious thought. It is hoped that local ranchmen will cooperate in bringing this promising test to a satisfactory conclusion. As ticks are found on sheep, cattle, horses, wood, hay, etc., shipment of animals from infected zones may cause spotted fever to become a serious menace to public health in other localities. The tick Dermacentor drops from its host to molt or deposit eggs, and this may be done en route to other localities or at the destination. Many deaths occur annually in the Rocky Mountain States from spotted fever, and great depreciation in the value of land is caused by its presence. These facts, joind with the liability of other areas becoming infected, suggest a grave situation. Spotted fever should be included with the "reported diseases," in all States where it occurs; more experimental work should be done in certain States, now reporting it, to establish its presence without question, and stringent methods should be instituted to prevent its spread into uninfected localities.

The flea, bedbug, and louse are not believed to play any part in the transmission of spotted fever. One does not hear of more than one case in the same house during a season; besides these insects may be found the year round; furthermore, spotted fever is a disease of the country and not of cities. It is not known in jails and prisons where these pests are most common. Neither is the mosquito believed to play any part in the transmission There are said to be nine species of mosquitos in the Bitter Root Valley, but after examining several hundred we found but one genus, the culex. Eighteen of these were placed in a specially constructed cage with an infected guinea-pig and a normal pig. Both pigs had one-half of their backs shaved so as to afford better exposure for the mosquitos. These insects were frequently seen attached to the animals; two days later the infected pig died and was removed. The normal pig was kept in this cage for two weeks; at the end of this time all the mosquitos were dead. The pig was removed and kept under observation for two weeks longer, but at no time was there any evidence of disease. On immunity test the pig developed a typical case of spotted fever. Of course, one experiment proves nothing, but it is at least significant of the unimportance of the culex mosquito in relation to this disease.

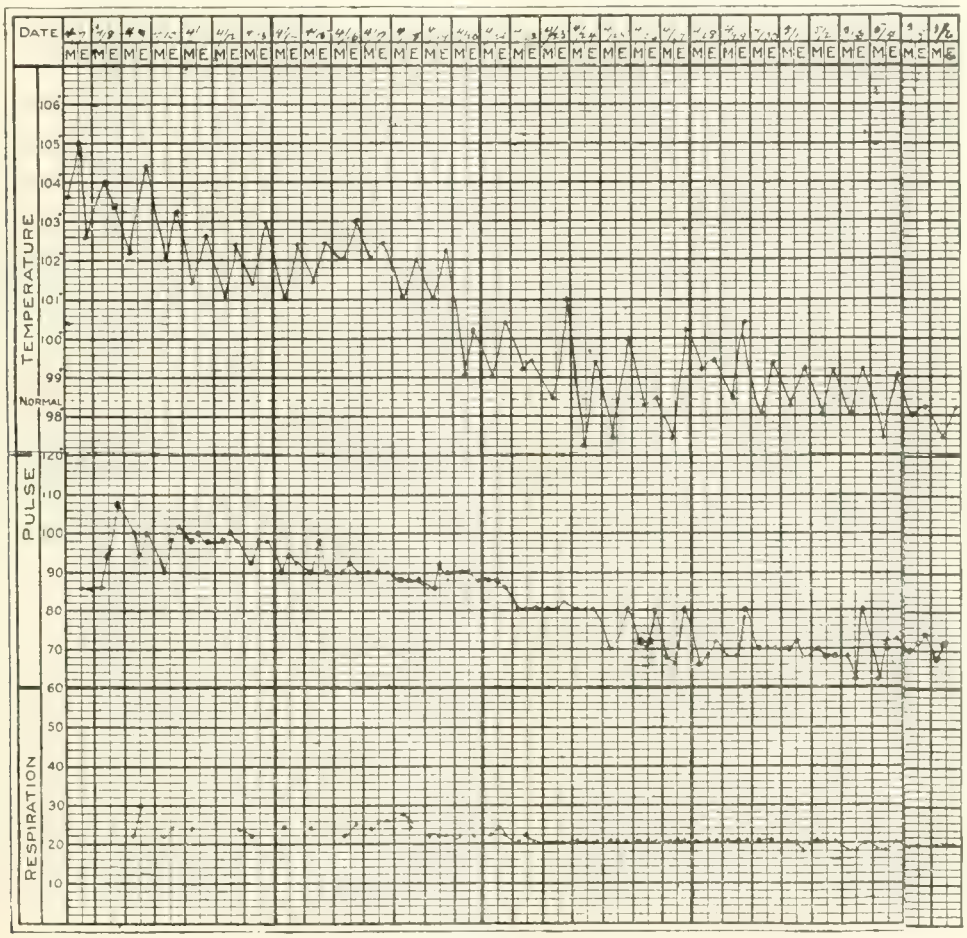
There remain two important epidemiological factors worthy of special mention, namely, education of the people and tick hunting. Inhabitants of infected districts should be taught the means of transmission by the tick and taught to discredit all other means, such as "swamp water," "rotting wood," "melted snow," "miasms," and other similar things. Many people in the Bitter Root Valley utterly disclaim any relationship between the tick and spotted fever. As an example, Mr. L., a large ranch owner in Lo Lo Canyon, denies the tick transmission, although he has had one or more cases on his ranch

*According to Hadeven, the tick *Dermacentor venustus*, as it occurs in the dry district of British Columbia, gives rise to a peculiar form of paralysis in sheep which, directly or indirectly, may prove fatal. Nuttall, working in Cambridge, England, substantiates Hadeven's work. The disease is non-febrile.

every year, and has lost one child from the disease. The financial loss due to the depreciation resulting from the acknowledgment of tick relationship is believed to be responsible for this disbelief.

Tick Hunting.—The tick is a slow feeder, requiring hours to attach and infect an animal. Should one regularly search the entire body for ticks at least three times a day, after being exposed, there would be very few cases of spotted fever.

We wish to express our appreciation to the Surgeon General, the Chief Surgeon of the Western Department, U. S. Army, to the Surgeon at Fort Missoula, Montana, the Director, Hygienic Laboratory, United States Public Health Service, and to the local practitioners of the Bitter Root Valley, for valuable assistance rendered during this investigation. If possible, this investigation will be continued at a future date.

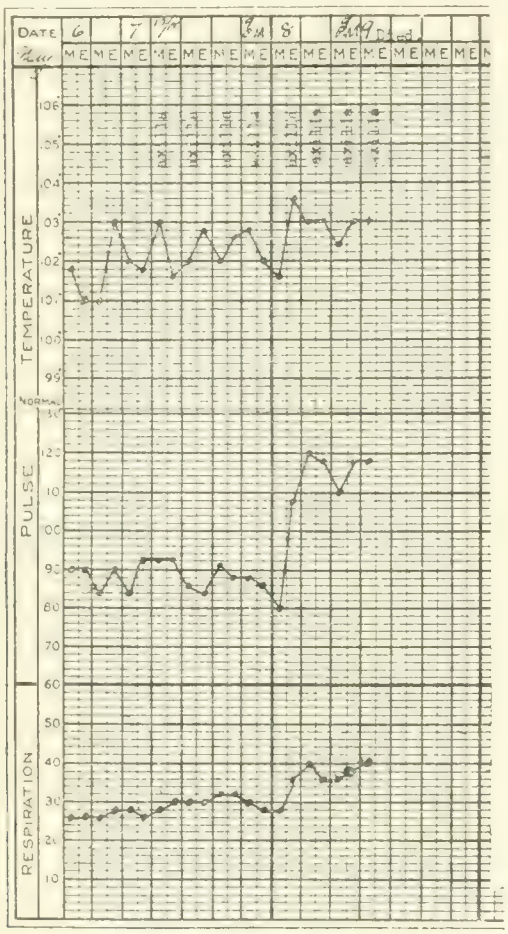


CASE I.—Albert M.

CASE I.—(The only patient in the Bitter Root Valley who recovered in 1912.) Albert M., male, aged sixteen years; living on ranch west of Hamilton, Mont., in a heavily infected district. Has had measles and mumps, no other diseases of childhood. Mother and father living; family history negative for tuberculosis, malignancy, and spotted fever, although other cases of the latter disease have occurred in the neighborhood yearly. Was frequently bitten by ticks, but presumably bitten by an infected tick, March 31, 1912, back of the right ear; this area became painful and inflamed, and of a cyanotic color on the second day. Had a chill and was put to bed, April 4, 1912. On the same day an indistinct macular eruption was noticed on the ankles, wrists, forearms, and palms. The patient grew worse and was taken to the hospital, April 7, in a delirious condition. Examination at that time showed the tick bite very distinctly, and the eruption to be more marked. Temperature, 103.6°, pulse, 86, respirations, 22. The spleen was enlarged, and the liver could be felt below the costal margin; lymph glands not enlarged; urine highly colored and albuminous; patient constipated; heart normal. Cyanotic appearance around the mouth, tongue dry, coated, and the motility sluggish; reflexes slightly increased, leucocytes 9,000; hemoglobin 100 per cent. Two guinea-pigs were inoculated intraperitoneally with 2 c.c. of blood taken from the patient, slides and cultures were also made. Patient remained in an apathetic and delirious condition for three weeks, with temperature pulse, and respirations as shown on the accompanying chart. The eruption developed typically on the 19th of April. Treatment consisted of rest in bid, liquid diet, use of the bed-pan, large amount of water by mouth, tepid sponge for temperature over 102.5°, ice cap, frequent mouth wash, quinine through the entire course, purgatives, sodium cacodylate, 1 c.c. hypodermically four times a day, from April 8 to 10, and one half c.c. to the 14th. The pigs inoculated developed typical lesions of spotted fever, and the strain was carried on for several transfers. This patient's mental condition remained very sluggish for six weeks, and his temperature occasionally went above 99° F. during this period.

CASE II.—(A typical fatal case.) Harry van H., male, aged 24 years; born in Missouri; by occupation a laborer; came West a few months ago. For the last month has been working on Mr. L.'s ranch. in Lo Lo Canyon. When first seen was apathetic, and little or no personal or family history could be obtained. Friends said that he complained of tick bites about a week ago, and that he has been sick and feverish for several days. Admitted to the Post Hospital, Fort Missoula, Montana, May 6, 1912. All his clothing was carefully removed and placed in lysol solution to kill any ticks that might be contained in them. The body was then carefully examined, and no ticks found attached. Patient's expression was drawn, and eyelids heavy; articulation thick, speech very difficult to understand. On examining the skin, no changes could be found on the scalp, small bluish areas, the size of a pin's head, could be seen on the flexor surfaces of the ankles, not raised nor disappearing on pressure. A macular eruption was also discerned on both extensor

and flexor surfaces of the forearms, and over the entire back, and the soles of the feet and palms showed a deep-seated macular eruption. There was no eruption on the face, neck, thighs, or arms. The calves, chest, and abdomen showed scattered lesions. One inch below the navel a dark colored, raised papule, surrounded by an inflammatory zone appeared; this the patient claimed to be the site of the tick bite. There was no enlargement of superficial lymph glands. No evidence of venereal disease. The conjunctivæ were injected, and pharyngitis was present. Joints slightly painful, but no inflammation or swelling noticeable. Temperature 101.8°, pulse 88, respirations 26. Heart and lungs normal. Abdomen tympanitic; spleen enlarged; liver and testicles showed no change. The lips and ears were somewhat cyanotic. Breath foul, patient breathing through the mouth. Pupils equal, dilated, and reacting normally. Urine albuminous; leucocytes 11,800, differential count showed reduction in the polymorphonuclears, and an increase in large mononuclears. The peripheral circulation was poor, pulse low in tension. Blood darker than normal its coagulation time increased.



Case II—Harry Van H

Differential Count.

	8th day; per cent.	9th day; per cent.
Large lymphocytes	8	2
Small lymphocytes	5	4
Large mononuclears	20	11
Polymorphonuclears neutrophiles.	34	45
Transitionals	26	19
Eosinophiles	2	0
Mast cells	2	2
Unclassified	3	8
Myelocytes	0	1
Nucleated red cells	Present	Present

Leucocyte Count: May 7, 11,800; May 8, 7,120; May 9, 16,000.

A brisk purge was administered, and 20 grains of sodium acetate given t.i.d. May 8 0.34 gram of salvarsan was given intravenously, which was followed by a rapid decline in the patient's condition. Ice cap, liquids, sponge baths, and the usual general nursing. The mental symptoms grew rapidly worse, eruption became more profuse and confluent, pulse increased, and temperature rose; urine decreased in amount, ending in suppression after temporary incontinence; spleen greatly enlarged; jaundice appeared soon after the salvarsan was given, and became marked and general by May 9. On this date there was cyanosis about the neck, ankles, wrists, lips, and ears. Muttering delirium with carphologia and subsultus, a pulse of 120, temperature 103.6°, marked jaundice, absence of eosinophiles, suppression of urine, and respiration rate of 40 showed very clearly that the end was near. The patient died the same day.

Postmortem examination showed some emaciation, rigor mortis incomplete, skin a saffron hue, the eruption showing distinctly on the arms, forearms, wrists, palms, legs, soles, back and chest. The fluidity of the blood and its extremely dark color were very noticeable on incising the skin. The lungs were sunken into the back of the thoracic cavity, anthracosed; no evidence of adhesions or recent inflammation. Right heart engorged and contained clots. Abdominal viscera showed signs of jaundice, more marked in the great omentum. Stomach and intestines filled with gas, no inflammation. Spleen greatly enlarged, dark, firm, indented in several places, hemorrhagic, and bleeding freely on section. Pancreas yellow and acutely congested. Liver enlarged, subcapsular hemorrhage, twice the size of a silver dollar, on the right lobe. Gall bladder partially filled with dark bile. Kidneys engorged, and on section showed small hemorrhages in the cortex. Adrenals yellow and acutely congested. Testicles adherent to the scrotum, and presenting gangrenous changes. The cerebrospinal system was not examined. Diagnosis: Rocky Mountain spotted (tick) fever.

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THE CRAVING FOR THE SUPERNATURAL.*

By TOM A. WILLIAMS, M.B., C.M. (EDIN.),

WASHINGTON, D. C.

LECTURER ON NERVOUS AND MENTAL DISEASES, HOWARD UNIVERSITY, NEUROLOGIST TO EPIPHANY DISPENSARY AND FREEDMEN'S HOSPITAL, [illegible] MEMBER MEDICAL AND PHYSIOLOGICAL SOCIETIES OF PARIS, ETC.

The Nature of Craving.—Craving is a sign of physiological need. It is a sensory phenomenon, of which, however, explicit awareness cannot always be discovered. It is conspicuously noticed in cases of disturbance of the body secretions, such as occurs in over-function of the thyroid gland. It is regarded as a crude body-consciousness that something is the matter. In motor organisms it causes visible reaction: this expresses itself in what is termed restlessness. But the unrest may show itself by a fixation, more particularly in the muscles of emotional expression, although the manifestation is not confined to these; shallow respirations and restricted amplitude of movement in limbs and trunk may be observed also. In cerebrate animals the reaction of the individual is under the guidance of preceding impressions stored in the pallium and known as memories; whereas in the animals without a pallium the reaction is accomplished through stable mechanisms known as instincts. Both of these types of reactions are tropisms merely; but the former are liable, conditionable; whereas the latter cannot be modified. The science of conditionable reactions of cerebrate animals is called psychology; and the means by which the reactions are influenced are called psychogenetic, whether these are healthy or diseased. It must not be forgotten, however, that the genesis of a psychological disturbance may be purely somatic, although the manner in which the reaction shows itself is contingent mainly upon the features of the individual which have been derived from previous sensory impressions and their resultant motor reactions commonly known as experience. It is the influence of these upon the hereditary dispositions of the individual which constitute what is known as "make up" or character; and it is this which determines the form which reaction to stimulus must take, whether the stimulus is purely psychological or somatic.

Discomfort.—Now physiological discomfort is an experience universal at one time of life or another; but the reaction to it is infinite in variety, and while part of it depends upon the congenital dispositions which are the common property of humanity, a larger part is contingent upon the psychogenetic factors which have stamped the individual.

The Supernatural.—Now an influence which has been of great significance to every human being since the traditional period, at least, has been the concept of the universe regnant at the period of that individual's life. The insistence by its protagonists upon this concept as the ultimate motive of human endeavor made its acceptance almost universal at periods when it was the custom to lean upon the dicta of authority for guidance in life,

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even when blind obedience was not the rule. Now in natural affairs inconvenient questionings and scepticisms towards dogmatisms would ultimately reach truth. But inaccessibleness to verification of what was called supernatural, made authority, rather than investigation, its criterion: excommunication from the tribe would still all criticism. Thus every act of life became permeated by motives originated in arbitrary interpretations of a supernature.

These influences were specially conspicuous concerning the difficulties of man's almost blind struggle against the uncomprehended astronomical and geodetic phenomena marveled at and fled from, as well as the pestilences which ravaged him. In his sociological affairs, too, every act or thought became imbued with a relationship to an extraneous power.

It is by these social and physical phenomena that the greatest appeal is made to the states of feeling termed emotions and sentiments. So that it became the custom to invoke concerning ill states of feeling the reference to a supernatural influence. Thus, from the cradle up, the ordering of social relationships was made dependent upon the simple expedient of the supernatural extraneous agent rather than upon the more difficult and elaborate analysis and synthesis which would have been required for a proper investigation of each perturbing circumstance in its relation to life as a whole. The power of this influence was inversely proportional to the resiliency and tenacity as well as the general well-being of the individual.

But not only is reference to the supernatural favored by traditional cosmogony, but because of certain psychological features of the individual himself there is a tendency towards supernatural explanations of the introspective observations. The occasions of introspection of this kind are two, and I am not speaking of the inculcated introspection of the moralists. One of these occasions is the self-examination into his conduct which is a normal character of a thinking being. This will often give rise to supernatural explanations even when the introspection is not determined by the tradition of which I have already spoken.

The second kind of occasion demanding introspection, is the autochthonous emanation of feeling of unaccustomed character. Such feelings occur at the physiological epochs; but at these times they are readily explained in a familiar and simple way, and hence no supernatural agency is usually invoked. A similar explanation is made readily enough in cases of evident bodily disease, even where mental symptoms are prominent, for it is no longer the custom to speak of demon possession even in the acute deliria. But even where no physiological epoch or clearly defined physical disease stands forth, unusual feelings are no uncommon phenomenon; and they demand explanation. Such occur conspicuously in the psychopathological syndrome so completely described by Janet under the term psychasthenia. Persons thus afflicted, feeling an incapacity and an impediment to their free activity and not recognizing that they are sick, endeavor to interpret their feelings. Of course, the interpretation varies somewhat in accordance with the nature of the feelings, and with the person's information about the world and his psyche. But quite apart from modifications of this type, I have found it very common for patients to declare, "I feel as if there was another person in me," or, "I feel compelled as if by another agency to act thus." The explanation of a supernatural agent weighing upon them becomes very easy. For the purposes of this discussion, it is not important whether psychasthenia arises purely from degeneration of structure, or from faults in the chemistry of the plasma which bathes the nerve structures, or whether it is a purely psychopathological condition to which the physical phenomena are secondary, as some would have us believe. Our object is merely the setting forth of the fact that it is a diseased condition which disposes its victim towards metaphysical explanations.

Mystical States.—As the religious experience is at bottom a peculiar feeling or sentiment, one has a right to inquire into the nature of this. It is in reality constituted by very common elementary feelings. One set belonging to the class which includes fright, horror, apprehension, veneration and respect; another set is the class of the tender emotions, admiration, love, and finally ecstasy. The excess of religious fervor, moreover, accompanies many alienated states quite different from one another; for it may occur in the agonizing horrors of depressed states (a mystical delirium), as well as in the expansive pride of excited psychoses, where the delusion may precede to the point of Godhood.

Of course, as the religious feeling was one of the earliest and most important of the facts of social life, its germ, present in most people, can very often be found in any ruin of the intelligence and feelings. Besides, theological doctrines even in our own day pervade instruction from the cradle to the university; and it would be strange if the powerful social constraints and suggestions of formal religion did not modify the reactions of an unstable mind just as they influence the mental content of us all. These effects of religious doctrine, however, differ from the "sentiment," in which the *feeling* of the mysterious, the union with divinity, dominates the person to the exclusion of all mundane considerations and plunges him or her into contemplative ecstasies which may reach the extent of union with divinity, the apotheosis of mysticism.

Mysticism, then is the *sentiment* of which religiosity is the intellectual counterpart. It is the *feeling* accompanying the belief in an unknown, mysterious, incomprehensible power—a supernature. Mere intellectual acquiescence in a doctrine of this kind does not make one a mystic, for the latter is ruled by warm feeling and not by cold judgment.

Mysticism is, however, the common basis of faith, whether in religion, spiritualism or in magic and sorcery. It is this peculiar feeling which gives men the idea that the facts to which it is attached possess a "value" all their own which takes them from the profane to the sacred realm, before which the criteria of normal life fall into abeyance.

The desire to achieve this feeling, which in essence is closely allied to those of sexual origin, may lead to religious fervor proper, shown in "works"; but it is just as likely to remain a mere passive beatitude satisfied with its own inner experiences and wrapped up in these. It is an all sufficient orgasm the companion of which is an imaginary being who satisfies better than flesh and blood.

Psychasthenic Manias, or Besetments.—The religious monomanias, to use an obsolete term, arise quite differently. In them the patient is obsessed by an idea or a doubt derived purely from his intellectual environment. The distress he feels is due to the state of doubt as to the validity of his idea, he has no real religious feeling but a mere intellectual dissatisfaction, and is not therefore a

mystic. Even when he appears filled with enthusiasm, this is suggested to him from without; it is not a part of his being; he is a false mystic, not in the sense of being a pharisee, but because he unconsciously affects a sentiment which he does his best to imitate. It is as unnatural to him as is bipedal progression to a dog.

The Deluded.—Many insane with delusions of persecution pass through a short phase of mysticism in that they suppose that "intangible" enemies with "inconceivable" powers act upon them in a manner which "ordinary people cannot divine," and which the patient can only defend himself against by some "marvelous" invention of the imagination. This requires "special virtues," faculties acting in supernatural ways. The meeting of several individuals in this state of mind very easily furnishes a circle of spiritualism, sorcery, or some branch of the occult.

The religious turn of a mystic's thoughts is an accident of environment just as much as in the case of the monomaniacs. A most striking example of this is the case of a young French girl whose mother became insane because of the patient's father's and brother's deaths, the latter of which she refused to believe on account of frequent hallucinatory interviews. After this misfortune, the young woman began to "feel quite different"; following which she had "moral communion" with evil powers. Eventually nothing could be done without the intervention of these, from whom she hoped to recover her lost fortunes, health, and family.

Now, this young woman scorned religious beliefs and practices, knew nothing of spiritualism, disbelieved in fortune telling; but as do savages, showed reluctance to speak of the mysterious powers around her, whom she believed to have deceived her about her brother's death; that is to say, her mystical conceptions prevailed over her actual experience.

*The Cause of Superstitious Feeling.**—The change in the *feeling of personality* is the foundation of this girl's disorder, and the same cause can be traced for all the cases. It arises in the first place from physical disorder, such as the poisoning of the brain cells by a chronic infection, such as the fever contracted in child-bearing, alimentary or other intoxications, the perversion of the secretions by psychical means, like prolonged grief or worry, in all of which diminished oxidation plays a large part. The brain function thus perturbed, no clear recognition of men and things occurs, only a vague ideation is possible. Hence, the sentiment of unusualness, mystery, supernatural, the primitive mystical feeling. The impression is so powerful that the patient can easily negate the former and present experiences of his senses, and from the exceptional character of the "experience" he deduces a supernatural quality of the "force" which "must have caused it." The qualities he attributes to the power depend upon the stock of ideas he has possessed. A believer will say "in order to have so much power over everything it can only be the Holy Ghost." On the contrary, a patient who held no strong belief before her alienation, merely complained of the feeling that her intelligence had gone, that she was no longer herself, although her body remained the same. Another had the feeling that she was in a dead world, and therefore must herself be dead. "It is black all around, there is no world there; but you cannot understand and I cannot explain it." And yet this woman retained her perceptive intellectual faculties undiminished.

Perturbations of the internal feelings of physical causation are then at the root of mysticism, and this is shown most clearly by their appearance or recrudescence at the epochs of puberty, menstruation, and the climacteric. The practical application of these facts is well known in the rites and ceremonies imposed in heathen ritual.

It is only when the system is unbalanced that the mystical experience can be felt. And it is not easy for a modern, unless he has studied defectives, to conceive the illogical mind of the primitive savage. It is hard for a sane mind to achieve religious exaltation; and it can never arrive at the true mystical feeling. It is a sort of uneasiness which prevents comfort in the feelings of certainty, in the operations of the intellect and decision of action. The patient finding himself aboulic and perhaps too critical minded to accept the mundane supports in his vicinity, seeks a solace in that which to him seems powerful because incomprehensible; that is to say something supernatural.

For this it is not essential that the victim's mind be pervaded by the infantine cosmogony which parades often as religious truth. Without anything of the sort, there may arise naive interpretations, hardly even having explicit reference to supernatural agents. For example, a patient may say, "If I begin on Friday, a certain undertaking will fail." "If I do not turn my vest twice, misfortune will occur." "It is incumbent upon me to turn round in my chair, or the negotiations will fail." The enumeration of expedients would be endless. The above are from three different patients, one a boy of 14 now completely cured; the second from the son of a very prominent public man now quite restored to health; the third from a case now quite recovered. In none of these, save the last, was the bodily state of importance: the psychological reactions were the sole object of therapeutic effort, and their ordination was accomplished by purely psychological means.

1705 N STREET

*This is not necessarily the cause of superstitious *belief;* for this is often inculcated or derived from collective suggestion as in the naive minded who pursue faith healing cults.

SUNLIGHT A NECESSITY FOR THE MAINTENANCE OF HEALTH.

By J. W. KIME, M.D.,

[illegible]

SUPERINTENDENT BOULDER LODGE SANATORIUM

THERE are few lessons so difficult to learn as the lesson of sunlight. The chapter on fresh air is beginning to be understood—only beginning, however, for thousands of windows still are tightly closed both day and night which should be widely opened for the admission of the fresh pure air from without. But that light, sunlight, is of the greatest value in the maintenance of health, and even of life, is comprehended by but few, indeed by almost none at all. Even physicians do not know, or, knowing, fail to heed the necessity for the admission of sunlight to their homes.

In consequence we find in every city and in every rural district splendid homes which are swamped in trees—swamped to such an extent that even the grass refuses to grow; the windows are small

and few in number, and even upon these, the shades are pulled far down to exclude the light. These homes are dark and often are damp—the very conditions most favorable to bacterial growth. In homes like these ill health must be the rule.

In the plant world light is essential for health and growth. If grown within the house, the shoots are weak and pale and spindling while just without, where the sunshine falls, the same plants are strong and rugged and clothed in green.

In dark places, in caves and cellars where but few straggling rays of light may enter, plant life is devoid of health and strength and color. The energy imparted by sunlight is wholly lacking; the rich green chlorophyl which only the sunlight paints in grass and leaf and flower is not imparted in caves and gloomy places where sunlight never falls.

The familiar and homely potato proclaims an eloquent lesson of the beneficent powers of sunlight. We store this vegetable in places that are dark and close; a dingy window in the basement wall admits a fraction of light. Along toward springtime the "eyes" begin to swell and soon long, white, fragile sprouts emerge and creep long distances upon the dark cold floor. These "sprouts" are identical with the tough green stalks in the open garden upon whose rootlets these useful tubers grow.

In plant life sunlight measures the distance between life and death.

The human type confined indoors is pale and weak and bloodless. If blood there be it is but tinged with red; the deep red colors which only the sunlight paints are reserved for those who live outdoors.

It therefore comes about in the course of time, and of human events, that every fourth generation we must go back to the rural dwellers for a new influx into urban life. Indeed, were it not for this steady stream continuously flowing from rural to urban districts, our city life would soon lose much of its virile power.

City life is life within doors—in shop and factory, in office and counting room, in homes, too often, from which sunlight is removed; it is life in which the blood runs pale. It is close akin to the life which creeps and crawls on the dark damp floor beneath the house.

There once was a race of human dwellers that lived in caves. They burrowed beneath the ground, they scaled great cliffs and dug into their walls. From out their homes the light of day was wholly shut—and of the cliff dwellers only these caverns now remain.

The dwellers in cities, and too often those in the country, approach in a measure, in their habitations, the darkened homes of these forgotten peoples. Their homes are dark, the sunlight is excluded, the houses are swamped in trees. The conditions are those too nearly related to life within the cave.

Light is an energy of wondrous power. Great trees bend and grow toward it. Light paints the color of every flower and tinges the cheek with the glow of health. Without light, the world would be dead and the firmament be blotted out. In darkness, it is not possible for man to live. Reason fails, the health breaks, and death soon comes.

De Laroquette has observed that "the human body, like the plant, draws from the sun an important part of the energy necessary for the maintenance of life." In other words, the food we eat and the air we breathe do not alone supply all that is necessary for our existence. The radiant energy of the sun is equally necessary to life. We are constantly receiving and absorbing into our bodies light waves either from the direct rays of the sun or from the diffused light about us. These light rays perform an important function in maintaining the body health. Indeed, the cell life of the animal tissues can no more be continued in the dark than can the cell life of the plant when light is excluded from it. And yet the physiology of light has scarce been touched upon.

Sunlight, either direct or diffused, when falling upon our bodies is in part absorbed and in part is reflected from their surfaces. The darker the skin the more absorption takes place. In the African, practically 100 per cent. of the sun's rays falling upon his body is absorbed, while in the case of the blond a large percentage is reflected. The amount of light energy which reaches the clothed body is not great as practically all the rays are absorbed by the clothing worn. Hence, merely sitting or walking about in the sunshine falls far short of what is meant when we speak of "light treatment" or "heliotherapy."

The sunlight absorbed by the body represents a tremendous energy which becomes a part of the vital assets of the individual. Much of this light energy is taken up by the blood and is carried by it to every organ within the body. Many years of experience by numerous investigators have shown that this energy is not only a real power for good in the maintenance of health but is applicable to the treatment of a wide range of diseases. Indeed, it was well known to physicians of the earlier centuries that sunlight was one of the most efficient remedies at their command. It was in general use as a therapeutic agent in that day and solaria were built into the homes of many of the wealthy people. Among some primitive peoples, as in sections of South America, sunlight is still used in much the same way it was centuries ago.

But sunlight as a remedial agent was for hundreds of years almost wholly abandoned by the medical profession and it has been only during the last decade that attention has again been directed to it. Sufficient data are now at hand to enable us to make a partial list of the affections to which sunlight may profitably be applied.

The most noticeable results perhaps have been obtained in the treatment of rachitic children and of children suffering from various forms of bone tuberculosis. Rollier of Switzerland, most notably, has obtained marvelous results in this class of patients. He exposes the entire body surface of these children to the sunlight for several hours each day. Almost without exception they at once begin to take on weight and to gain in strength and soon are well on their way to complete recovery.

In anemia very similar results are obtained. Many of these patients have been closely housed, often in homes that are dark, their nutrition is bad, they are in need of just such an invigorating tonic as sunlight proves to be. Their blood is lacking in hemoglobin and this the light produces just as in the plant cell the sunlight brings the bright green chlorophyl.

For like reasons sunlight proves the remedy par excellence in diseases of debilitating nature, in tuberculosis and other wasting diseases, in neurasthenia, and in convalescence from disease. Such

patients properly exposed to the direct rays of the sun usually respond most favorably to the treatment.

In surgical tuberculosis, and especially after operative procedures to relieve the same, and where healing is slow or refuses to take place, sunbaths offer the best prospect for successful treatment. Wounds and injuries of all kinds heal promptly under the influence of direct sunlight. Solaria are now established in many places near the battle fronts in Europe to give to the wounded soldiers the benefit of this rediscovery of a once forgotten successful method of treatment. It not infrequently happens that where the *x*-ray has long been tried without success a change to sunlight is quickly followed by relief.

In skin affections sunlight promises brilliant results. As many of these diseases are of bacterial origin the explanation is not far to seek. Sunlight is the most efficient bactericide known; the light kills the bacteria and the skin heals by natural processes. In lupus, eczema, psoriasis, and other skin lesions of bacterial origin, results are both prompt and gratifying.

In cervical adenitis, and upon surgical wounds made for the relief of cervical adenitis, the light exercises an influence of great value. Particularly is this true when a strong concentration of light by means of lenses is used upon the neck, followed by a general sunbath in which the entire surface of the body is exposed to the direct rays of the sun for an hour or more each day.

Heliotherapy is the treatment of disease by means of sunlight falling directly upon the nude body of the patient, and by the use of sunlight concentrated by means of convex lenses or by concave reflectors and directed upon certain local areas of the body which may be in need of treatment. In cervical adenitis, for example, the strongly concentrated light is played upon the glands of the neck for half an hour and then a general sunbath is given afterwards.

Sitting or walking in the sunshine with the body fully clad may be of a little value but it is not heliotherapy. In the treatment of disease by sunlight not even the thinnest clothing is permitted to intervene, as the clothing absorbs the sun's rays and the full effect of the light is not obtained. Whenever possible the entire body is exposed to the sunlight, the head only being protected from it.

The patient must very gradually become accustomed to the sunlight, otherwise disagreeable burns may be produced and blistering may occur. The usual method in initiating the patient to treatment is by the exposure of the feet and legs to the light for ten or fifteen minutes on the first day; on the second day the feet, legs, and thighs are exposed for fifteen minutes; on the third day the lower portion of the body is added, and on the following day the entire body, with the exception of the head, is exposed for the same length of time. The daily treatments are now gradually increased in length of time until an hour or more is passed with the full body exposed to the light. In winter the patient may thus lie in the sunshine for a number of hours each day.

No matter what the form of malady for which treatment is given the exposure of the body is total; in this manner only may all the blood circulating on the surface of the body be flooded with the sunlight.

The revival of the "sun cure," added as it now is to the discoveries made during the past quarter of a century in the field of bacteriology, means much toward the relief of many diseases whose causes are of bacterial origin.

RETROVERSION AND RETROFLEXION.

By ADOLPH JACOBY, M.D.,

NEW YORK,

CLINICAL ASSISTANT GYNECOLOGIST, NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

RETROVERSION is that condition in which the uterus and cervix are turned from their normal position in the pelvis, revolving about the internal os as an imaginary pivot, the body tilting backward and the cervix forward, without changing the angle formed by the junction of the body and the cervix.

Retroflexion is that condition in which the body only is bent backward, the cervix remaining in its normal position, thus changing the normal acute angle of anteflexion between the cervix and body, to a straight angle or even to an obtuse angle.

These two conditions should not be confused with retroposition of the uterus where the cervix and body are both pulled backward toward the sacrum without changing the angle between them.

The great majority of cases of retroversion are associated with a greater or lesser degree of retroflexion, so it is advisable to consider these two together.

It is customary to divide retroversion into three degrees. The first degree in which the fundus points toward the promontory of the sacrum; the second degree in which the fundus points backward towards the hollow of the sacrum; and the third degree in which the fundus points downward towards the coccyx, being completely upside down. It is readily conceivable how there may be any number of intermediate degrees, depending upon the position of the fundus.

Retroversion is fairly common among gynecological patients. Of 300 consecutive cases, 109 or 36 per cent. had retroverted uteri. Of this number 45, or 15 per cent. of the total number of patients examined, were pure cases of retroversion, that is, uncomplicated by any other pelvic disorder; 30, or 10 per cent. were associated with a posterior parametritis, 17 or 5.5 per cent. with diseased adnexa; 9, or 3 per cent. with both a posterior parametritis and a descensus uteri, and 8, or 2.5 per cent. with a descensus uteri.

The cases of pure retroversion are very often congenital, discovered only during a bimanual examination. Of the acquired factors prominent in the causation of retroversion, most frequent are lacerations of the pelvic floor during childbirth, with subsequent subinvolution of the uterus and ligaments, aided probably by tight abdominal binders, dorsal decubitus, and pressure of the abdominal contents. This causes the heavy relaxed uterus to tip over backward and stay there, because of its weight and the pressure upon it from above and in front. Once the uterus is retroverted, the intra-abdominal pressure on the anterior wall tends to aggravate the condition, so that retroversion, if left alone, always becomes more marked, instead of remaining stationary or showing improvement.

Inflammatory adhesions from the sacrum to the fundus, following a pelvic perimetritis or parametritis, usually causes the fundus to be drawn backward. This produces an adherent retroversion which is very difficult and painful to replace. An

overdistended bladder or a large cyst of the ovary —usually dermoid—growing in front of the uterus, may push it backward. Among other causes of retroversion may be mentioned growths on the back of the uterus drawing it downward and backward by their weight, falls, or blows on the abdomen, or heavy lifting; these last, however, do not occur very often.

In some of the text-books of gynecology, backache is mentioned as the most prominent symptom complained of by patients having retroversion. Now in our series of 109 cases, in not one of the 45 pure cases of retroversion was there complaint of backache, most of them being diagnosed as retroversion during the routine examination of all cases referred to the clinic. On the other hand, all of the 30 patients with retroversion associated with a posterior parametritis, did complain of backache. In all of the 9 cases associated with posterior parametritis and descensus uteri, there was complaint of backache and a bearing down sensation. In the 8 cases associated with descensus, none of the patients complained of backache. All complained of a bearing down sensation. In the 17 cases associated with diseased adnexa, none complained of backache; all complained of pain in one or both sides of the lower part of the abdomen.

Reviewing these symptoms as associated with their pathological findings, it becomes evident that retroversion, unless associated with a posterior parametritis, does not give rise to backache. In a previous article, it has been shown that backache is a constant complaint of patients suffering with a posterior parametritis. It is therefore very evident that the backache depends upon and is caused by the associated complications, and not by the retroversion. The same may be said for the pain in the lower part of the abdomen and the bearing down sensation, namely that they are not caused by the retroversion, but by the accompanying pathological complications. In 50 of the cases a leucorrheal discharge of greater or lesser amount was present. Of this number 10 were in the pure cases of retroversion, and 40 were in those with complications. Irregular or profuse menstruation occurred in 26 instances, 9 in the pure cases and 17 in the complicated. Frequency of urination occurred in 10 instances, 2 in the pure cases and 8 in the others. In 15 instances, constipation was a marked feature, 4 in the pure cases and 11 in the complicated.

It may thus be seen that the symptoms of retroversion are not very pronounced or numerous, and depend in a large measure upon, and are greatly aggravated by, the pathological conditions associated with it.

It is also clear that backache or a bearing down sensation is never associated with retroversion *per se*. This is important in the consideration of the treatment of retroversion.

The diagnosis of retroversion usually offers very little difficulty. A bimanual examination as a rule readily reveals the position of the fundus and its relation to the cervix. In very obese patients or those with rigid abdominal walls, in whom the fundus cannot be made out, we can, as a rule, feel the lower portion of the body of the uterus, just beyond the cervix, with the fingers of the internal hand. From this finding we can picture the position of the remainder of the body, from our knowledge of its anatomical relationship and contour. It is rarely necessary, nor is it advisable, to introduce a sound to determine the direction of the body of the uterus. A rectal examination occasionally aids in the determination of the position of the fundus, and a combined rectal and vaginal examination helps to disclose the presence of adhesions between the fundus and the sacrum.

The treatment of retroversion depends necessarily in a great measure upon the associated conditions present. For the cases of pure retroversion treatment is rarely necessary, as they do not cause sufficient annoyance to warrant interference. Before treatment of the retroversion itself can be instituted, the accompanying complications must be treated and relieved. For posterior parametritis, treatment as outlined in a previous article—glycerin and gauze packing of the vagina and hot douches—is very effective. Any adhesions present must be broken up, if possible, by gentle manipulation of the fingers in the posterior fornix. Very much can be accomplished by this daily massaging of the fornix, in the stretching of old adhesions and breaking up fresh ones, thus allowing the uterus to be subsequently reduced to its normal position. Disease of the adnexa must be treated according to its extent, by glycerin and vaginal gauze packing plus hot douches, or by operation. The further treatment of retroversion is either by reduction of the uterus and its maintainance in position by means of mechanical support, or operative measure.

Before mechanical support can be introduced, the uterus must first be brought back to its normal position in the pelvis. This is done during a bimanual examination, with the patient in the dorsal position, by exerting pressure backward on the anterior surface of the cervix with the internal fingers, and with the external hand on the abdomen, getting behind the fundus and lifting it forward. Another method which may be used, is one finger in the anterior fornix pushing the cervix backward, and the other in the posterior fornix pushing upward on the fundus at the same time; or both fingers in the posterior fornix pushing the fundus upward. The external hand in either case is used to get behind the fundus and lift it upward the same as before. The knee chest position may be used to aid in the reduction. If this does not succeed traction on the cervix by a tenaculum may be helpful. The administration of an anesthetic may be necessary to relax the abdomen and help in reducing the uterus. It is, as a rule, not advisable to use a sound in the uterus or the various uterine repositors for the correction of a retroversion, as they produce too much trauma and may subsequently give rise to infection.

After correcting the malposition, the uterus is held in place by a properly fitting and properly applied Hodge or Smith pessary. For retroversion associated with a descensus uteri, a Gehrung pessary is very efficient. One thing to be remembered in the use of the pessary is that it should never be introduced as long as there is an inflammatory condition present in the pelvis.

The operative treatment of retroversion, which I do not intend to discuss, usually comprises some form of suspension or fixation of the body of the uterus abdominally or vaginally, or the shortening of the round ligaments. It is well to remember that operation is rarely necessary for uncomplicated retroversion, or retroversion part of a general enteroptosis, and when performed is required by the conditions associated with the retroversion.

To conclude I wish to lay special emphasis upon the chief point brought out by this article, namely, the scarcity of symptoms associated with retroversion, and the complete absence of that symptom at one time considered so constant, to wit—backache.

1141 Fox Street.

AN IMPROVED FLEXIBLE ESOPHAGEAL BOUGIE.*

By ROBERT COLEMAN KEMP, M.D.,

NEW YORK.

PROFESSOR OF GASTROINTESTINAL DISEASES AT THE FORDHAM UNIVERSITY MEDICAL SCHOOL.

The writer has frequently called to the attention of his students that instrumental examination of the esophagus with bougies is by no means always a safe procedure, and in his book on gastrointestinal diseases states that the safest method is by the use of soft-rubber stomach tubes of various calibers. This is particularly true for the novice.

Even during the examination of an apparently normal esophagus, one may find partial obstruction to the entrance of the instrument from adenoid tissue at the base of the pharynx, or from anterior curvature of a cervical vertebra. I have had such experiences.

The bougie with a whalebone stem in a single piece, such as is employed by H. S. Plummer, or the divisible whalebone bougie of Einhorn, are probably the most popular instruments. Though they are denominated as flexible by some, they are not sufficiently so to eliminate all danger. There are numerous flexible esophageal bougies, notably those of Sippy, Lerche and a special one of Plummer's, and also imported instruments of soft rubber. As far as I can determine, my own instrument most nearly resembles that of Lerche (*Jour. Am. Med. Assn.*, July 29, 1911), consisting of a flexible wire shaft, covered with rubber and with perforated olives so that they can be threaded on a silk guide. Time does not allow me to refer to other originators of flexible esophageal bougies, so I must apologize in advance, in order to avoid controversy. The idea, therefore, is by no means original with the writer. Every good horse or dog owner believes that his animal possesses some peculiar virtues, and I am merely so far opinionated in regard to my own instrument. I believe there are a few new features.

The bougie, herein described, has a small stem, about the diameter of 11 French, made of wound flexible wire, hollow, and covered with rubber, to which olives of various sizes can be screwed. There are six olives in the set. They are perforated obliquely so that they can be threaded on a silk-thread guide if such should be required. (See illustration.)

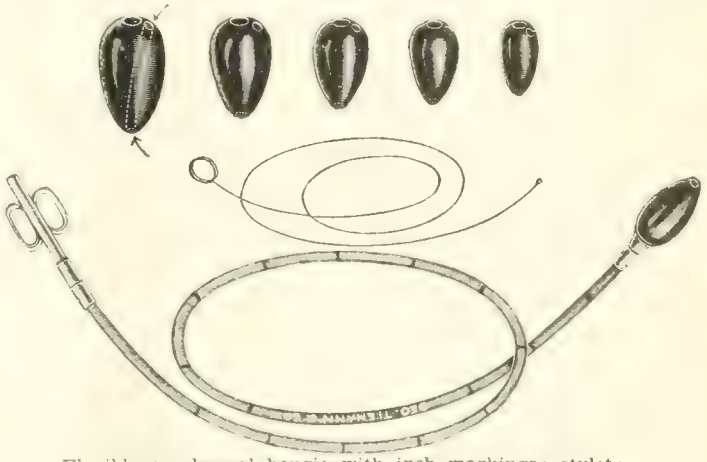
It is well known that slight or commencing stricture of the urethra can be the more readily determined by flexible bougies of various calibers. The flexibility apparently increases the delicacy of the touch and renders a more ready appreciation of any irregularity, or narrowing of the canal, even though it be slight. The same holds true in examination of the esophagus by means of the flexible bougie and even small sensitive ulcerative areas can be the more readily appreciated.

*Read before Medical Association of Greater City of New York, Jan. 17, 1916.

Other methods, however, have also been suggested for the determination of commencing stenosis. Bassler, for example, employs radiography, after first plugging the cardiac orifice of the stomach with an inflated bulb and filling the esophagus above the plug with barium, or bismuth; while others have inserted into the esophagus sacs of gold-beater's skin, or animal membrane, and after filling them with barium or bismuth have radiographed the esophagus. (W. H. Stewart: "Advanced Röntgen Technique in the Diagnosis of Esophageal Lesions," *American Journal of Röntgenology*, October, 1914.)

Local anesthesia with cocaine or eucaine is rarely necessary for the introduction of the flexible instrument and it can be inserted with the head in the natural position (*i.e.* without extension) and with but little disturbance.

There are three stylets of different caliber made of piano wire, furnished with each instrument. After the sound has entered the esophagus and passed to the point of stricture, if it is desired to stiffen the instrument in order to pass through the stricture or to calibrate it, a stylet can be inserted with the head still in the natural position. Three degrees of stiffening can be secured. Complete protection to the stylet wires is afforded by bulbous tips, so that their points cannot possibly penetrate the wire tube forming the shaft of the instrument. It is possible to secure slightly stiffer stylets, or a bougie with a stem of larger diameter for still thicker stylets.



Flexible esophageal bougie with inch markings; stylet; perforated olives.

The rubber tube covering the wire shaft has upon it circular markings at inch intervals, starting from the point of attachment of the olive. The distance of a stricture from the teeth can be sufficiently closely estimated by computing the number of marks (rings) from the olive to the teeth plus the length of the small metal fitting and about half the length of the olive small enough to just pass the obstruction. In the case of a very tight stricture which the smallest olive would not pass, the entire length of the latter should be added, to properly compute the distance. One can bend the instrument and measure the unmarked sections noted, by means of one of the marked inch spaces, so that no tape measure is required.

The ingestion of sweet oil previous to the passage of the bougie is an excellent procedure. The value of olive oil injection into the urethra previous to the passage of urethral bougies is well known and the same is true of the esophagus. For example, float ℥ss of sweet oil on an ounce of iced water,

which last also helps to anesthetize the parts for a moment, and have the patient drink the same just before the passage of the esophageal bougie. If the tongue be immediately touched to a pinch of salt it will relieve the disagreeable taste of the oil.

It is always advisable to make a digital examination of the lower pharynx to determine whether adenoid tissue, vertebral deformity, a new growth, or any obstruction is present, which would interfere with the passage of the instrument. This type of bougie the writer believes to be safe for the examination of children.

103 East Fifty-seventh Street

EXPERIMENTAL STUDY OF THE EFFECT OF EMETINIZED BLOOD ON THE TYPHOID BACILLUS.

By MARCUS BEEKMAN, M.D.,

NATCHEZ, MISS.

Director Clinical Laboratory of the Natchez Sanatorium.

It was my pleasure to read recently with great interest an article on a treatment for typhoid fever which, if the results as stated could be substantiated by other investigators, would rank among the great medical achievements of modern times. The article I refer to was on "The Abortion of Typhoid Fever with Emetine Hydrochloride," by William L. Frazier, M. D., appearing in The Medical Record, March 20, 1915.

Realizing the great advantage of such a treatment which, according to the author, "in only six cases of a series of eighty-two treated by injections of Emetine did the fever run longer than four days after the treatment was begun, and none of these six extended over a period of more than six days," I decided to try the matter from a purely laboratory point of view. I therefore secured the permission of one of the local physicians to carry out my experimental work with one of his patients. The patient was under the care of competent pupil nurses in a private institution during the entire course of the experiment, and the records show that the treatment was carried out to the letter. I will omit the history and description of the present illness as my work was not undertaken with any idea of showing the effects of emetine on the course of typhoid fever. In fact, there is still considerable doubt in my mind whether the case was actually one of typhoid or of some other disease. My work was undertaken solely for the purpose of showing whether emetine did or did not produce a bactericidal condition of the blood when given according to the method used by the writer of the article referred to above.

I therefore bled the patient, after which treatment was begun. This blood was allowed to clot, the clear serum collected, and the following dilutions made: 1:2, 1:5, 1:10, 1:20, 1:50, 1:100, 1:200, 1:500, 1:1000, 1:2000, 1:5000, 1:10,000, 1:100,000, 1:500,000. By a dilution of 1:2 I mean one part of serum with sufficient broth to make two parts; by 1:5 I mean one part of serum with sufficient broth to make five parts, etc. Somewhere in the neighborhood of two cubic centimeters of each dilution was placed in a test-tube and each tube in the series inoculated with a loopful of a 14-hour broth culture of bacillus typhosus. These were incubated at 37 C. for 24 hours. At the end of this time all of the dilutions showed a heavy growth of the bacilli. At the same time that this test was set up, a Widal test was also done with the serum in dilutions of 1:20, 1:40 and 1:60, all of which were negative at the end of one hour. There was a pseudo-reaction in the dilution of 1:60 with some clumping and many actively motile bacilli.

Following the drawing of this blood emetine hydrochloride was given subcutaneously in one-half grain doses every six hours until twenty doses had been given. Exactly three hours after the twentieth dose, blood was again drawn by venous puncture and an identical set of dilutions with inoculation as before was set up. After this had been incubated for the same length of time all of the tubes again showed a heavy growth of the typhoid bacillus.

I therefore came to the conclusion that the subcutaneous administration of emetine hydrochloride in one-half grain doses every six hours does not impart any bactericidal properties to the blood, at least so far as the typhoid bacillus is concerned.

One case and one observer, however, are not sufficient on which to base any definite conclusions, and I therefore hope that other observers will investigate the matter and publish their results. Certainly any treatment as simple as that which has been laid down by the originator of this therapeutic measure and which gives such very gratifying results should not be passed by without further investigation.

Medicolegal Notes.

Contract for Physician's Services—Insurance.—A corporation entered into separate contracts with, among others, a physician, whereby the physician agreed to sell his services to such persons as the corporation might direct for a consideration to be paid him by the corporation. Venereal diseases, chronic and incurable diseases, and major surgery were excepted. The corporation then contracted with its subscribers to procure for them medical service free (with the exception that the subscriber should pay the physician one-half the regular fee in obstetrical cases). The contract provided that the agency "assumes no liability for the breach of any one or all of said contracts. The agency agrees, however, that in the event of a breach, it will use its best efforts to procure other persons or firms to offer the same or similar service." The insurance commissioner of the State of Washington, where the corporation was doing business, instituted an action to have its franchise forfeited because it did not comply with the insurance statutes. The question to decide was whether the company was actually doing an insurance business.

The essential elements of an insurance contract are: (1) An insurer; (2) a consideration; (3) a person insured or his beneficiary; (4) a hazard or peril insured against whereby the insured or his beneficiary may suffer loss or injury. It was held that there was, under the terms of the contract, no hazard or peril whereby the purchaser of the contract might suffer loss or injury, which the company insured against, and therefore the principal essential to an insurance contract was lacking. It did not guarantee that the physician would perform the services agreed upon. It was therefore not engaged in the insurance business.

The court distinguished the case from the so-called Physicians' Defense Company Cases, 199 Fed. 556 and 100 Minn. 490, where the company agreed for a stated consideration paid to it by a physician to defend the physician against "all civil suits for damages for malpractice, based on professional services rendered by himself or his agent during the time of the contract at its own expense, not exceeding $5,000," subject to certain defined conditions. This contract was held to be one of insurance. There was therefore in all cases of this kind a contract for indemnity against a hazard which might cause the physician loss.—State v. Universal Service Agency, Washington Supreme Court, 151 Pac. 768.

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THE PRESENT STATUS OF THE ABDERHALDEN REACTION.

THE theories upon which Abderhalden based his method for the detection of specific ferments in the blood serum were so attractive and fitted so closely with many already established ideas concerning the body functions, that they were at first accepted very generally. His experimental data were apparently quite complete and very convincing. The reaction based upon these theories immediately became very popular, and about it there has grown up a literature which, even in the few years of its existence, has become so great it is impossible for any one man to become wholly familiar with it. Gradually the first enthusiasm wore off and dissenting voices became audible. These latter grew in volume, and lately the majority seem to have agreed that the reaction is of little practical value. The technique of the reaction is exceedingly difficult, and Abderhalden has maintained that contradictory results are due to faulty application of the methods on the part of the dissenting laboratory workers. But some of the objectors have been careful experts, and the wholesale denial lacked conviction. Repeated efforts have been made to simplify the reaction so that its results might become more reliable, and the most significant of these has been the substitution of the amino nitrogen determination in the dialysate in place of the delicate ninhydrin test. An additional advantage obtained by the use of this method was that an exact quantitative estimation could be made and the unreliable comparison of colors was completely avoided.

In the most recent report on the use of this method, Van Slyke, Vinograd-Villchur, and Losee (*Journal of Biological Chemistry*, 1915, xxiii, 377) present the results of the examination of blood sera from pregnant women and from numerous non-pregnant controls. Their conclusions are apparently justified by their careful work and are worth quotation. "Practically every serum, whether from a pregnant or a non-pregnant individual, showed protein digestion when incubated with placental tissue prepared according to Abderhalden. The range of individual variation in proteolytic activity was wide. The range covered by most of the normal sera was, however, identical with that covered by the majority of the pregnant sera. . . . There is a tendency for the results from the pregnant sera to average somewhat higher than those from non-pregnant. The difference, even in the averages, is not great, however; and the individual variations of both pregnant and non-pregnant sera make the results from both overlap so completely as to render the reaction, even with quantitative technique, absolutely indecisive for either positive or negative diagnosis of pregnancy. . . . It appears that nearly all human sera can digest certain coagulated tissue proteins to some extent."

Bronfenbrenner has approached the problem from another angle, and we have already had occasion to mention his theory in explanation of the reaction. In his latest paper on the subject (*Journal of Laboratory and Clinical Medicine*, 1915, i, 79) he reviews the technique and shows that its complexity is so great that even if the reaction were conclusive, its usefulness would be greatly restricted. He emphasizes his demonstration that the digestion of the tissue is due to the action of the normal proteolytic ferment of the blood serum and not to a specific ferment and shows that it is possible to obtain a positive pregnancy reaction with male sera merely by increasing the amount of placenta used. He is of the opinion that it may be *relatively* specific within certain quantitative limits, but ceases to be outside these limits. He reiterates the argument that the rapidity with which these ferments appear after immunization in experimental animals, militates against the possibility of their being really specific ferments. The test is due to the absorption of antiferments in the blood serum by the tissue used, and involves the action of complement and may be somewhat similar to the stalagmometer reactions of Ascoli. He still maintains that satisfactory results may be obtained in a certain number of cases, but insists that the method must be performed by a high class worker, specially trained in this special reaction, and concludes that at present the reaction has merely a scientific interest. Its value as a routine method of diagnosis is very, very small.

It seems worth while to call attention to the conclusions reached in these two laboratories, for the test is no doubt quite extensively used through the medium of diagnostic laboratories. A careful consideration of all the evidence presented in these articles leads one to the inevitable conclusion that the Abderhalden reaction can be of almost no value to the practitioner as a method of diagnosis. If it has any place at the present time it is as a possible aid to the expert immunologist in the working out of special problems, and even that place is not well defined or accepted. It has served, however, to stimulate the study of the fermentative activities of the body fluids, especially the blood, and has therefore played its part in the general scheme of things. The part being played, it is now apparently time for the player to retire.

COMPULSORY INSURANCE AND THE MEDICAL INCOME.

IN an address before the Congress on Medical Education, Public Health, and Medical Licensure which met at Chicago on Feb. 7, Dr. Otto V. Huffman, formerly Secretary of the New York State Board

of Medical Examiners and Secretary of the Federation of State Medical Boards of the United States, advocated a new plan for the regulation of the practice of medicine in this country. He pointed out that originally the first licensing boards were created simply to examine the apprentice—trained physicians and surgeons, who had not attended any medical college, and that medical college graduates were given the license without examination just as in many foreign countries to-day. About thirty years ago, because of sectarian medicine it became necessary to make an all-inclusive requirement for the license, and for the sake of trying to appear just to all applicants, all were required to pass the same examination, regardless of their qualifications and training. In recent years there has been a gradual movement toward the recognition of the educational basis for any qualification to practise medicine. This has meant the more and more careful looking into the standard upheld by a medical college, and even by the high schools and colleges whose credentials it recognizes in granting admission to students. With all of this activity on the part of many individual State boards of medical examiners, it is no wonder that as yet there is no uniformity or concerted action. There are many differences over minor details and that is why the long-desired reciprocity in medical licensure is delayed. The State boards retaliate against one another with absurd requirements. To break this up the plan of a national examination and licensure has been advocated, but Huffman does not seem to favor this, urging rather that the Federation of State Medical Boards, *i.e.* a majority of the States, should agree upon a common standard, and give the license to all who came up to this standard without making them take a State board examination. This is the way it is done in some foreign countries, the State being quite content with the examinations given by an approved faculty. For those who have not received their training in the prescribed way, thorough practical State board examinations should be provided.

In some instances there are grounds for the suspicion that the State board aims not to allow the medical profession in its State to become overcrowded. To meet this phase, which always comes up sooner or later in any discussion of the question of how the practice of medicine should be regulated, Dr. Huffman recommended compulsory sickness-insurance as the best way for putting the practice of medicine on a sound economic basis. If his figures are true, they are astounding. According to them, the medical profession is receiving only one-ninth of what the U. S. Industrial Relations Commission computed its services to be worth. The average income of a physician is only $500, whereas it ought to be $4,500. Compulsory sickness-insurance, Dr. Huffman said, could be introduced in this country on a national scale and without any of the drawbacks of the European systems. It should provide only the services of a doctor and leave the matter of health insurance, with its cash benefits, to the private companies. In this way the medical profession would not be hampered and could work freely along preventive lines. In fact its interest would be more largely concerned with the prevention of disease or disability and in no way could it be influenced by the patient's concern over cash benefits. The insurance companies would, of course, have their own referees to pass on cases. If the British plan were adopted, a doctor could refuse to carry a panel and limit his practice to patients with incomes of $1,200 or over, as these would not come under the scheme of compulsory insurance. And likewise wage earners compelled to pay the insurance tax could exercise choice—they could choose any doctor carrying a panel who would accept them. To prevent electioneering for a large panel, it could be limited to 2000. The insurance companies would probably not oppose the plan because it does not call for cash benefits.

There is so much that is entirely new in this scheme, and so much that seems advantageous, that every physician ought to give it careful consideration in order that it may be wisely matured. Certainly the present plan of medical licensure is not exactly satisfactory, nor is the present economic situation of the practice of medicine. The medical profession is doing too much for nothing. It is said that in New York City alone, 4,000,000 patients, from whom the medical profession does not receive a cent, are treated annually.

REGISTRATION OF BIRTHS AND DEATHS AND NOTIFICATION OF DISEASE.

Upon the compilation of statistics depends, to a large extent, information as to the prevalence of disease and the morbidity and mortality rates arising therefrom. That this information should be as accurate as possible is, of course, of the first importance, and it therefore behooves medical practitioners to see to it that they know exactly how to register births and deaths and to report sickness. The system of registration is by no means perfect and is open to criticism in many respects, but matters would be greatly improved if practising physicians were better acquainted with the modes of gathering this kind of information.

In *Public Health Reports*, January 14, 1916, this subject is discussed at some length, and it is pointed out that it is the bounden duty of the physician to know the purposes of the registration of births and deaths and the notification of the occurrence of preventable diseases, and the uses made of the records. He should also know thoroughly the legal requirements of his community in regard to these matters. A full explanation is given of the manner in which the physician should proceed in attesting to the registration of births and deaths and the value of properly carrying out the procedure is emphasized. The mode in which the reporting of sickness should be done is explained and the following summary of the uses of morbidity reports is appended: "(1) In the communicable diseases, morbidity reports show the occurrence of cases which constitute foci from which the disease may spread to others, as in scarlet fever, typhoid fever, tuberculosis, or yellow fever, and make it possible to find the previously unrecognized cases and to take proper precautions to protect the family

of the patient, his associates, or the community at large. (2) In some cases morbidity reports make it possible to see that the sick receive proper treatment, as in ophthalmia neonatorum, diphtheria, and, in certain cities, tuberculosis. The reporting of cases of ophthalmia in the new-born makes it possible to save the sight of some infants who would otherwise not receive adequate treatment until after much damage had been done. In diphtheria the health department can be of service in furnishing antitoxin. Some cities furnish hospital or other relief to consumptives who would otherwise be without proper treatment. (3) In diseases that are not communicable, such as those due to occupation or environment, reported cases show the location or conditions which are causing illness or injury. This makes it possible to remedy the faulty conditions, so that others may not be similarly injured. (4) In certain diseases, of which the cause or means of spread is unknown, morbidity reports show their geographic distribution and varying prevalence and the conditions under which cases occur. This information has great potential value in attempts to ascertain their causes and means of spread. (5) Reports of the occurrence of disease are necessary to show the need of certain sanitary measures or works and to control and check the efficiency of such measures or works when put into operation. In pulmonary tuberculosis such reports show the number of consumptives in the community and the need of sanatoria. In malaria they show the prevalence of the disease, the need for drainage and other antimosquito work, the efficiency of such work when in operation, and when a change in the prophylactic measures is required, or additional ones are necessary. In typhoid fever they show faults in the water supply or in the control of the production and distribution of milk, or in the disposal of excreta in special localities. (6) Morbidity reports, when recorded over a period of time and properly compiled, become a record of the past occurrence of disease. They show the relative prevalence of disease from year to year and under varying conditions. They show the effect of the introduction of public health measures and of sanitary works. They give a history of disease not obtainable in their absence."

The practising physician should be cognizant of his responsibilities with respect to the registration of births and deaths and the reporting of cases of the notifiable diseases. In this field he owes a duty to the community, to the individual child, and to its parents, which duty he alone can perform. In the prevention of disease it is essential that registration of births and deaths and the reporting of notifiable diseases should be performed promptly and accurately and, as said before, it is incumbent on the practising physician to see that neglect to do this does not imperil the health and welfare of the people at large.

"Aquaria Viva."

The term "living" or "human aquarium" is used to some extent to denote the showman who swallows water by the quart, some of which contains small fish, tadpoles and frogs, which he rejects at will by compressing his stomach. Recently a despatch in a metropolitan daily stated that a performance of this sort had been stopped by a local humane society, doubtless rather from principle than because of any actual animal suffering. At a session last summer of the General Medical Societies of Cologne (*Muenchener medizinische Wochenschrift*, November 23) an "aquarium vivum" was presented to the society, not indeed as a medical curiosity, but because in swallowing a handful of nails, one had got into the trachea (evidently he combined the roles of "aquarium" and "ostrich"). His stomach extended three fingers' breadths below the iliac crest. He was accustomed to swallow from 10 to 14 liters of water, and allowed 5 frogs and 3 goldfish to remain in his stomach for 20 minutes. Some of these were dead when rejected, others living, but the latter soon succumbed. He also swallowed his watch without effort—it was 25 cm. broad—on the chain, so that he could extract it at will. Finally he plunged his cane into his stomach and allowed it to remain for some minutes. Unlike the old-time sword swallower, these artists make no bones of their stunts—the sooner done the greater the renown.

Chronic Recurrent Tetanus.

In France, after trench fighting had continued for some little time, tetanus of the acute and hyperacute type was extremely rife. The treatment of these forms of tetanus by means of antitetanic serum and their prevention by injections are said to have been so highly successful that the affection is now practically extinct. Chronic recurring tetanus, however, although rare, is observed now and then at the French seat of war. In the *Medical Press*, January 12, 1916, Dr. Albert Mouchet, Chief Surgeon to the Auxiliary Hospital No. 26, at Orleans, discusses this form of tetanus from the clinical point of view. A case is reported in which a piece of shell had been left in the tissue and it was found that tetanus recurred from time to time until this had been extracted. Mouchet points out that the great lesson to be drawn from this case is that from the moment that tetanus makes its appearance in a case in which the projectile is still in the tissues, it must, if possible, be extracted with the greatest promptitude. For this purpose early radioscopic examination is indispensable, after which no time should be lost. The injection of antitetanic serum, free opening up of the wound, and extraction of the projectile constitute the tripod therapeusis on which treatment of such wounds must be based.

News of the Week.

Fresh Air Home.—The Fresh Air Home at Dumont, N. J., which was opened on June 1, 1915, for the purpose of furnishing summer vacations to the children of tuberculous families living in crowded tenement districts in New York, reports that during the summer seventy-four children, ranging in age from five to fourteen years, were cared for. Both girls and boys were taken, and all showed a marked increase in weight and an improvement in general condition as the result of living under proper hygienic conditions. The home is conducted as an adjunct of the social service work of the Yorkville Tuberculosis Clinic.

Children's Homes.—The Department of Health

has recently completed a survey of homes for children located in New York City, including a careful inspection of the plumbing, heating, lighting, and ventilation of the institution, the cleanliness of the premises and of the inmates, the diet and methods of cooking, the character of the clothing, and the care of the sick. Within the five boroughs of the city there are eighty-four institutions of this class, all of which were inspected, with the result that 1,443 recommendations were made by the Bureau of Child Hygiene, and of these 654 were promptly complied with. The other recommendations were largely of a structural nature, so that time was necessary before they could be entirely satisfied. Of the children themselves, 56 per cent. showed some physical defects; the treatment of these during the past year was, however, very satisfactory, more than two-thirds of the conditions being entirely remedied, and only 5 per cent. remaining untreated. In the opinion of the officials of the Department of Health the conditions disclosed by the survey were most satisfactory, the institutions all showing great willingness to comply with the recommendations made.

City Death Rate.—During the week ending January 29, the death rate in New York was 16.46 per 1,000, as compared with 13.64 for the corresponding week of last year, the total number of deaths being 1,812 and 1,460, respectively. Although the acute infectious diseases caused fewer deaths during the week than during the same week of 1915, the deaths from influenza, bronchitis, and pneumonia numbered 435, as compared with 261, and there was a considerable increase also in the deaths from heart and kidney diseases. The highest mortality occurred among the adults of the population, as has been the case in the last few weeks, the death rate for children under five years of age being less than for last year. The death rate for the first five weeks of 1916 was 16.47, as compared with 14.64 for the corresponding period of last year.

Dr. A. J. Barker Savage has been appointed superintendent of the Broad Street Hospital, New York, and of the Sea Gate Reception Hospital, Coney Island.

Gift to Charity.—A bequest amounting to a few thousand dollars was made to Society of Servants of Relief for Incurable Cancer in the will of the late Kate Gilgan of Central Islip, N. Y.

Street Accidents.—The National Highway Protective Society reports that during January, 1916, 34 persons, of whom 13 were children, were killed on the streets of New York City, 22 by automobiles, 7 by trolleys, and 5 by wagons. Eighteen persons were killed in the State outside of New York City.

Public Health Lectures.—The annual course of free lectures for the public on the prevention of diseases, given by the Public Health Education Committee of the Medical Society of the County of New York, was begun on Tuesday, February 1. The lectures are given at the Academy of Medicine on alternate Tuesday evenings and Thursday afternoons from February 1 to March 23. The chairman of the committee is Dr. Esther L. Jefferis; the secretary, Dr. Wilhelmina A. Ragland.

The Internment of Dr. Koch.—A correspondent of *The Sun* writes that he understands the great Dr. Koch is interned in England, and he suggests that the United States request the British Government to let him come here until the end of the war. *The* Dr. Koch has been interned since 1910, but not in England. There is a Dr. Koch now interned in England who is said to be one formerly held at the Norfolk Navy Yard who broke his parole and fled the country, but was caught by the English while on his way home. A case of jumping out of the frying-pan into the fire.

Convalescent Home in Switzerland.—It is reported from Berne, Switzerland, that Mrs. H. T. McCormick of Chicago has acquired property there and will establish a charitable foundation, especially a home for convalescents, which will be under the direction of well known Swiss physicians.

Hospital Boat Launched.—The *Helen C. Juilliard*, the new floating hospital of St. John's Guild, was successfully launched at Wilmington, Del., on February 5. The boat will be ready for service on July 1, and will have accommodations for 1,200 patients. The lower deck will be devoted to dining rooms, galley, and store rooms; the main deck will be furnished with benches and hammocks for the mothers and children. It will have forward a milk booth equipped with pasteurizing apparatus, ice boxes, etc., and in the after part bathrooms and storerooms. On the upper deck there will be four wards, examining rooms, an operating room, a sterilizing room, and rooms for the staff; and on the hurricane deck there will be an isolation ward and quarters for the officers and crew. When in full service the boat will have a day and night crew and a day and a night corps of doctors and nurses, and it is planned, during the hot weather, after she has returned from her regular day trip, to fill up with a fresh lot of patients and then steam up the Sound, and anchor in some cool spot until early morning.

Medical Society Elections.—The first meeting of the MEDICAL SOCIETY OF BAY RIDGE (N. Y.) was held on February 1, when the organization was completed. The officers elected were: *President*, Dr. John P. McQuillin; *Vice-President*, Dr. Robert E. Coughlin; *Secretary*, Dr. Frank E. A. Stoney; *Treasurer*, Dr. Roderick Byington. The society has for its object the promotion of sociability among its members, study, and general welfare. The district embraces that part of the Borough of Brooklyn reaching from the Narrows to Thirty-ninth Street and Gravesend Avenue.

NASHUA (N. H.) MEDICAL ASSOCIATION: Annual meeting on January 13. Officers elected: *President*, Dr. Timothy F. Rock; *Vice-Presidents*, Dr. H. H. Jewell and Dr. S. G. Davis; *Treasurer*, Dr. Albert F. Mulvanity; *Secretary*, Dr. Charles H. Babbitt.

DOUGLAS COUNTY (KAN.) MEDICAL SOCIETY: Annual meeting at Lawrence on January 11. Officers elected: *President*, Dr. E. James Blair, Lawrence; *Vice-President*, Dr. Edmond R. Keith, Lawrence; *Secretary*, Dr. Carl Phillips, Lawrence; *Treasurer*, Dr. McConnell.

DODGE COUNTY (NEB.) MEDICAL SOCIETY: Annual meeting at Fremont on January 6. Officers elected: *President*, Dr. Rupert A. Davies, Arlington; *Vice-President*, Dr. G. A. Rathbun, Fremont; *Secretary-Treasurer*, Dr. Sylvester A. Preston, Fremont.

PHILADELPHIA MEDICAL CLUB: At the annual meeting, held on January 21, the following officers were elected for the ensuing year: *President*, Dr. Judson Daland; *First Vice-President*, Dr. William Duffield Robinson; *Second Vice-President*, Dr. J. Torrance Rugh; *Secretary*, Dr. William S. Wray; *Treasurer*, Dr. Lewis H. Adler, Jr.

BUTTS COUNTY (GA.) MEDICAL SOCIETY: Annual

meeting at Jackson on January 14. Officers elected: *President,* Dr. J. Lee Byron, Jackson; *Vice-President,* Dr. B. F. Akin, Jenkinsburg; *Secretary-Treasurer,* Dr. W. H. Steele, Jackson.

GRAND FORKS DISTRICT (N. D.) MEDICAL SOCIETY: Annual meeting at Grand Forks on January 14. Officers elected: *President,* Dean Harley E. French; *Vice-President,* Dr. Thomas Mulligan; *Secretary,* Dr. H. G. Woutat; *Treasurer,* Dr. C. S. Marsden.

HATHERLY MEDICAL SOCIETY: The tenth anniversary of this society was celebrated at a meeting held in Abington (Mass.) on January 13, when the following officers were elected: *President,* Dr. C. E. Knight, Rockland; *Vice-President,* Dr. Richard B. Rand, North Abington; *Secretary-Treasurer,* Dr. Charles Hammond, Hanover.

MASSACHUSETTS SOCIETY OF EXAMINING PHYSICIANS: Annual meeting at Boston on January 26, when the following officers were elected *President,* Dr. Francis W. Anthony, Haverhill; *Vice-Presidents,* Dr. Frederic J. Cotton, Dr. L. V. Briggs, and Dr. Timothy Leary, Boston; *Secretary,* Dr. J. H. Stevens, Boston; *Treasurer,* Dr. John S. Phelps, Boston.

MARSHALL COUNTY (IA.) MEDICAL SOCIETY: Annual meeting at Marshalltown on January 25. Officers were elected as follows: *President,* Dr. Royal F. French, Marshalltown; *Vice-President,* Dr. A. C. Conaway, Marshalltown; *Secretary-Treasurer,* Dr. G. M. Johnson, Marshalltown.

NORTHWESTERN MEDICAL SOCIETY: At the annual meeting held in Minot, N. D., on January 22, the following officers were elected: *President,* Dr. Louis Henry Kermott, Minot; *Vice-President,* Dr. Fred Ewing; *Secretary-Treasurer,* Dr. Francis A. Brugman, Minot.

WAUKESHA CITY (WIS.) MEDICAL SOCIETY: Annual meeting held at the Waukesha Springs Sanatorium on January 20. Officers elected: *President,* Dr. Byron M. Caples; *Vice-President,* Dr. Richard E. Davies; *Secretary-Treasurer,* Dr. Joseph B. Noble.

American Life Convention.—The sixth mid-year meeting of the Medical Section of the American Life Convention will be held at Birmingham, Ala., on March 1-3, with Dr. Whitfield Harral of Dallas, Tex., as chairman. An interesting program has been prepared, including a symposium on the cancer problem, participated in by Dr. F. C. Wood of New York, Mr. Frederick L. Hoffman of Newark, Dr. E. E. Tyzzer of Boston, Dr. John B. Murphy of Chicago, and Dr. H. W. Cook of Minneapolis.

Obituary Notes.—Dr. GEORGE H. M. ROWE of Boston, Mass., a graduate of Harvard University Medical School in 1868, died at his home on January 21, aged 75 years. He was a member of the American Medical Association, the Massachusetts Medical Society, the District Medical Society, and the Boston Society of Psychiatry and Neurology, and was for thirty years superintendent of the Boston City Hospital.

Dr. JOHN MALONE of Boston, a graduate of the Tufts College Medical School, Boston, in 1902, died at his home, from pneumonia, after a brief illness, on January 10, aged 48 years.

Dr. HENRY C. HACHE of Somerville, Mass., a graduate of the Kentucky School of Medicine, Louisville, in 1893, and a member of the American Medical Association, the Massachusetts Medical Society, and the Middlesex District Medical Society, died suddenly in the Massachusetts General Hospital while undergoing a surgical operation on January 7, aged 47 years.

Dr. WILLIAM K. FLETCHER of Somerville, Mass., a graduate of the Harvard University Medical School, Boston, in 1862, and a veteran of the Civil War, died on January 13, aged 88 years.

Dr. ARATHENA B. DRAKE of Boston, a graduate of the College of Physicians and Surgeons, Boston, in 1894, and a member of the Boston Homeopathic Medical Society, the Massachusetts Homeopathic Medical Society, and the American Institute of Homeopathy, died at her home on January 21, aged 87 years.

Dr. ARCHIBALD S. HIGGINS of Manasquan, N. J., a graduate of the Bellevue Hospital Medical College, New York, in 1892, was injured in a collision between a railroad train and the automobile which he was driving, at Allenhurst, N. J., on January 27, and died a few hours later at the Ann May Memorial Hospital, Spring Lake.

Dr. EUGENE M. SMYSER of Brooklyn, N. Y., a graduate of the Department of Medicine, University of Pennsylvania, Philadelphia, in 1864, and a veteran of the Civil War, died at his home on January 27, aged 74 years.

Dr. MARY A. NEUMANN of Philadelphia, a graduate of the Penn Medical University, Philadelphia, in 1881, died at her home on January 18, aged 58 years.

Dr. HANNA WHITSON LOVELL of Langhorne, PA., a graduate of the Penn Medical University, Philadelphia, in 1865, died at her home recently, aged 80 years.

Dr. LEONARD WATERMAN of Norman, Neb., a graduate of the Department of Medicine and Surgery, University of Michigan, Ann Arbor, in 1913, died in Omaha, on January 20, aged 28 years.

Dr. CONRAD S. REYNOLDS of Kennett Square, Pa., a graduate of the Department of Medicine, University of Pennsylvania, Philadelphia, in 1883, and a member of the American Medical Association, the Medical Society of the State of Pennsylvania, and the Chester County Medical Society, died in the German Hospital, Philadelphia, on January 22, aged 58 years.

Dr. HENRY M. JEWETT of Providence, R. I., a graduate of the College of Physicians and Surgeons, Baltimore, in 1888, died at the home of his daughter, from pneumonia, after a brief illness, on January 18, aged 55 years.

Dr. CHARLES ADNA SMITH of Texarkana, Tex., a graduate of the Rush Medical College, Chicago, in 1882, a member of the American Medical Association, the State Medical Association of Texas, and the Bowie County Medical Society, and chief surgeon at the Cotton Belt General Hospital, died at his home on January 22, aged 60 years.

Dr. JOHN AUBREY VAUGHAN of Brooklyn, N. Y., a graduate of the Eclectic Medical College of the City of New York in 1875, died at his home on January 29, aged 70 years.

Dr. CHARLES MCCREIGHT died at Philadelphia on January 22 at the age of 43 years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1900. He was a member of the Philadelphia County Medical Society and of the State of Pennsylvania and a Fellow of the American Medical Association.

Dr. JOHN MULLIN BATTEN died at Downingtown, Pa., on January 23 at the age of 78 years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1864.

He served as surgeon in the United States Navy during the Civil War.

Dr. JAMES A. PEEPLES died at Wrightsdale, Pa., on January 24 at the age of 74 years. He was graduated from Jefferson Medical College in the class of 1868.

Dr. ELIZA WOOD ARMITAGE died at Kennett Square, Pa., on January 28 at the age of 83 years. She was graduated from the Woman's Medical College of Pennsylvania.

Dr. JACOB KLATZKO died of heart disease at Philadelphia on January 29 at the age of 59 years.

Dr. J. B. COOK of Detroit, Mich., a graduate of the Jefferson Medical College, Philadelphia, in 1865, died at his home on February 1, aged 73 years. He was a member of the American Medical Association, the Michigan State Medical Society, and the Wayne County Medical Society, and was emeritus professor of surgery in the Detroit College of Medicine and Surgery.

Dr. THOMAS H. RUSSELL of New Haven, Conn., a graduate of Yale University Medical Department in 1875, and a member of the American Medical Association, the Connecticut State Medical Society, and the New Haven County Medical Society, died on February 2, aged 64 years.

Dr. EDWARD SMITH EVELETH of Gloucester, Mass., a graduate of the New York University Medical College, New York, in 1866, died at his home on January 24, aged 74 years. He was a member of the American Medical Association, the Massachusetts Medical Society, and the District Medical Society.

Correspondence.

IS TOBACCO A STIMULANT OR A NARCOTIC?

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—I was somewhat astonished in reading Dr. Abbe's interesting article in the MEDICAL RECORD of January 29 to find him designating both tobacco and alcohol as stimulants, especially as in the course of his article he definitely points out the depressing influences of tobacco. Perhaps it is quibbling to raise the question; but it is important in doing educational work to classify influences correctly. Both alcohol and tobacco primarily have irritating and stimulating effects; but the ultimate results in both cases are markedly depressant. As the result of some extensive experimentation that I conducted some years ago, as to the effects of depressant poisons on insect life, I found that next to hydrocyanic acid gas, the fumes from burning tobacco were the most fatal to all forms of insect life. With a sufficient amount of exposure, such fumes will kill every form of life; and it should be remembered that the fumes of burning tobacco have been more or less decomposed and rendered less intensive in their effects through the heat of the burning. The fact that a narcotic blunts the sensory powers of perception and obscures pain, and thus prevents the discomfort of undertaking extra work, is no reason for classifying that effect as stimulation. Of course, the odor from a burning cigar or other tobacco, may have a stimulating effect on the nasal nerve terminals, and is hence a stimulant in the same sense that other odors and flavors may act as stimulants on the gustatory filaments. But the general effect constitutionally of tobacco is mostly depressant.

Alcohol coagulates albumin, and its first peripheral action on individual cells may stimulate to increased activity in the cell; but as the influence penetrates more deeply into the cell, a decrease of cellular activity ensues. Of course, the molecular oxidation of alcohol also acts constitutionally stimulative at first, but the depressant effect that ensues more or less quickly overbalances the stimulating effect. The tissues in time become more or less adjusted to the influences of stimulants and narcotics, in fact, morphologically adjusted; and when that adjustment has become habitual, these narcotic and stimulating influences do not have the same effect as they do upon tissues unaccustomed to such influences.

We do not know just what the physical effect of nicotine and its burned decomposed products is upon the tissues. I have observed that in tobacco solutions, bacteria will grow to an extent that will entirely eliminate any narcotic effect in the solution. The tobacco worm grows grossly fat on the raw tobacco leaf. It has occurred to me that perhaps ptomaines may develop in tobacco due to bacterial fermentations in the curing process. There may be a splitting up of some of the protein constituents of the leaf. It is doubtful if constitutionally tobacco is as irritating as alcohol; although if it were as freely diffusible as alcohol, a general systematic primary irritation would be effected. Of course the local irritating effects of tobacco are plainly observable. So far as my observation goes, its major effect is that of decreasing functional activity in the various tissues with which it is brought into contact, and somewhat in proportion to the extent of the influence and the openness to diffusion of the tissues influenced. These effects are most quickly and prominently observed in those whose tissues are most delicate and absorptive, as in the young. The delightful sensations of a supervening narcosis are more or less realized by the tobacco habitué as well as by the consumers of alcohol, opium, or other narcotics, or by the diner who enters upon his after-dinner nap under the somniferous influence of a heavy dinner. There is a good deal to say against the tobacco habit, for esthetic, social, and economic, as well as for other reasons, although it is quite possible that in certain cases, the habitual indulgence in narcotization may prolong life through hiding from the consumer the intensity of some of the ills of existence; but there can be no question that for most individuals, the sum total of life's activities and probably the extension of life are shortened indirectly through the weakening effect of the habit.

J. W. M. KITCHEN, M.D.

EAST ORANGE, N. J.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

CENTRAL MEDICAL WAR COMMITTEE—SUPPLY TO THE ARMY AND THE PUBLIC—VICTIMS OF THE WAR—NOTES.

LONDON, Jan. 15, 1916.

THE Central Medical War Committee has been calling the attention of local medical war committees to the duty of respecting as far as possible civilian interests in their search for medical officers for the military service. The committee has been requested to organize the profession in such a way as will enable the government to utilize the services of all practitioners fitted for the work, so as to turn their qualifications to the best purpose and deal with all

matters affecting them in connection with the present war. This throws on the committee the duty of considering in every aspect the organization of the profession for the needs of the community; since to provide the army with a regular steady supply of medical officers entails the necessity of seeing that the work of those who go to the front is carried on during their absence. Recruiting the local medical war committees should therefore be carried on with careful regard to the needs of every locality.

The Central Medical War Committee has been in conference with the National Health Insurance Commissioners and other departments responsible to Parliament for the medical treatment of various branches of the industrial population of the country and agrees with them that taking the country generally there is a sufficient supply of doctors of military age to meet any likely demand. But they are very unequally distributed, so that while some areas could well spare a considerable number, there are others in which the removal of a small proportion might bring about much inconvenience. It is then for the central committee to assist in adjusting the demands of different areas. This committee has obtained much information through the commissioners and others, but still has to look for the help of the local committees with their knowledge of local requirements.

It is rumored that the medical committee is not satisfied that the local committees have been sufficiently careful as to this, and it is known that in some cases difficulties have been brought about in regard to the attendance needed by the local populations. The local committees ought to be in possession of information as to the conditions throughout their districts, but they do not seem to have informed the central committee nor yet to have taken any action themselves. The conference advises that when a committee finds any weak district it should at once warn the Central Medical Committee that commissions should not be given to practitioners in such districts without further consideration and that it should increase its pressure on men of military age in other districts which may be able to spare some of their doctors. The Committee should be closely in touch with the panel committees in its area and the insurance secretaries and representatives of local war committees, as well as with any bodies employng a considerable number of medical men, *e.g.*, hospitals, dispensaries, or other institutions.

The Central Committee will, on its side, make use of all information coming through local committees, taking care at the same time that its activities shall in no way hinder the supply of medical officers to the army. Every local committee should take care to meet the demands made upon it, with due regard to the needs and capabilities of its own area and careful study of what other parts of the country may be doing. The War Office is leaving the organization of the profession for military purposes to a purely professional committee—a compliment to its organizing capacity and public spirit. No one has any doubt that the confidence thus shown will be fully justified.

Many persons anticipate that there will be so great a demand for medical officers in the army and navy that the general public may be inconvenienced by the withdrawal from civil practice of a considerable number of their advisers. The apprehension is not altogether unnatural, though we are more accustomed to hear complaints of the excessive number of doctors in numerous localities. Many could easily leave their practices for a few months without loss—for example, the practitioners at spas and other health resorts frequented only during their seasons. Then there are many young men, recently qualified, who are taking various temporary offices or helping their seniors for a time in order to see a variety of practice before settling down. In one district the doctors who have gone on war service have drawn up a list of their appointments and patients in order that their work may be carried on by their neighbors during their absence, differences of opinion that may arise to be decided by the Medical War Committee. It seems to be thought that towns will find a considerable proportion of their advisers volunteer for temporary war service. But I think the probability of the public being inconvenienced is a good deal exaggerated, particularly considering the many places from which complaints of over-competition in practice are poured forth.

In the House of Commons questions have been asked as to whether advanced students might be employed or were employed, so as to save engaging more qualified men. It was replied that those who had nearly completed their curriculum would be better advised to obtain their qualifications and those less advanced should join the combatant forces if they desired to save the Crown. It was not to their advantage to become orderlies. It was not now the practice to give first commissions to candidates who had not served in the ranks. Previous service in the Officers' Training Corps gave a person valuable experience which those who had not had such service could not possess.

Among the victims of the war are: Major A. Kellas, R.A.M.C., Oct. 31; Lieut. Maurice Mackenzie, son of the late Sir S. Mackenzie; Capt. F. Shingleton Smith, son of the Clifton consulting physician; Lieut. John Cunningham Bell, Oct. 39; Lieut.-Col. Aitken Ross, son of the colonel of the Leicestershire Regiment; Lieut. Francis Joseph Wiseley, formerly assistant medical officer of the Worcester County Asylum; Lieut.-Col. L. F. Childe, formerly principal of Grant Medical College, Bombay.

The annual entertainment at the Chelsea Hospital for Women was again given on New Year's Day. Special facilities for the treatment of female relatives of soldiers are the feature of this institution. Last year 877 patients were admitted and many operations were performed. The rate of mortality was a little under 1½ per cent. The convalescent home in connection with it at St. Leonard's-on-Sea renders valuable aid in restoring to health those who have undergone treatment in the hospital.

On Saturday 2200 of the poorest children of Poplar were entertained at the Sixteenth Children's New Year's Carnival.

Between 300 and 400 orphan children of sailors and marines who lost their lives in the war were entertained on Saturday at Chatham to a tea, followed by a concert. A Christmas tree was the center of distribution of fancy and useful articles of clothing and other presents.

Emetine in Pyorrhea Alveolaris. — As a result of a series of experiments conducted by officers of the U. S. Public Health Service, it is asserted that emetine is an amebicide, but alone will not cure pyorrhea alveolaris, and that it is necessary to resort to the operative measure of scraping the roots of the affected teeth even though emetine is freely given.

Progress of Medical Science.

Boston Medical and Surgical Journal.

January 27, 1916.

1. Orthopedic Work in a War Hospital. Robert B. Osgood.
2. Some Anthropological Comments upon the So-called "Herbivorous" and "Carnivorous" Types of Man. E. A. Hooton.
3. Mutism and Deafness Due to Emotional Shock, Cured by Etherization. D. Pearce Penhallow.
4. Progress in Pediatrics. John Lovett Morse.

1. Orthopedic Work in a War Hospital.—Robert B. Osgood gives a description of orthopedic work in a war hospital based on three months' experience at the American Ambulance in Paris as orthopedic surgeon with the Harvard Medical School Unit. This experience leads him to believe that the essentials for efficient orthopedic work in a war hospital are a person interested in orthopedic surgery and with a knowledge of those mechanical principles which have to do with the fixation of inflamed joints and broken bones, and also with the restoration of function in stiffened joints and the obtaining of proper final alignment in fractures, proper material with which the work may be done, and time and assistants to use them. At the American Ambulance all these necessary conditions are fulfilled. During the months of April, May, and June, about 450 cases were under the observation of the Harvard Unit and of these between 20 and 25 per cent. presented some problem for the solution of which the help of the orthopedic surgeon was sought. The house surgeons were constantly on watch for contracting tendons and muscles and for joints which were in danger of becoming ankylosed. By this attention much after treatment and deformity was undoubtedly spared. The author describes the treatment in the following six groups of cases: 1. Simple fractures of the shafts of bones. 2. Compound fractures of the shafts of long bones, needing as perfect fixation as possible which would at the same time allow painless copious dressing or constant drainage. 3. Injuries to joints, either from penetrating wounds, fractures into them, or external trauma. 4. Ankylosis of joints complete or partial, following immobilization or secondary inflammation. 5. Contraction of tendons or muscles from faulty position or cicitrization. 6. Nerve lesions resulting in paralysis and requiring apparatus. Numerous illustrations show the varieties of apparatus that have proved most useful in treating these different types of injuries. In closing the author confesses to some doubt at the beginning as to whether an orthopedic service at a war hospital would prove interesting to the orthopedic surgeon or be useful to the other departments of the hospital. The doubt as to the interest of the orthopedic surgeon disappeared at once and work assigned to the orthopedic surgeon answered the other question.

2. Some Anthropological Comments upon the So-called "Herbivorous" and "Carnivorous" Types of Man.—E. A. Hooton calls attention to the numerous articles that have appeared within the last year on physical types of men and the relation of these types to disease, eugenics, civilization, and what not. He says that in order to establish an anthropological type it is necessary to combine the results of extensive morphological observations with measurements on long series of subjects. The evidence of the existence of such a type must then be presented in concrete statistical form, and if possible a mathematical correlation between the associated characters demonstrated. He then produces evidence of such nature that he cannot believe in the existence of the "carnivorous" and "herbivorous" types of man. He shows that there is no constant relation between bodily fullness and stature. While the attempt to bring anthropology and medical science in a working partnership is laudable, the theory of "herbivorous" and "carnivorous" types of man falls to the ground because it is based largely on incorrect anthropological assumptions. If students preparing for a medical course were thoroughly grounded in physical anthropology and zoology it would very greatly enlarge their field of vision in their professional career and would result not only in invaluable contributions to anthropology, but would also be instrumental in advancing medical science.

New York Medical Journal.

January 29, 1916.

1. Infantile Paralysis. R. Tunstall Taylor.
2. Irritation as a Factor in Malignant Tumor Development. G. L. Rohdenburg.
3. The Postoperative Complications of Appendicitis. Joseph Wiener.
4. The Ductless Glands and Atypical Growth. Seelye W. Little.
5. The Treatment of Infections of Accessory Sinus. Arthur Morgan MacWhinnie.
6. Gastrointestinal Symptoms and Eye Strain. Aaron Brav.
7. A Stain for Tubercle Bacilli. Emanuel Klein.
8. The Question of Antivivisectors. R. S. Robertson.
9. Dr. Achilles Rose. An Appreciation. David Gilbert Yates.

1. Infantile Paralysis.—R. Tunstall Taylor emphasizes the need of greater care in the early recognition of infantile paralysis and the importance of using appropriate means to prevent its spread. Elimination of the toxin should be facilitated in every possible way. As hexamethylenamine has apparently helped some cases and can do no harm it should be given in the early stages. Rest is most important in order to give the muscles a chance and freedom from strain. Warmth helps the hyperesthesia and nerve pain. No matter whether a part is paralyzed or not, efforts at assisted active movements should be tried and passive movements and massage given, possibly aided by Faradic electricity, slowly interrupted by a pendulum to produce muscular contractures, no matter how slight. Braces must be used as light as possible, to compensate for muscular deficiency, prevent contractures, and promote a normal physiological balance. Tenotomy and myotomy must be employed later when moderate stretching will not affect the desired lengthening of overactive muscles. Tendon transplantation must be resorted to two years after the attack, based upon careful scientific and mechanical study, to produce a proper distribution and balance of power and support. Some form of tenodesis by tendon or preferably by silk can be used to supplement the tendon transplantation if the alignment is not perfect and relaxation of a joint exists. As in the writer's method, the tendon must be carried straight from the origin to the new insertion to gain the greatest mechanical efficiency, and the annular ligament must be employed when possible to take up any slack in the new order of things. The tendon is more securely fixed if sutured to a notch in the bone, retained in a fixed dressing four months, and without weight bearing for two months. Mutilating operations should be avoided as far as possible and used only as a last resort.

4. The Ductless Glands and Atypical Growth.—Seelye W. Little says that it is well known that the ductless glands have a great influence on cell growth, on inhibition of cell growth, on cell differentiation or inhibition of the same, with a consequent marked peculiarity in size, shape and development of various organs, or even of the entire individual. The same is true of the remarkably selective action on particular tissues of ductless gland influence. If there were no other evidence, the presumption would be very strong that there might be a similar connection between ductless and what are known in general as pathological "new growths." This presumption, the writer believes, becomes a conviction when one deliberately sets side by

side all the facts concerning ductless glands and all the facts concerning such new growths as cancer. He sets down in tabular form the more important significant facts and finds that no fact of either set can disprove the theory, and many offer direct proof in favor of it. Nevertheless some hitherto unknown fact may absolutely disprove what seems not to be certain. Until disproved this theory seems to the writer the most profitable and hopeful for the physician confronted with the care of a case of inoperable cancer. An argument based on the facts that ductless glands have an influence on cell reproduction, on metabolic functions, and in that matter of cell specialization, leads him to conclude that cancer development is dependent upon failure of some ductless gland or the cells depending upon it. If the theory is true, one ought to find plenty of evidence of it in a cancer patient. This, the writer believes, he finds in an accurate personal and family history of any ten cancer patients taken at random. Finally the author concludes that by exclusion, by reasoning from known facts, and by clinical trial, any case of atypical growth which cannot at present be otherwise explained or otherwise helped, should be treated by ductless gland therapy, since such treatment is by no means mere haphazard guess work. Even with the present equipment is it certain that we have a check and sometimes even a control of the growth called cancer in appropriate ductless glands thereapy?

5. **Accessory Sinus Infections.** — Arthur Morgan MacWhinnie recommends the following treatment with little variation in all cases of acute and chronic purulent ethmoiditis, including what some writers call subacute and acute purulent ethmoiditis, the one exception being the chronic hyperplastic type: Application of antipyrin, 4 per cent. solution, or adrenalin chloride with cocaine, 3 per cent. solution, to the ethmoid region, allowing the pledgets to stay in place until there is complete shrinkage; application of the author's suction pump with from 5 to 20 inches of vacuum, depending upon the susceptibility of the patient's membranes, entire cleaning of the cells, often requiring 15 inches of vacuum; injections directly into the ethmoidal cells, by means of a very fine pipette, of 50 per cent. solution argyrol. This pipette holds about 2 c.c. The patient is instructed to keep this in the nose for one hour before blowing it out. In the vast majority of sinus cases, when it is expelled, large plugs of mucus come with it, and these are frequently not replaced. This procedure is carried out every day, or on alternate days, depending upon the amount of reaction, six to twelve treatments usually sufficing. The writer has used this method for a period of over two years with marked success. He also describes his suction pump, which is illustrated by diagram.

Journal of the American Medical Association.

January 29, 1916.

1. The Use of Medical Bibliography and Medical History in the Medical Curriculum. Fielding H. Garrison.
2. The Carbohydrate Factor in the Causation and Treatment of Hyperacidity and Ulcer. Willard J. Stone.
3. The Epidemic of Typhus Exanthematicus in the Balkans and in the Prison Camps of Europe. Bert W. Caldwell.
4. Strontium Salicylate. M. A. Blankenhorn.
5. Paralysis of the Recurrent Laryngeal Nerve Resulting from Mitral Stenosis. Joseph Rosenthal.
6. Radial Pulse Difference and Left Recurrent Nerve Paralysis Due to Mitral Stenosis. John Guttman and Selian Neuhof.
7. Diagnostic Methods and Pathological Constants in Idiopathic Epilepsy. Second Report. Charles A. L. Reed.
8. A Contribution to the Subject of Skull Fractures: Analysis of One Thousand Cases at the Cook County Hospital, and a Report of Seventy-Four Cases Examined at Necropsy. Frederic A. Besley.
9. A Case of Fatal Diabetic Coma Without Diacetic or Beta-Oxybutyric Acid. G. W. McCaskey.
10. An Unusual Case of Appendicitis. Warren G. Young.
11. Intraspinal Injections of Mercurialized Serum in a Case of Spastic Paraplegia. B. M. Edlavitch.

2. **The Carbohydrate Factor in the Causation and Treatment of Hyperacidity and Ulcer.** — Willard J. Stone mentions certain observations relative to the dietetic and medical management founded on the following: 1. The great increase per capita of sugar during the past fifty years. 2. The possible relationship existing between this increase of sugar consumption and the apparent increased incidence of gastric and duodenal ulcer. 3. The influence of restricted carbohydrate diet in the treatment of uncomplicated hyperacidity and on ulcer. This excludes those in whom some remote pathological condition may exert reflex influence on the gastric secretion. Hyperacidity has in probably every case been a factor of at least contributory importance in the pathological changes leading to ulcer formation in the stomach and duodenum. In his experience, reflex causes in the abdomen have served as an explanation for the hypersecretion in at least 50 per cent. of the cases; in the remainder a faulty dietary with an excess of carbohydrates has been a factor. At least this much may be said: A majority of such patients are relieved of many of their symptoms by restricting their carbohydrate intake. When the hyperacidity and hypersecretion have existed for a considerable period of time with periodic intervals of improvement and relapse, definite ulcer should be suspected. A large majority of ulcer cases are amenable to medical treatment. About 25 per cent., however, become chronic and are given greater relief by surgical intervention. Patients with hyperacidity and ulcer do better with an almost starch and sugar free diet, at least during the time of active symptoms. The essential point the writer wishes to bring out is that organic acid decomposition of sugars and starches appears to play an important rôle in the production of hyperchlorhydria and its sequelæ.

3. **The Epidemic of Typhus Exanthematicus in the Balkans and in the Prison Camps of Europe.**—Bert W. Caldwell says that the epidemic of this disease which spread over Serbia from December, 1914, to the end of July, 1915, was, in proportion to the territory involved and the population affected, the most severe that Europe has ever experienced. Conservatively, one out of every five of the 2,500,000 population was attacked by typhus, and 135,000, including 30,000 Austrian prisoners, died of typhus during this epidemic. The hospital mortality ranged from 19 to 65 per cent. The lesson which this epidemic teaches is particularly valuable to the sanitary world, especially to those localities which are from time to time subject to an epidemic of typhus fever. It demonstrates beyond any question of a doubt that the disease can be kept out of a country by instituting proper quarantine and sanitary measures, and by the proper observance of personal and community cleanliness and hygiene. It has demonstrated with equal certainty that if it should at any time secure a foothold in any locality, it can be easily limited and eradicated in a short time. With our present knowledge of the measures which control this disease, we can take a very optimistic view of the future, and assert with confidence that the epidemic of typhus which Serbia has so recently experienced is probably the last one which will occur in Europe, unless conditions favoring an epidemic are worse than have ever before existed in the history of the continent.

7. **Diagnostic Methods and Pathological Constants in Idiopathic Epilepsy.**—Charles A. L. Reed presents his second report on this subject. The clinical phenomena which he has recorded, the pathological constants which he has presented, considered in connection with the now demonstrated organism, especially in the absence of facts of contrary significance, seem to justify

tentative conclusions as follows: 1. Idiopathic or essential epilepsy is an infection. 2. The infecting organism, whatever may be its primary habitat, finds its way under circumstances of forced absorption from the alimentary canal into the blood. 3. The conditions that enforce absorption from the alimentary canal consist in mechanical distortions with resulting constipation in the form of either obvious or masked stasis. 4. These conditions point to a logical line of treatment as follows: (*a*) The organism should be isolated in each case with reference to the development of an antigen and the possible immunization of the patient. (*b*) In the absence of such immunization or in recurrence after apparent immunization, but in certain otherwise favorable cases, the mechanical conditions of the intestines responsible for the enforced absorption should be surgically corrected and a stop thus put to the farther intake of the organisms by restoring the normal drainage of the bowel. (*c*) Postoperative treatment should be instituted to neutralize and eliminate the residual infection already established in the glands and blood of the patient. (*d*) In this connection it is of the highest importance to insist that the intercurrent chronic acidosis, which exists without exception in these cases, shall be as nearly as possible reversed as can sometimes be done, although only temporarily, by appropriate treatment preliminary to surgical interference. Failure to observe this precaution will result in a high surgical mortality.

8. Skull Fractures.—Frederic A. Besley gives an analysis of 1,000 cases at the Cook County Hospital with a report of 74 cases examined at necropsy. A careful study of 74 cases of fracture of the skull at necropsy has convinced him that the factures of the base are not produced by a bursting force, but are due to a direct inbending force applied through the articulation of the condyles and atlas. In this series of 1,000 cases, the escape of blood and spinal fluid from the ears occurred in 316, or 31.5 per cent. of the cases. Free bleeding from the orbital cavity occurred in 10 cases. Unmixed cerebrospinal fluid from the ears occurred in 21 cases, or 2 per cent. Free bleeding occurred from the mouth and nose in 172 cases, from the nose in 118 cases, and from the mouth alone in 53 cases, or a total of 343. It was interesting to note how infrequently the pulse rate remained slow. The average pulse rate was higher in the fatal cases. In the fatal cases of all types the respiration average was consistently higher. The eye protruded in 9 cases. The patellar reflexes were increased in 67 cases, and absent in 50, with no change recorded in the rest. A Babinski reflex was observed in 55 cases, and a Kernig sign in 8 cases. General convulsions were noted in 32 cases. Clonic convulsions of the arm accurred in 6 cases, of the leg in 2 cases, and of the face in 7 cases. Rigidity of the legs was observed in 29 cases and of the neck in 29 cases. Complete muscular paralysis was observed in the muscles of the face in 47 cases, in the muscles of the legs in 55 cases, and in muscles of the arms in 58 cases. In this series of 1,000 cases, vomiting was a common symptom, and occurred in 361, or 36 per cent. of all cases. In 11 cases the vomitus was almost wholly blood.

9. A Case of Fatal Diabetic Coma without Diacetic or Beta-Oxybutyric Acid.—G. W. McCaskey believes this report of a case seems of sufficient interest to be placed on record because of the general tendency to trust to the Gerhardt reaction as a sign of impending coma in cases of diabetes. In the case reported the ammonia excretion was not estimated. The clinical picture was unmistakably that of the "alcoholic type" of diabetic coma. That it was really a coma from some type of acidosis was indicated by the transient improvement following the intravenous injection of large quantities of sodium bicarbonate. The principal clinical interest attaches to the absence of Gerhardt's reaction, showing that this cannot be relied on to exclude impending coma; neither can the low blood pressure which Ehrmann says is a nearly constant feature of the precoma state be depended upon. In this case the systolic pressure was 120, falling to 75 only when coma had actually supervened. Considerable scientific interest, however, attaches to the absence of beta-oxybutyric acid, as well as the absence of the intermediary body, acetic acid, and the presence of large quantities of acetone.

10. An Unusual Case of Appendicitis. — Warren G. Young says that every case of appendicitis is of some clinical interest to surgeon and physician alike; but some cases stand out on account either of the operative findings or of the complications which follow. It is to the latter class that the case he reports belongs, and it is of particular interest because it terminated in recovery. The gangrenous appendix in this case was clearly due to a constriction by a Jackson's membrane. The technical difficulties encountered in its removal were due to its posterior situation and to its being buried beneath a pericolic membrane, plus an adherent cecum. The early drainage of the peritoneal cavity, which was done thirty hours after the primary operation when the abdomen was reopened on the advent of a general peritonitis, was probably responsible for the favorable outcome. There was a retrocecal abscess which was located and evacuated under local anesthesia. This was followed by pleural involvement, the infection of the liver, prompt and radical treatment of the empyema, and drainage of the abscessed liver through the transpleural-thoracic route.

The Lancet.

Jan. 29 & 15, 1916.

1. The Fitzpatrick Lectures on Medicine, Magic, and Religion. Lecture II. W. H. R. Rivers.
2. Factors Responsible for Gaseous Gangrene. Kenneth Taylor.
3. Two Cases of Heart-Block. Christen Lundsgaard.
4. The Bactericidal Action of Normal and Infected Sera Upon Different Microbes. K. Sakagami.
5. A Case of Acute Rheumatism Occurring in the Tropics. G. Waugh Scott and Harold T. Skae.
6. The Radical Treatment of Rheumatoid Arthritis. M. J. Rowlands.

2. Factors Responsible for Gaseous Gangrene.—Kenneth Taylor describes his experiments upon the products of the bacillus which are responsible for the pathological changes in the clinical infections and in the experimental laboratory animals and concludes as follows: 1. The gas produced by the *B. aerogenes capsulatus* is of little or no importance as a toxic factor. 2. The mechanical action of the pressure produced is usually, if not always, the most important part of the infection. To it may be charged the development of highly pathogenic possibilities in a usually rather innocent infection. It brings about (*a*) the death of the tissues from the resulting anæmia produced by a pressure much higher than that of the circulating blood; (*b*) the actual mechanical fragmentation of the tissues, especially muscle; and (*c*) the mechanical scattering of the infection. 3. One of the chief problems in the treatment of the infection is that of establishing drainage for the escape of the gas before the pressure has resulted in the death of the tissue.

3. Two Cases of Heart-Block.—Christen Lundsgaard reports a case of paroxysmal auricular fibrillation and of paroxysmal intermittent heart-block in a man fifty-nine years of age suffering from aneurysm of the aorta. A transitory attack of irregular pulse was observed, appearing at one time to be an intermittent

heart-block; at another time an arrhythmia pertetua. He also reports a case of acute heart-block in a patient suffering from rheumatic fever. In this patient an intermittent heart was observed which disappeared the same day as the joint symptoms ceased and the temperature fell to normal. He thinks there is reason to believe that the acute heart-block in infectious diseases is due to direct infectious or toxic lesions of the auriculo-ventricular bundle. In rheumatic fever such a localized myocarditis may be associated with endocarditis. In most of these cases of heart-block occurring in infectious diseases the intermittent type is predominant, a total heart-block or 2:1 rhythm having been observed only a few times.

4. The Bactericidal Action of Normal and Infected Sera upon Different Microbes.—K. Sakagami, working under the direction of Sir Almroth E. Wright, in the Inoculation Department of St. Mary's Hospital, states that it was already known to our scientific predecessors what microbes would grow in normal serum and what would fail to do so but still they could not get definite results. He has been working at this problem, his idea being as follows: Microbes do not as a rule grow in normal serum; if they grow the serum has no bactericidal power, and we must use another power of the serum to kill them. A way must be contrived to make such serum bactericidal by adding to it some further power. The author classifies the conflicting opinions on this subject and describes his experiments from which he finds that the *Staphylococcus pyogenes*, pneumococcus, pseudo-tuberculosis, *Streptococcus pyogenes*, and *M. catarrhalis* grow in normal serum. Normal serum has a very small bactericidal action upon the staphylococcus during the first hour of exposure, but after many hours its power decreases. Serum heated to 60° C. has no power. Normal serum has no bactericidal power upon the streptococcus. The serum of tuberculous patients has smaller bactericidal power than normal serum upon the staphylococcus and streptococcus. Serum of those suffering from staphylococcus infections has a little stronger power than that of tuberculous patients. The serum of those suffering from tuberculosis and staphylococcal infections at the same time has more power than the serum of those suffering from tuberculosis only. The bactericidal action of the writer's own serum after he had been inoculated with cholera and typhoid mixed vaccines was noticeable on both these bacteria, but otherwise was unchanged.

6. Radical Treatment of Rheumatoid Arthritis.—M. J. Rowlands emphasized the importance of discovering and remedying the infective focus from which pathogenic organisms which have caused the rheumatoid arthritis have been absorbed. He considers the various foci of infection and describes his method of administering autogenic vaccines. If the pathogenic organism cannot be found elsewhere he recommends an examination of the urine since the organism is frequently found in the urine. While the dosage largely depends upon the type of case as well as on individual features of the case, the writer has a plan of beginning with a dose of five millions if the organism is a streptococcus, pneumococcus, or a diphtheroid bacillus, the dose being increased according to the reaction. The arthritic reaction is important as being the chief guide to subsequent doses employed. The writer always aims at bringing about a slight exacerbation of the joint symptoms; after this the patient usually reports marked improvement. There should be an interval of seven to ten days between injections, and when there is marked improvement this may be increased to fourteen or twenty-one days. The treatment should be continued for at least a year and should be accompanied by the usual forms of treatment, including attention to the general condition, removal to a bracing climate, baths, massage, tonics, etc.

British Medical Journal.

January 15, 1916.

1. The Bacteria of Gangrenous Wounds. H. R. Dean and T. B. Mouat.
2. The Treatment of Acute Toxemia Secondary to Gas Gangrene by the Intravenous Injection of a Solution of Hypochlorous Acid. John Fraser and H. J. Bates.
3. Notes on Clothing Against Cold. W. T. Grenfell.
4. Chloramine in the Treatment of Wounds of the Mouth and Jaws. A. R. Fisher.
5. Combined Preventive Inoculation Against Typhoid and Paratyphoid Fever and Bacillary Dysentery. J. Pratt Johnson and A. J. Milne.

1. Bacteria of Gangrenous Wounds. — H. R. Dean and T. B. Mouat have studied a series of 18 cases of gangrenous wounds, of which three only were fatal. Included in the series were 4 cases of tetanus, 1 of which was fatal, and 4 cases of gas gangrene, 2 of which were fatal. Of the 18 cases *B. œdematis maligni* was found in 15 and *B. aerogenes capsulatus* in 13. Both of these organisms are apparently possessed of powerful enzymes. The *B. aerogenes capsulatus* is peculiarly able to attack carbohydrates and the *B. œdematis maligni* proteins. Dorset's egg medium is an excellent medium for both microorganisms. The shape, size, staining reactions, and capacity for spore formation of these bacilli are profoundly influenced by the nature of the culture medium. The *B. aerogenes capsulatus* forms spores on Dorset's egg medium and inspissated serum, but not on media in which an acid reaction is produced. *B. œdematis maligni* forms spores less readily in acid media. The presence of *B. aerogenes capsulatus* and *B. œdematis maligni* is not necessarily associated with the development of gas in the tissues. Both of these microorganisms are essentially saprophytes. They have little or no power to multiply in living tissue. In dead tissue they grow rapidly and produce poisonous substances by which the adjacent living tissue is destroyed and rendered a suitable medium for the further multiplication of these bacilli. The *B. tetani* was not found in films made from the discharge in any one of the six cases of this series in which it was present. The recognition of the *B. tetani* by purely microscopical methods is complicated by the fact that slender Gram positive rods bearing an absolutely terminal spore may occasionally be found in pure cultures of *B. œdematis maligni* and *B. aerogenes capsulatus*. Moreover, pure cultures of tetanus bacilli, especially cultures on egg medium, contain many atypical forms. If broth is inoculated with material from the wound in a case of tetanus, and incubated under anaerobic conditions, the presence of *B. tetani* can often be satisfactorily demonstrated by animal inoculation. Such a broth culture should be examined at intervals, and two or three weeks may elapse before the tetanus bacillus can be demonstrated. The discovery of this bacillus in the wounds of a patient who has not developed tetanus is obviously an indication for one or more prophylactic injections of antitetanic serum. Indeed it is probable that the three organisms under consideration have probably a common source and the conditions favorable to their growth within a wound are probably identical, hence the discovery of either of these bacilli may with advantage be followed by a prophylactic injection of antitetanic serum.

2. Acute Toxemia Secondary to Gas Gangrene.—John Fraser and H. J. Bates have made a report on this subject to the Medical Research Committee in which they state they have observed that men suffering from an infection of their wounds by a gas producing organism frequently succumb to what appears to be an

intense and progressive toxemia which they find extremely difficult to treat. Following Professor Lorrain Smith's suggestion they are now using intravenous injection of a solution containing 0.5 per cent. hypochlorous acid (eusol) to which is added 8 grams of sodium chloride per litre and the results obtained most thoroughly justify the adoption of this method. They report cases presenting apparently the same condition, some of which were treated by this method while in others it was not used. In the cases in which these injections were given the improvement was prompt and striking, and the patients went on to recovery. The injection was made by means of a Record syringe into the median basilic vein. In two of the cases 40 c.c. of the solution were injected and in a third 70 c.c. This latter case showed that in some instances the larger dose might be given with advantage.

4. Chloramine in the Treatment of Wounds of the Mouth and Jaws.—A. R. Fisher says that the septic character of all gunshot wounds involving the mouth and the disadvantages attending the use of the common antiseptics led him to try chloramine (toluene sodium sulphochloramide) in seven cases, five being compound fractures of the jaw and two flesh wounds involving the mouth. A two per cent. aqueous solution of this agent was used for irrigation, which was carried out every hour during the day and as often as possible during the night. Chloramine besides being a powerful antiseptic has the property of penetrating the tissues, and is not so readily neutralized by albuminous discharges as the simpler chemical antiseptics. It is bland and non-irritant. While the number of cases treated was small the results were most encouraging.

5. Combined Preventive Inoculation against Typhoid and Paratyphoid Fever and Bacillary Dysentery.—J. Pratt Johnson and A. J. Milne present a preliminary report of their investigations into the possibility of amplifying the scope of preventive inoculation so as to afford protection not only against typhoid and paratyphoid fever, but also against bacillary dysentery. They use a typhoid and paratyphoid combined with sensitized dysentery vaccine, containing in 1 c.c. *B. typhosus*, *B. paratyphosus*, A, and *B. paratyphosus* B 500 million in a ratio of 2, 1, 1, plus *B. dysenteriae* (sensitized) 250 million. A dose of 1 c.c. is recommended as a first inoculation, followed after an interval of seven or eight days by a second inoculation of the same amount. It is important that the inoculations be made in subcutaneous tissue over muscle. The writers have found the pectoral region convenient. In order to secure accurate doses a 1 c.c. syringe with a moderately fine needle should be used. After one inoculation of a combined untreated vaccine specific agglutinins were found in the blood after an interval of nine to fourteen days for each of the four organisms present. Immunity was therefore rapidly produced, and it appears that the complete sensitization of the dysentery organisms not only reduces the local reaction, but produces a much more rapid and satisfactory immunization.

Berliner klinische Wochenschrift.

December 20, 1915.

Pruritus Hiemalis.—Unna regards this condition as dependent upon that state of the circulation which manifests itself in the formation of small varices, especially about the knee, calf, and ankle. The exciting causes are cold weather and exposure of the skin, as in disrobing. It is absent throughout in summer and appears with the first frost. The rationale appears to be that the venous stasis leads to oxygen hunger, this in turn causing the itching. Another local factor is seen in the cornification of the skin which results from lack of oxygen in the stagnant blood. The winter flannels, according to this view do not cause the preventive, but actually prevents it by the resulting equable warmth. "Flannel itch" is quite a different affection. Scratching the skin causes active congestion, and as the capillary blood pressure becomes raised itching becomes intense and a burden, since it may give trouble all night. The usual effects of scratching becomes superadded to the skin, which may show thickening infection, eczema, etc. In time a chronic eczema develops. An ointment containing camphor and carbolic acid will relieve the itching, but for a cure it will be necessary to overcome mechanically the relaxation of the venules, either with elastic stockings or medicated plasters or both.

Recent Developments in Kidney Research.—Schrumpf gives a review from literature of the recent progress made in advanced studies of renal disease. A number of the contributions which he has covered have already been abstracted in this column. The distinction between nephroses and nephrites is not accepted on all sides and it is naturally very difficult to separate primary degenerative processes from inflammation and its results. It is likewise difficult to separate a purely arteriosclerotic kidney from diffuse glomerular nephritis which is so surely followed by cardiovascular lesions. It is inevitable that these viewpoints necessitate many mixed types and the pathology of the kidney can hardly be regarded as simplified by studies along these lines which are necessarily pathological, not clinical. Certain facts stand out plainly—thus experimental sublimate poisoning can produce at will a simple nephrosis. In the nephrosis type we see edema, from lack of renal permeability; a very large per cent. of albumin and formed elements; scanty and dense urine, etc. But one sees neither hematuria, high blood pressure, cardiac hypertrophy or changes in the fundus oculi. Uremia and convulsions never take place. Even the terminal shrinking of the organs does not in itself lead to death. Nephroses are practically of toxic origin, while nephritides are of bacterial origin, usually the streptococcus and pneumococcus being accused. True pregnancy kidney is a nephrosis without elevated blood pressure, but pregnant women also have nephritis with blood pressure raised. Nephritides occur in numerous clinical forms, but there is always blood in the urine of acute cases, never much albuminuria. Complete suppression of urine may occur—in fact a long parallel can be drawn between a nephrosis and a nephrites in which the symptoms of one are the reverse of those of the other. Hypertonia is a condition not the same as arteriosclerosis although it may lead to the latter. It is benign throughout. The patients have hypertrophy of the heart and a very high blood pressure. Cardiac asthma is present and valuable for diagnosis; moreover it disappears under dry diet. The second aortic sound is not always accentuated. Various evidences of cardiac insufficiency are seen, but these are not of a marked degree. Edema is almost never seen. In malignant or arteriosclerotic hypertonia the urine may appear quite normal, while albuminuria may be absent. Symptoms of N-retention are seldom seen, but many vascular phenomena are in evidence as apoplexy, vascular spasms, vascular crises, etc.

Münchener medizinische Wochenschrift.

December 21, 1915.

Pneumoperitonitis. — Doerfler describes a condition barely known in text book literature in which a post-

operative peritonitis is complicated by the presence of gas, either generated *in loco* or else escaped through an intact intestinal wall. The condition bears a close resemblance clinically to acute septic peritonitis with total intestinal paresis. Pneumoperitonitis may be best understood through an actual case, such as the following: the author had operated on a middle aged man for irreducible omental scrotal hernia. The omental stump was replaced in the abdominal cavity, and the herniotomy wound had healed by first intention. The asepsis seemed complete. Nevertheless colic fever and meteorism developed almost from the outset, all, however, in mild degree, the general condition being uninfluenced. There was no vomiting and gas escaped after a glycerine enemata. Not until the sixth day, or thereabout, did the symptoms seem cumulative. Meteorism had now become pathological, and tenderness was no longer localized. The tongue began to dry and the hot air chest and physostigmine were used to combat the meteorism. The latter, however, became more and more pronounced, in the absence of obstruction of the intestine. Castor oil caused stools but no lessening of meteorism. The stomach was siphoned out with the same negative result. Cyanosis and intermittence of the heart contrasted with the fairly good general condition. The author was still unable to think of anything but paralyzed intestines, and proceeded to institute a colonic fistula. As he divided the parietal peritoneum a strong hissing sound was heard and the meteorism subsided, to the great relief of the patient. It was certain that the intestine had not been wounded. Inspection showed that there was no distention of the coils, but instead a collapse. The external wound was closed and the patient at once improved. Within two days, however, the former status began to reappear, and diarrhea became a prominent symptom. Paracentesis abdominis was performed a number of times without wounding the intestine, and the gush of air was strong enough to extinguish a match. The first step toward establishment of an intestinal fistula was performed, as an emergency measure. The opening into the peritoneal cavity was prevented from closing by a tampon. During the next two weeks the patient steadily failed. The autopsy showed that the upper and lower halves of the peritoneal cavity were isolated from each other by adhesions between the omentum and intestine and the abdominal wall. The lower half showed no abnormalities, but in the upper space suppuration had occurred, and an ordinary purulent peritonitis was present. How explain the phenomenon of pneumoperitoneum? Beyond expressing his belief that a gas forming bacillus was responsible in some way, the author has nothing to offer in answer to this question. A similar case reported by Malcolm, an American surgeon, ended in recovery, apparently because of sufficient drainage. The subacute course of the case was naturally misleading, as no urgent indication for radical procedure was forthcoming. Forthe failure of asepsis the author blames the catgut used.

Deutsche medizinische Wochenschrift.

December 16, 1915.

Functional Nervous Disturbances in Soldiers, etc.—Meyer states that military experiences quite notably give rise to psychoneurotic disturbances of psychogenic origin, especially in predisposed individuals. Aside from individual predisposition it would indeed be a miracle if the persistent, almost superhuman efforts, the privations and somatic injuries could affect the highly organized, civilized creature and not leave him without some traces of the ordeal. The results naturally are similar in kind to the traumatic neuroses in civil practice; indeed many of the army cases would be adjudged as simple traumatic neurosis. A subject of active interest in this connection is the relationship between progress and deterioration, which in turn leads to the supposition that warriors may hand down their nerve wreckage to posterity. But such a result would surely have its compensations.

Systolic Functional Heart Sounds. — According to Treupel these have a most varied origin, which may be intra- or extracardial (cardiopulmonic murmurs). They are often spoken of as accidental murmurs. Most commonly they are due to acceleration of the velocity of the blood current, relative insufficiency of the mitral valve, and particularly current relations at the pulmonic ostium, and nervous influence upon the decline of cardiac contraction. These generalizations, however, hardly do justice to the many special problems involved in functional murmurs. Thus, let us suppose the existence of a high diaphragm. The *x*-ray shows us not only a broadening of the heart's shadow but a kinking at the origin of the pulmonalis. This anatomical status would account for a murmur. Certain murmurs are veidently due to dilatation. In fact Henschen regards all functional murmurs as belonging here. Dilatation results from disturbances of nutrition in the heart muscle, as seen in anemias, infections, intoxications, etc. Others, however, cannot see a dilatation component in these cases. Henschen's criterion is simple percussion, but the *x*-ray has shown that his diagnosis is often correct.

Experiences with Malignant Phlegmon.—Under this head Tappeiner describes two types of this affection, of which one is gas phlegmon, while the other, unnamed, is still more severe in type. Gas phlegmon may follow any kind of wound but is more often seen in deep, ragged injuries with much wreckage of soft tissues. It is correspondingly rare after clean wounds from infantry bullets. As a rule wound infection appears in about three days, exceptionally during the first twenty-four hours, and at the margins of the wound. Gas phlegmon has simulated emphysema, which must be excluded. Palpation about the wound edges will cause the sensation of crepitus. There may also be latent or delayed infection with the bacillus of gas gangrene. The general symptoms are often those of sepsis. The patient feels well, and even experiences euphoria. This mental status does not prevent a physical collapse which often demands prompt intervention. Free, deep and multiple incisions must be followed up by disinfection with hydrogen peroxide. The author has cured at least 50 cases of gas phlegmon in this manner. The other form of phlegmon is of a livid appearance. This coloration must not be confounded with erysipelas. The swelling is only medium in amount, and the tenderness but slight; the former is due to a gelatinous infiltration of the connective tissue. When, however, it occurs in a limb the latter may swell greatly, doubtless because of venous thrombosis. In contrast to the gas phlegmon, the process may begin at some distance from the injury. The radical management of this type is much the same as that for gas gangrene.

Magnesium Chloride in Wound Treatment.—Pinard states that he treats all wounds by application of an 18:1000 magnesium chloride solution. The wound is first irrigated with the solution and is then covered with a thin layer of sterile absorbent cotton wet with same. In case of profuse suppuration the dressings are changed twice a day for the first five days, then once a day.—*Bulletin de l'Académie de Médecine de Paris.*

Book Reviews.

QUANTITATIVE LAWS IN BIOLOGICAL CHEMISTRY. By SVANTE ARRHENIUS, Ph.D., M.D., LL.D., F.R.S., Nobel Laureate, Director of the Nobel Institute of Physical Chemistry. Price, 6 shillings net. London: G. Bell & Sons, Ltd., 1915.

IN 1904 Arrhenius delivered an important series of lectures, published three years later, on the application of chemistry to the study of biological antibodies. In these lectures he applied the laws of physical chemistry to certain quantitative researches, made chiefly by Madsen in the Danish Serum Institute, on the observed processes of immunity, and also analyzed a large number of similar experiments published by other investigators, showing that when observations were made with sufficient accuracy they conformed to the laws deduced by the physiochemical study of simple chemical reactions. While this monograph did not add new observations, it correlated many apparently unrelated phenomena; showed that Ehrlich's method of explaining immunity by a happy nomenclature left many questions unsettled; and laid the foundations for further investigations. Many of these points are included in the new volume just issued by this talented author, which is a re-working of the Tyndall lectures of the Royal Institute for 1914. In it fresh illustrations are given of the importance of the application of the laws of physical chemistry to biological phenomena. The rates of the reaction as observed in digestion experiments are examined and shown to follow the same law as such widely separated processes as the inversion of cane sugar, the decomposition of tetanolysin, and the destruction of hydrogen peroxide by colloidal platinum. The influence of temperature on the inversion of cane sugar, on the saponification of cottonseed oil, and on the coagulation of milk is also shown to be similar in all these widely different processes. It is interesting to note that the killing of bacteria by disinfectants, their destruction by hot water, and the hemolysis of red cells, all follow the same physical laws. As immediately practical these studies can not for one moment be considered, but they point the way to further research which may add much to medicine. Until we can apply quantitative methods to these complex biological phenomena, we can know but little; and Arrhenius and his pupils have done much to clear up some phases of an extremely vague and difficult subject, about which much has been published, but in which much still needs clarification.

A MECHANISTIC VIEW OF WAR AND PEACE. By GEORGE W. CRILE. Edited by Amy F. Rowland. Price, $1.25. New York: The Macmillan Company, 1915.

THIS volume presents the substance of a lecture delivered at the Western Reserve University and constitutes an application of the principles enunciated by the author in his work "The Theory of the Emotions" to conditions observed while in the war zone. To those familiar with the larger work it is unnecessary to go further. Crile sees in war an intense activation of the kinetic system of all the inhabitants of the warring nations, an activation which made necessary a release of muscular activity of one sort or another. He speaks of the comparative anesthesia accompanying a state of exhaustion and cites numerous interesting instances. he attempts to show that the "action-patterns" of war are established in our minds from the earliest moment and that therefore it is highly improbable that war will ever become a thing of the past. Nevertheless if this result is ever reached it will be because education has been exploited as efficiently as war and a civilization built up "freed to some extent from its menacing phylogeny." It is a most interesting philosophical discussion, though we rather doubt the possibility of its practical application.

INDIVIDUALITY IN ORGANISMS. By CHARLES MANNING CHILD, of the Department of Zoölogy, the University of Chicago. Price, $1.25 net. Chicago: The University of Chicago Press, 1915.

THIS book supplements and completes the author's presentation of his system of biology contained in his work "Senescence and Rejuvenescence," which was reviewed in a previous issue of the MEDICAL RECORD. In size and weight it is in pleasing contrast with its ponderous predecessor. In matter it is an expansion of Chapter IX of the larger work, and the style is the same. The present volume can hardly be regarded as an independent work, for in order to understand its contents one must have read the other.

The problem discussed is the nature of that unity which we call an organic individual. The point of view is physiological. The organism is regarded as a reaction system consisting of certain physico-chemical activities in a specific protoplasmic substratum. Differentiation is due to differences in strength of stimuli received at different levels from the region of greatest metabolic activity,—the apex of the stem in plants, the head in worms, the brain in higher animals. It is a dynamic, as contrasted with a morphological, conception of the individual.

The problem is stated and the proposed solution outlined in the first three chapters. The evidence drawn from experiments on regeneration in various lower animals and plants, occupies two chapters, and is the most interesting part of the book, which closes with an interesting chapter on the relations of the author's views to problems of reproduction and heredity.

As pointed out by the author, the problems of reproduction, differentiation, and heredity have been attacked chiefly by morphologists from the point of view of structure. The value of the present work lies in the light it throws on these problems from another angle. The explanation offered, based as it is upon a long series of carefully conducted experiments, is attractive in its simplicity. But it remains to be proved that it is adequate to explain the extremely complex phenomena in question.

AMNESIA AND ANALGESIA IN PARTURITION (Twilight Sleep). By ALFRED M. HELLMAN, B.A., M.D., F.A.C.S., Adjunct Attending Gynecologist and Obstetrician Lebanon Hospital, Attending Gynecologist German Hospital Dispensary, Fellow New York Academy of Medicine, etc. Price, $1.50. New York: Paul B. Hoeber, 1915.

TWILIGHT sleep is probably more widely discussed among the laity to-day, than any other medical subject. For this very reason every physician is constantly being asked his opinion as to its value. Unfortunately in many instances he is unable to give an intelligent unbiased opinion as he has had neither the time nor the opportunity to acquaint himself thoroughly with the subject. For this reason we should welcome Dr. Hellman's book. In it he has made it possible for one with a minimum expenditure of time and effort to get a very clear idea of the nature and value of twilight sleep. Dr. Hellman briefly reviews the history of scopolamine in obstetrics, and then takes up in detail the Freiburg technique of twilight sleep. Following this he discusses the controversy between Freiburg and Berlin. The history of twilight sleep in England and America is also reviewed. The book is well written and concise and should prove valuable.

LABORATORY METHODS, with Special Reference to the Needs of the General Practitioner. By B. G. R. WILLIAMS, M.D., and E. G. C. WILLIAMS, M.D., with an Introduction by VICTOR C. VAUGHAN, M.D., LL.D. Third Edition. Price, $2.50. St. Louis: C. V. Mosby Company, 1915.

A CAREFUL perusal of this volume will cause the reader to have a good deal of sympathy for the poor general practitioner who is being so carefully looked after. The object is apparently to instruct those men who have had insufficient teaching in their medical course, and several of the methods advised are curiously ill-adapted for this purpose. The authors apparently never think of the difficulty and danger of handling sputum and bacterial smears made on cover slips, and so do not mention the use of slides, which is much more convenient. The bacteriological section is quite inadequate in conception as well as treatment. Can one imagine doing any bacteriology with a basin of 1:1000 bichloride at one's elbow, in which one's hand are to be immersed every little while? Speaking of the gonococcus, they say "it is not necessary to use Gram's stain in order to avoid confusion with other micrococci," surely a very dangerous teaching. Blood smears, paradoxically, are directed to be made on slides. They prefer the diazo test to the Widal in the diagnosis of typhoid fever. It would take much too long a time to mention all the points in which the authors differ from the reviewer. Certainly it is not a safe or valuable volume to hand to the untrained "general practitioner," without a warning as to its limitations, while a laboratory man of any experience would have little use for it.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held December 27, 1915

THE PRESIDENT, DR. HOWARD LILIENTHAL, IN THE CHAIR.

Bronchiectasis from the Standpoint of the Bronchoscopist. — Dr. SIDNEY YANKAUER presented this paper in which he stated that the bronchoscope had been used for over a decade for the removal of foreign bodies, but up to the present time had not been employed for the endobronchial diagnosis of chest diseases. This was largely because bronchoscopy was more difficult than other endoscopic procedures, because respiration must proceed uninterruptedly through the bronchoscope itself during the entire examination. The extreme sensitiveness of the mucous membrane stimulated deep breathing and the respiratory movements caused a continual displacement of the field of vision. Coughing and expectoration of mucus obscured the illumination and interfered with the observer's vision. With the perfection of the instrumentarium these difficulties had been sufficiently overcome for the purpose of removing foreign bodies. For the purpose of endobronchial diagnosis, however, the bronchoscopist must have matured his experience to such a degree that the introduction of the bronchoscope, the recognition of the tracheal bifurcation, the entrance into the right or left bronchus at will, and the identification of the openings of the individual secondary branches leading to each of the five lobes of the lungs had become matters of elementary simplicity. The endobronchial diagnostician must observe the size, and shape of the trachea, the main bronchi and the secondary and tertiary branches as far as he could see; he must observe the color and texture of the mucous membrane in all parts of the bronchial tree; he must note the respiratory and cardiac pulsatory movements, the size, configuration, and position of the bifurcation as well as the spurs which mark the opening of the minor branches, and he must determine the amount, character, and source of any secretion that might be present. A suction apparatus had been used for some time for the removal of secretions. When the technique of its employment was understood it was a valuable aid in diagnosis. The bronchoscopist must also be skilled in the use of forceps for the removal of specimens for microscopical examination. Specimens should never be taken from the spurs at the openings of the branches, since at this point the mediastinal tissue came close to the surface. Specimens should be removed only from the lateral walls. In the majority of patients suffering from bronchiectasis or lung abscesses, bronchoscopy was well tolerated. In tolerant individuals it could be performed under local anesthesia; in those less tolerant, under local anesthesia after the previous hypodermic use of morphine, with or without scopolamin. In patients who were not tolerant or those with short thick necks general anesthesia was advisable. The writer considered the endobronchial diagnosis of bronchiectasis under the following heads: (1) Foreign bodies, (2) benign tumors, (3) malignant growths, (4) syphilis and tuberculosis, (5) differentiation between various forms of the disease itself. The cases in which foreign bodies had remained in the bronchus for a long time corresponded in their clinical course and physical signs exactly with the cases generally diagnosed as bronchiectasis, with the exception that the history of the inhalation of a foreign body was definitely given as the cause of the cough. However, a number of cases might be cited in which such a history could not be obtained and yet in which a foreign body was discovered to have been the cause of the trouble. Furthermore, the radiograph did not always show the presence of a foreign body even when one was known to be present. If the foreign body happened to be one transparent to the rays the picture obtained would be the same as in lung abscesses in which there was no foreign body. When a foreign body was found in a bronchiectatic cavity, its removal had resulted in a cure of the suppurative condition, whenever the foreign body had remained intact, so that it could be completely removed. Every case of bronchiectasis or lung abscess should be bronchoscoped for the purpose of locating any foreign body that might be present and no major operation was justifiable until the presence of a foreign body had been excluded by bronchoscopy. The writer had seen about nine cases of lung abscess following the removal of the tonsils under general anesthesia. The exact relation between the tonsillectomy and the lung abscess was not clear and Dr. Morris Manges was making a study of it. Benign tumors might occur in any part of the bronchial tree; for instance, the writer had removed a granuloma from the lower part of the trachea, had found a stenosis of the left main bronchus caused by the pressure of an extrabronchial growth, and a stenosis of the lower part of the trachea caused by pressure upon the left side of the trachea of a pulsating tumor which was afterwards determined to be an aortic aneurism. A number of cases cited showed that a bronchoscopic examination in cases of carcinoma had revealed a change in the texture of the mucous membrane, it being darker in color and having a nodular or granular appearance. Specimens removed through the bronchoscope in these cases showed the presence of carcinoma. If bronchoscopic examination was made early there was no doubt that quite a few lung cancers could be recognized early enough to permit of successful surgery. Endobronchially three groups of cases could be distinguished. In the first of these there was dilatation of one or both of the main bronchi which could be distinctly recognized through the bronchoscope. In the other two groups the main bronchi were not likely to be dilated, but contained secretion, which even when evacuated by the suction apparatus, continued to reappear from the smaller bronchi. From the surgical standpoint it was of the utmost importance to distinguish between cases of diffuse dilatation of the larger bronchi, cases of multiple peribronchial abscesses, and cases of abscess involving only one part of the lung. It was not only necessary in such cases to recognize that pus came from a single branch only but also to identify the particular branch from which it came. The author cited cases that illustrated the accuracy with which a pulmonary lesion could be located through the bronchoscope and also the accuracy with which changes in the texture of the mucous membrane could be recognized. Considering the novelty of the endobronchial method in the diagnosis of these conditions the results thus far obtained had been most encouraging. In most instances which had come to operation or to autopsy, the endobronchial diagnosis had been confirmed. In handling these cases the writer had secured definite results by the following method which he had devised. He had constructed a double tube which was introduced into the bronchiectatic cavity through the bronchoscope; through the smaller tube normal saline was injected, while at the same time suction was applied through the larger tube. The fluid was thus removed as fast as it entered the bronchus. By directing the tube at various parts of the wall of the cavity, a thorough irrigation was accomplished. It had been possible in this way to irrigate each lung with about eight ounces of salt water at one sitting under local anesthesia. After two or three irrigations the foul odor of the secretion disappeared and the amount became markedly reduced. This beneficial effect lasted only a few days unfortunately, when the irrigation had to be repeated.

DR. MORRIS MANGES said he could find but one fault with the paper, and that was with the title, which he believed to be misleading in not showing the worth of the paper. It was the general practitioner who must be reached if these cases were to be properly treated. The work done in bronchiectasis in clearing up this field and especially in the differentiation of this condition, the work of Drs. Yankauer, Meyer, and Lilienthal, would be defeated unless the general practitioner received proper instruction regarding bronchiectasis. Dr. Manges said he trusted that what Dr. Yankauer had brought out would be an incentive for others who were working in this field of diagnosis. Bronchiectasis was a common disease and continued year after year. The reason for the failure of its recognition was because of the lack of proper education of the general practitioner. The *x*-ray diagnosis was often misleading and it had been Dr. Yankauer's privilege to correct many *x*-ray diagnoses. By means of the bronchoscope a diagnosis of bronchiectasis should be made earlier. With regard to foreign bodies it should be an axiom in every case of bronchiectasis and in every case of pulmonary suppuration, especially if monolocular in character, that the condition should be regarded as possibly due to a foreign body. The attempts to relieve the advanced cases of bronchiectasis by washing out with argrol and other solutions showed what could be done. In regard to the frequency of abscess of the lung occurring after tonsillectomy, in one hospital nine cases came under observation within a period of four months.

Dr. WILLY MEYER said that they all recognized the value of the bronchoscope particularly when they wished to make a refined diagnosis of these conditions. Bronchiectasis was a peculiar disease. An attempted diagnosis by means of auscultation and percussion was extremely difficult and showed how little could be learned by these means. Much depended upon the history of these cases, such as clubbed fingers, etc. Efforts to localize the trouble became a task of extreme difficulty. In bronchiectasis it had been proposed to inject the bronchial tree with collargol and this was what he proposed at the International Congress of Surgeons which met in New York in 1914. But not much had been accomplished by this procedure. Dr. Meyer hoped that more good effects would be shown by the use of bismuth. It should be remembered that these patients came first into the hands of the general practitioner and, therefore, the necessity that a refined diagnosis, a distinct diagnosis, be made early, should be emphasized. These were surgical and not medical cases. Nothing but a radical operation would help these individuals.

Dr. N. W. GREEN said that bronchoscopy, although a difficult procedure, was becoming easier as the instruments used were becoming more efficient. The bronchoscope was surprisingly well tolerated by the conscious patient. It gave one the means of exact visual diagnosis, in many cases surpassing the *x*-ray. The *x*-ray should be used first in cases of long standing. The bronchoscope was an instrument of precision after an area under suspicion had been located by radiography. It was comparatively easy to pass the tube down the bronchus and into the cavity if one had a suitable aspirator with which to remove the pus. Dr. Green agreed with Dr. Yankauer that it was advisable to have cases of lung abscess or bronchiectasis examined with the bronchoscope before further surgical procedure. In many cases coming to a general surgical service the chest must be opened to let out the pus of an ampyema which was secondary to a lung abscess. This might establish a bronchial fistula. In these cases this was not a bad thing. It was a question of the pus in the cavity being emptied through the mouth in large quantities or through the side into dressings. In the bronchial fistula cases there was better drainage and the health of the patient improved while the chest remained open. After the pus had been evacuated the bronchoscope should be used to search for a foreign body. The depth of a cavity from the chest wall and the distance from the glottis might be estimated with the brónchoscope and an indication might be obtained as to the subsequent surgical procedure. Removal of the foreign body alone would not always clear up the pus. In this class of lung cavities it was well to proceed very slowly. Surgical procedures should be carried on in several stages, doing only enough at one time to complete one stage and leaving the patient with a reserve for safety. As far as was feasible it was well to do the preliminary stage under local anesthesia. Surgical treatment must first aim to reduce the size of the cavity emptying into the bronchus; later it must be more radical if the pus was to be cleared up. It might be will to let the patient pass his years under improved rather than cured conditions, since an attempt to produce absolute cure in these cases might lead to fatalities.

Dr. GEORGE MANNHEIMER said that these cases of bronchiectasis usually landed in tuberculosis institutions. There were some features which distinguished such cases from the ordinary cases of tuberculosis. The condition was usually located in the lower lobes. Dr. Mannheimer called attention to one form of treatment employed, practically placing the patient "on his head" by raising the foot of the bed. Posture in these cases was of great help. The examination of the sputum gave most valuable diagnostic aid. But if there were elastic fibers present in the sputa, but no tubercle bacilli, he said they could be reasonably sure that the case was not one of tuberculosis. Patients with bronchiectasis should not be consigned to tuberculosis hospitals. The open-air treatment for them, however, was as valuable as it was for the tuberculous patient.

Dr. HOWARD LILIENTHAL said that the importance of the use of the bronchoscope in bronciectasis could be compared with the importance of the cystoscope in diseases of the kidney. The bronchoscope gave some kind of information regarding any disease of the bronchial tubes and lungs just as did the cystoscope in diseases of the kidney (not of the bladder). With regard to the cases of bronchiectasis following tonsillectomy, nine cases had been reported at the Mount Sinai Hospital within a period of four months; to this number he said he could add one more case, making ten altogether, and all the patients were absolutely miserable. If they could have been operated upon early it would have been fortunate because a cure might have followed. In these cases there was a history of quinsies with final removal of the tonsils; there was the characteristic sputum, the clubbing of the fingers, and the *x*-ray showed a bronchiectasis of the middle lobe of the right side in one case. After operating upon this case, the patient was discharged cured at the end of two months. This was one of five cases Dr. Lilienthal had operated upon with good results. In every case he had followed, when the end came it resulted from hemorrhage. Because of the adhesions which formed he did not believe in a two-stage operation, but he believed the operation should be finished at one stage.

Dr. YANKAUER said that the solution used was the normal saline. Injections of *x*-ray opaque substances had been tried repeatedly. He had often used collargol but it was immediately expelled. However, if the bronchus had been irrigated before the use of collargol, more of the injected material might have remained in the bronchiectatic wall.

Some Observations on the Action of Pituitary Extract.—Dr. SAMUEL W. BANDLER read this paper. He stated that pituitary extract was supposed to have a decided effect in stimulating the contractions of the bladder and in giving force to intestinal peristalsis. He had found little need of it in the bladder cases, since its action was uncertain and in the female, catheterization was so readily carried out that the bladder could be emptied with minimum difficulty and with practically no danger of infection if urotropin was used systematically. As to the action of pituitrin on intestinal peristalsis, Dr. Bandler said he could speak with the greatest certainty and assurance. In postoperative cases, often as a routine procedure, it had a very beneficial effect in starting the intestinal activity as an aid to enemata or drugs given by mouth; repeated hypodermic injections of pituitrin often overcame symptoms simulating intestinal paresis, and as a general stimulant in post-operative cases it was of the greatest value, taking a position on a plane with caffeine, strychnine, digitalis, and camphor. The writer had used it in quite a number of cesarean section cases in small doses, repeated several times a day, for several days after the operation. It not only had an excellent effect on the uterus, but its effect on the intestinal activity could be readily recognized. In performing a cesarean section, as soon as the incision was made in the abdominal wall, a hypodermic injection of pituitary extract was given. Its effect in contracting the uterus after the extraction of the fetus and placenta was marked; there was naturally no bleeding at all from the sides of the wound, and the interior of the uterus bled only to the slightest degree. It also rendered sewing the uterus a most simple procedure. Another reason for continuing its use in cesarean section was because of its stimulating action on the secretion of the breasts. After cesarean section, Dr. Bandler said he did not limit himself to pituitrin alone but gave these and all other post-partum cases ergotole for long periods. In the third stage of labor he always used ergotole, no matter how much pituitrin might have been given before. The value of this drug during the emptying of the uterus in abortion, hydatid mole, etc., varied, but in his experience it had no marked action, at least, no rapid action, though he used it in practically every case. He used the drug every day and for many days after abortion, and after curettage for menorrhagia or metrorrhagia. An ampoule was given in one or divided doses. The effect upon the contraction of the uterus and its action upon the ovaries was sometimes quite marked, in other cases quite slow. The hypodermic use of pituitary extract was an excellent ambulatory treatment for menorrhagia or metrorrhagia in young girls, in whom examination, or treatment, or curettage were out of the question. A hypodermic might be given every day if possible for days or months. Only rarely were such patients so sensitive that the drug had to be given in small doses. A series of thirty-three cases of menorrhagia and metrorrhagia treated in this way at the Post Graduate Hospital by Dr. J. S. Boldt included cases of fibrosis uteri, fibroids of the uterus, hyperplastic endometrium, subinvolution, retroversion, vaginal fixation, salpingo-oophoritis, and posterior parametritis. The number of injections given varied from ten to thirty, one c.c. being given every other day hypodermatically. The reaction was very slight and the results were immediate. It acted much more promptly and efficiently

than any other drug available at present. The effects of the drug were not permanent; it lasted over two menstrual periods, in a few cases longer, than the symptoms tended to return. If pituitrin might not be given by needle, then the extract of the posterior lobe or of the whole gland might be given in powdered form. The whole gland in capsule might be given for long periods, with encouraging results. The whole gland was a splendid tonic in some cases of asthenia. The greatest find as regarded the physiological action of pituitrin was to be noted in the field of parturition. It had no effect in inducing labor, but once labor was on the way, whether recognized or not, the action of the drug was most remarkable. This had suggested the use of the hypodermic injection of pituitrin as a means of differentiating between true and false labor pains and thus relieving the obstetrician's doubt as to whether the patient was in labor or not. If the patient was in labor three hypodermics would produce regular, rhythmical, continued labor pains; if the patient were not in labor small pains might be produced which would stop in half an hour or so and would not recur. A field in which pituitary extract found an excellent opportunity for effectual action was in the induction of labor. If a Barnes bag was introduced into the cervix, a few hours afterwards the patient experienced a sensation of pressure and discomfort, if then pituitary extract was given in small doses and repeated, labor pains came on and labor progressed without any difficulty. In dry labor pituitary extract given shortly after the membranes ruptured had saved hours and hours of waiting. As to the indications for the use of pituitrin in labor, it might be said that when conditions were normal, and the relation between the fetal head and the pelvic bones was normal, when the presentation was normal, when all that was needed was sufficient uterine force, then one might use pituitary extract. Emphasis must be laid on the expression, all that is needed was sufficient uterine force. In labor the action of pituitary extract in primigravidæ, if properly brought into force, reduced the duration to one-half, so that the average duration of labor in a primigravida could be made between seven and ten hours. After giving pituitary extract one might leave a primigravida for a while, but one might never do this with a multigravida. The head of the fetus must be well molded and fixed in and through the brim of the pelvis before pituitary extract was given by the general practitioner. But whatever the stage of the labor this rule did not hold good in women who had had one or more children, because in them the head was rarely fixed in the brim before or in the early stage of labor. Here one must be guided by the history of previous labor or labors. The important point with reference to pituitrin was that it diminished the necessity for forceps most decidedly; in fact, in his own practice it had almost abolished the use of forceps under this circumstance. Moreover, the pituitrin saved the loss of time and waste of strength incident to a prolonged labor. As soon, in the second stage, as uterine forces were no longer effective in causing the fetus to descend satisfactorily, pituitrin might be given. Pituitary extract was not contraindicated when the head lay well molded in or just past the brim, with the membranes unruptured, and the cervix refused to dilate. This condition was an indication for its use. There was no danger of rupturing the uterus so long as the membranes were intact. The action of the drug, however, lasted only a short time and it must be repeated in small doses. It was natural that a rupture of the uterus should occur with large doses of this drug where there were malrelations, malpositions, and disproportions between passage and passenger. From his personal experience Dr. Bandler said he felt that he could do with pituitrin even if more slowly, all that forceps had ever accomplished, and could do it just as faithfully and with equal certainty as to the life of the baby, and surely with greater assurance as to the conservation of the soft parts of the perineum.

Dr. Joseph Wiener said he wished to discuss the paper from the surgical standpoint. The field for the use of pituitrin was a large one; Dr. Bandler's field was only one of the many which called for the use of this agent. In regard to the methods of administration, there were three: by the mouth, hypodermically, and intravenously. Dr. Bandler regularly gave it in only one of the three ways, namely, hypodermically. He advised against giving it intravenously because it was a dangerous procedure. Dr. Wiener said he had never seen any bad results from the hypodermic or intramuscular injections. Used in either of these two ways in postoperative and all abdominal operative conditions, it was of great value, especially in helping to clear up existing intestinal paresis which might in time become an intestinal obstruction. There was another advantage in the use of pituitrin in postoperative conditions in that it permitted the use of large doses of morphine after operations. He was to-day using pituitrin in large doses in every postoperative case that required morphine. Before he had begun using pituitary extract, he said, he was very loath to try it, but now he employed it in every case that called for it. Many of those who otherwise would die of exhaustion if given pituitrin and then morphine, producing a sleep of four, six or eight hours, might be saved. Dr. Wiener did not give the drug as did Dr. Bandler—in divided doses. The use of this drug aided in clearing up the differential diagnosis between pure intestinal obstructon and the border line obstruction. If ten, fifteen, or twenty minutes following the administration of pituitrin, the intestinal peristalsis increased, he knew that an intestinal obstruction was present.

Dr. Arthur Stein said he believed the usefulness of pituitrin was mainly in the obstetrical field which included also the cases of abortion, and that here its use had brought about a revolution, especially in those cases of long drawn out labors which did not require forceps because the labor had not advanced far enough. Dr. Stein's experience with pituitary extract at the Harlem Hospital was very extensive in Dr. Brodhead's service and mainly in cases of cesarean section; it really acted wonderfully. Practically a bloodless operation could be performed. Dr. Bandler had sounded a warning; every practitioner who intended to use the drug must be sure of his pelvimetric findings, and note carefully whether the pelvis was normal or contracted. If unable to do this he should not resort to the use of pituitrin. One should use it in only absolutely normal cases. The danger of uterine rupture should be kept in mind when there was a disproportion between the pelvis and the oncoming child. Dr. Bandler had mentioned the use of pituitary extract for diagnostic purposes to see whether labor was going on or not, whether real or false labor pains were present or not, and he said he wished to add another type of cases, where the labor pains had ceased. The field of application of this agent in obstetrics was rather big; there was no question regarding the shortening of the time of labor; cases that might run eighteen to twenty-four hours might be shortened to ten, or twelve, or even eight hours. There was no doubt that the use of pituitrin was of great help in post-operative gynecological cases and certainly did away with catheterization; its use stimulated the muscular condition of the bladder and avoided the necessity of catheterization. This also stimulated the intestinal condition as well.

Dr. Ross McPherson said he had used pituitrin for a considerable period of time. Its employment had been suggested to him by a member of the Rockefeller Institute at a time when it was not much used. He was told that the effect upon the musculature was very marked; he had tried it and he found its action a very marked one. He had not found that it had much effect, however, in menorrhagia, but in post-operative intestinal stasis he obtained a very striking action. He always avoided the use of the catheter except in those cases where it could not be helped, in the difficult labor cases and after total hysterectomies. One or more injections of pituitrin would induce micturition without difficulty. Its use was contraindicated when there was a disproportion between the size of the pelvis and the size of the child's head. In the prevention of postoperative hemorrhage it was a very useful agent.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held December 3, 1915.

Dr. John Douglas in the Chair.

Intrahepatic Cholelithiasis. — Dr. Richard Lewisohn presented a man, thirty-one years of age, who had been admitted to the Beth Israel Hospital on November 19, 1914. He had been sick one day before admission. His most marked symptoms were pain and rigidity in the right upper abdomen. The pre-operative diagnosis was gangrenous cholecystitis and perforated duodenal ulcer. An immediate laparotomy was performed and the liver was found to be studded with small nodules.

One of these nodules at the diaphragmatic surface of the liver was incised and presented three small gall-stones. A localized peritonitis had been caused by the perforation of one of the stones at the under surface of the liver. The stones weighed between 2 and 3 mgs. Dr. Lewisohn pointed out the extreme rarity of this condition and stated that this was the first typical case of intrahepatic cholelithiasis which had been diagnosed on the operating table. All the other cases, about 150 in number, in the literature, were post-mortem findings. Dr. Lewisohn discussed the etiology of this rare disease. The patient had a biliary fistula which persisted for about eight months and then closed automatically two months ago; he was today apparently in perfect health.

Perforated Gastric Ulcer.—Dr. EDWARD W. PETERSON presented this case. The patient was a man, thirty-five years of age, with a negative family history. His alcohol and tobacco habits were in moderation. His present trouble began in 1910, when he had more or less gastric disturbance. One night, about four hours after supper, he had a very sharp attack of abdominal pain lasting about two hours and from this time on he had discomfort and vomiting in the evening, four or five hours after eating, with sour eructions, pain, etc., which were relieved by vomiting. The vomitus consisted of the supper showing but little digestion. The pain was sharp and boring but did not radiate to the back or shoulders, and was uninfluenced by any kind of food ingested. He had never had jaundice. His appetite was good. He was constipated, and he had lost 26 to 30 pounds since December, 1909. He was first seen in July, 1910. The examination of the vomitus showed red cells, leucocytes, mucus, large squamous epithelium from mouth or esophagus. The examination of the gastric contents showed free hydrochloric acid varying from 20 to 57. The total acidity was from 42 to 87. The blood count showed 2,200,000 red cells, 8,600 leucocytes, 80 per cent. polymorphonuclears, and 49 per cent. hemoglobin. The examination of the urine was negative. Examination of the heart and lungs was also negative. The abdominal reflexes were exaggerated. The muscular tone was good. There were no palpable masses. Fluoroscopic examination showed marked retention. The diagnosis was pyloric stenosis due to ulcer. Upon opening the abdomen all the organs of the upper abdomen were found to be matted together in firm adhesions; after freeing the gall-bladder, the pylorus and stomach were found to be attached to the under surface of the liver. When the stomach was freed there was found a perforated ulcer on the lesser curvature about 2½ inches from the pylorus. This perforation, about the size of a 5-cent piece, was with difficulty closed; this closure caused considerable distortion of the stomach. As the pyloric obstruction was relieved upon release of the adhesions, a gastroenterostomy was not considered necessary. The patient made a prompt recovery and was free from digestive disturbances for about two months. He gained 15 pounds in weight. Then his symptoms recurred and were practically the same as before the operation. In May, 1911, he re-entered the hospital and a secondary operation was performed. Adhesions to the gall-bladder, stomach and liver, etc., had reformed. No attempt was made to separate them. A posterior, no-loop gastroenterostomy was performed which was somewhat difficult because of the fixed position of the stomach. The patient made a prompt and satisfactory recovery from this operation. His anemia disappeared, and he had been free from indigestion, for a period of over five years.

Perforated Duodenal Ulcer.—Dr. EDWARD W. PETERSON reported this case. This patient, a man of fifty years of age, was admitted to the Post-Graduate Hospital on April 28, to the service of Dr. Samuel Lloyd, with the diagnosis of gall-stone disease. He was operated upon the following day. Since 1902 he had suffered from digestic disturbances and had had occasional attacks of sharp pain in the epigastrium, vomiting, fever, etc. During each attack he would be confined to the bed from two or three days to a week or more. Shortly before admission to the hospital he had an attack lasting three weeks and with this attack there was a constant dull aching pain which became acute three or four hours after his evening meal. He would then become nauseated, vomiting practically all of the food taken during the day, the vomitus showing only partial digestion. Following the vomiting he would experience a feeling of relief. The pain, nausea, vomiting, etc., were but little influenced by the character of the food or its amount. There was no hunger pain and the taking of food increased rather than lessened the discomfort. The pain did not radiate to the back or the shoulder. There was no jaundice. The radiographic study of this case before the patient entered the hospital indicated a pyloric or duodenal ulcer. The family physician was inclined to think that the trouble was due to gall-stones. Through the courtesy of Dr. Lloyd this patient was turned over to Dr. Peterson for operation. Adhesions were found binding together omentum, gall-bladder, and the pyloric end of the stomach. After freeing these the gall-bladder was found to contain no stones. The duodenum was much thickened and adherent to the under surface of the liver. Upon separating the duodenum from the liver a perforated ulcer, about the size of a ten-cent piece, was found on the anterior wall of the gut. There was also a contact ulcer on the posterior duodenal wall. The ulcer had perforated slowly and the adhesions to the under surface of the liver had prevented leakage and diffuse peritoneal infection. Owing to the much thickened condition of the duodenum and the enlarged lymph glands in the vicinity of the ulcer, the condition was thought to be malignant. An immediate frozen section diagnosis, however, showed only a chronic inflammatory condition. The pyloric end of the stomach and the first portion of the duodenum were resected. Great difficulty was experienced in closing the duodenum. A no-loop posterior gastro-enterostomy was made. The abdomen was closed with drainage at the duodenal stump. The patient's recovery was satisfactory except for the leakage from the duodenum. This was profuse and annoying for about two weeks when it ceased rather abruptly. The patient left the hospital in about four weeks; since this time he had gained rapidly in weight and strength, the gain in weight amounting to about 40 pounds. At present he weighed more than he had ever weighed in his life and was entirely free of any digestive trouble.

Resection of Joint with Resulting Function.—Dr. ASPINWALL JUDD presented this case. The patient, eighteen years of age, was operated upon four years ago for a tuberculous osteomyelitis of the elbow joint. The entire joint was involved. A resection was done, care being taken to save as far as possible the periosteal attachments of all muscles and as much as possible of the periosteal tubes even when involved in the tuberculous process to some extent. The tubes were packed with iodoform gauze, after thoroughly cleaning all the tissues with iodoform and ether, 12 per cent. The muscles with their periosteal attachments were sutured to other muscles with periosteal attachments or to surrounding structures in such fashion as to give a point of leverage for the proper functioning of those muscles. By the deposition of subperiosteal bone and dense scar tissue a false joint had been formed and the patient had 90 per cent. of function as all who would examine him might see. The strength of the arm was almost unimpaired, although it was 5 inches shorter than the other and radiographs showed not the slightest trace of the old joint. The points to be brought out in this and other cases of the same sort in which he had done a resection of this kind were the saving of the periosteal attachments, the suturing them so as to get so far as possible a muscular pull in the proper direction and the saving of the periosteal tube, thereby obtaining by means of subperiosteal bone a false joint which would act more or less like a fulcrum. Dr. Judd said he had obtained almost as good a resection in several shoulder joint cases, several elbows, and one hip. In the last case the man now drove his own automobile, using the foot of affected side in pressing the pedal.

Carcinoma of the Stomach.—Dr. JUDD presented this second patient, a woman twenty-three years of age, who had been operated upon a year ago for acute appendicitis. At that time a diagnosis of gastric ulcer was also made. The patient refused further operation. Her subsequent history showed the classic symptoms of gastric ulcer except that there was no blood at any time. She was operated upon sixteen days ago, when a hard thickened mass was found involving the greater curvature of the stomach, the pylorus, and the first part of the duodenum. The pathologist reported that it was an adenocarcinoma engrafted upon an old ulcer, and that the glands were involved for about 3 inches. The glands along the greater curvature were all involved. A resection of the pyloric third of the stomach, was made together with the pylorus and the caput of the duodenum, and all the glands along the greater curvature were removed. The glands along the lesser curvature were not involved. (When the glands along the lesser

curvature were involved it was useless to proceed with a radical removal, even if the stomach was not tied down as the mediastinal glands were always sooner or later involved.) A posterior gastroenterostomy united the stomach to the jejunum, there being no loop. Dr. Judd said he had found in the literature one case of carcinoma of the stomach occurring in an individual at the age of seventeen years and one at eleven years of age. The recovery in the case presented was uneventful and all the functions of the patient were normal.

Bone Graft (Inlay).—Dr. JUDD also presented this patient, a young man nineteen years of age, who had sustained a compound fracture of the tibia and fibula, the result of an automobile accident. He was in the hospital for about eight weeks and no operation was done on account of sepsis. The operation then done consisted in taking a graft from the crest of the opposite tibia about 1 by ¼ by 5 inches, and after making a suitable groover in the broken bone, removing detached fragments, and cleansing the site thoroughly, making fast the graft. The resulting loss of bone and tissue was about 1½ inches. The graft contained periosteum which was sutured to the periosteum of the broken tibia. The graft united firmly to the distal portion of the tibia but failed to unite to the upper fragment. A second operation was performed at which time the fragment was found unabsorbed, firmly united below, but so freely movable above that a space of 3 inches could be produced by moving the leg. The graft and the upper portion of the tibia were freshened, the graft fastened, and plaster applied. At the present time the leg was as sound as its fellow. The point to be emphasized was that the graft, after uniting to the lower portion of the tibia, remained absolutely ununited to the upper portion and did not undergo absorption, but seemed at the time of operation as large as ever and after the freshening of its surfaces and also of the tibia united firmly. The last radiographs taken, nearly one year later, showed the graft much diminished in size but still plainly visible with much new bone at the site of the operation.

Gastroenterostomy and Occlusion of the Pylorus by Means of a Heavy Pagenstecher Thread.—Dr. WILLIAM A. DOWNES presented a young woman upon whom he had done this operation. Nine months later on account of persistent vomiting the patient was again operated upon and an enteroanastomosis performed. At this time the occluded pylorus was examined from within the stomach and seemed to be completely closed. An *x*-ray taken six months later showed that the pylorus had remained closed and all the bismuth passed through the gastroenterostomy opening. However, in the routine *x*-ray examination of the case at the end of twenty-four months bismuth was seen to be passing through the pylorus and it was very evident the occlusion had not been permanent in nature and it was for this reason the case seemed worth while reporting. Dr. Downes said he was not in favor of occluding the pylorus except in a certain type of cases. The case shown was of the kind in which there was extreme ptosis, retention of food, and constant vomiting. There was a limited field for this operation in these cases when carefully selected.

Pyloric Exclusion; an Experimental and Clinical Study.—Dr. RICHARD LEWISOHN read this paper. He stated that up to a few years ago simple gastroenterostomy was considered the method of choice for the treatment of gastric and duodenal ulcers. Most of the surgeons, however, now agreed that pyloric exclusion in some form ought to be added to this procedure in order to permanently cure pyloric and duodenal ulcers. It was a well known fact that simple gastroenterostomy did not prevent the food from passing through the pylorus and over the ulcerated area. Dr. Lewisohn stated that there were five different methods of pyloric exclusion but that none of them secured a permanent exclusion. He reported experiments with a modified Biondi method. This modification insured permanent exclusion. The technique, however, was too difficult and the method therefore should not be applied to clinical surgery. He showed the stomach of a dog operated upon according to the Biondo method and killed three months after operation. The pylorus was wide open and hardly any signs of surgical interference could be seen. He further demonstrated a human pylorus which he had resected in July, 1915. This patient had undergone a gastroenterostomy and pyloric exclusion with the string method eighteen months previously. The pylorus was patent and admitted the little finger, the stitch being still *in situ*. He concluded that the clinical results were just as good in using the most simple method (exclusion stitch) as in the use of the most complicated method (Eiselsberg). Though the exclusion stitch did not ensure a permanent exclusion of the pylorus, it ensured a temporary one and thus effected the healing of the ulcer.

The Inefficiency of Pyloric Exclusion by Fascial Bands; an Experimental Study.—Dr. HAROLD NEUHOF read this paper in which he stated that at the present time there was no general agreement as to the desirability of complete or permanent closure, or even as to the indications for exclusion of the pylorus. It was important, however, to know what might be expected from any method. The question of permanent viability was still unsettled and was not considered in the experiments described. In these experiments two methods were employed. Either the pylorus was tightly ligated with a strip of *fascia lata* knotted about it; or the fascia, as a broad band, was sutured snugly about the pylorus and infolded by two or three tiers of sutures. The gastroenterostomies were of the no-loop kind, with large stomata. Only one, at an examination made six days after operation, was the pylorus found to be completely water tight. When the examinations were made at the end of one to three weeks it was usually found closed until the hydrostatic pressure within the stomach became high. Even in this period, however, the pylorus was found open in one experiment. It was of interest to note that the cause of the partial exclusion observed a short time after operation appeared to lie in extensive peripyloric adhesions that generally developed, rather than in the constriction made by the band. In microscopic sections the fascia was found adherent to the gastric wall, but was evidently stretched, despite its great tensile strength, by the underlying musculature. When post-mortem examinations were made one to three months after operation the pylorus either opened with moderate hydrostatic pressure or was quite patent. In the latter instance the fascial band was incorporated with the gastric wall, but it made a ring that fitted loosely about the pyloric muscle. This was evident in the microscopic sections. In short the error in the work of Bogoljubow and his followers was the brief period of observation after the operation. Only very temporary pyloric exclusions resulted from ligation with fascial bands and even this could not be expected to develop regularly. A question which naturally arose was would pyloric exclusion by fascial strips be successful if the pylorus was first crushed. A few experiments were made in order to determine this point. In one instance, two months after the operation, the pylorus remained closed with moderate, but opened with considerable, hydrostatic pressure. It was found patent without water pressure in the remaining experiments. As a last effort to establish pyloric exclusion with fascial strips in a few instances the stomach was opened near the pylorus, gauze sponges and a strong tincture of iodine was vigorously rubbed into the pyloric mucous membrane, the gastric incision was closed, and the constricting fascial band applied. These experiments were as unsuccessful as the previous ones. There were two deaths worthy of mention because they appeared to be directly ascribable to disturbed mechanical arrangements, the sequel of incomplete pyloric occlusion. At autopsy complete or almost complete retention of gastric contents was demonstrable in both of these animals. In conclusion Dr. Neuhof stated that the experimental evidence of pyloric occlusion by fascial bands rested on incorrect observations, the pyloric closure having been examined too soon after operation. Permanent pyloric occlusion did not follow experimental ligation with fascial bands, and even temporary pyloric occlusion was uncertain after experimental ligation with fascial bands.

Lantern Slides Illustrating Roentgenographic Studies in Cases of Pyloric Exclusion.—Dr. LEON THEODORE LE WALD read this paper and exhibited lantern slides illustrating it. He stated that he had records of thirteen patients on whom an occlusion of the pylorus had been performed. In six cases the operation was performed for the relief of ulcer of the stomach in conjunction with a posterior enterostomy. In six other cases the operation was performed for relief of stasis in the stomach due to ptosis of the water-trap type. In all of these the operation was performed in conjunction with posterior gastroenterostomy. The thirteenth case was one in which a posterior gastroenterostomy had been per-

formed six years previously for relief of ulcer of the stomach, but without closure of the pylorus. To increase the efficiency of the gastroenterostomy opening, the pylorus was excluded according to the method of von Eiselsberg two months ago; the case was examined one month after operation at which time the occlusion remained. This was the only case in which the pyloric canal had not again tunnelled through after closure, but the period of observation after operation of this case was a very short one, while all the other cases had been observed for a period dating back two and one-half years. The ages of the patients varied from 23 to 58 years. There were five males and eight females. From a careful study of these cases it appeared that closure of the pylorus by means of ligature, even if combined with crushing of the tissues by clamp, was incapable of insuring permanent closure. However, there seemed to be certain cases in which a temporary closure of the pylorus was of distinct benefit. In order to obtain a more permanent occlusion complete section of the stomach seemed to be necessary and if this could be combined with a resection of the diseased area it allowed the stomach to empty through the gastroenterostomy opening in a most satisfactory manner.

Election of Officers.—*Chairman*, Dr. John Douglas; *Secretary*, Dr. Seth M. Milliken.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

California State Board of Medical Examiners.

San Francisco, June 15-18, 1915.

ANATOMY AND HISTOLOGY.

1. Give formation and branches of the lumbar and sacral plexuses. (May use diagram.) 2. (*a*) Classify articulations; give a typical example of each class. (*b*) Discuss the hip joint, naming all muscles passing across the joint. 3. Discuss the distribution and central connections of the auditory (eighth cranial) nerve. 4. Discuss the bony thorax. 5. Discuss the pleura, giving attachments and reflections, also external markings of its boundaries. 6. Give the action of: (*a*) the sternocleido-mastoid, singly and together; (*b*) the psoas magnus; (*c*) serratus anterior; (*d*) deltoid; (*e*) trapezius; (*f*) iliocostalis; (*g*) latissimus dorsi. 7. Describe by diagram the longitudinal section of the femur, showing outline and histologic structure showing normal development and regeneration. 8. Give the essential differences of the appearance and structure—gross and microscopic—of the mucous membrane of the duodenum, jejunum and ileum. 9. Give the histology of a medium size artery. 10. Give formation of the tributaries of the portal vein; give most inferior tributary. 11. Discuss the cervical sympathetic ganglia; give location, tributaries and branches. 12. Give histology of the mammary gland; make drawing showing typical histologic section.

PHYSIOLOGY.

1. (*a*) Discuss hemolysis. (*b*) Discuss the origin and fate of the leucocytes. 2. What is the relation of the nerves to the movements of the intestines? 3. Discuss the influence of the nervous system on respiration. 4. Define the following terms: inhibition, diffusion, osmosis, diapedesis, perimetry. 5. Discuss the metabolism of the embryo. 6. Discuss color blindness. 7. Discuss inhibition in reflex action. 8. Discuss the relation of the rods and cones to vision. 9. Discuss the variations in the volume of the brain due to respiration. 10. Discuss the sensation of hunger and thirst. 11. (*a*) What are the sources of uric acid? (*b*) Where and how is uric acid formed? 12. What effects are observed after section of a cutaneous nerve?

CHEMISTRY AND TOXICOLOGY.

1. Name and give the formulas for five salts of mercury. 2. What is the formula of hydrogen peroxide? What is its action on silver oxide; on finely divided platinum? 3. What is "bleaching powder"; its formula? How does it act as a disinfectant? 4. Define and discuss diffusion and osmosis. 5. Describe and discuss briefly HNO_3; its chemical and physical properties. 6. Discuss arsenic (its occurrence, properties, and toxic effects, and describe the use of one antidote). 7. Discuss lead poisoning and two effective means of overcoming the same. 8. Define "physiologic antidote" and "chemical antidote" and give an example of each. 9. Discuss hydrargyrism. 10. Discuss the indications and contraindications for the use of stomach pump. 11. Discuss carbolic acid poisoning and an efficient method of treatment. 12. Discuss the toxic effects of yellow phosphorus.

MATERIA MEDICA AND THERAPEUTICS, PHARMACOLOGY, INCLUDING PRESCRIPTION WRITING.

1. Name four commonly used mercury compounds (U. S. P.) and discuss briefly their therapeutic uses. 2. Discuss fully the possible therapeutic effects that would be expected of the following prescription: ℞ Tinct. nucis vomicæ, 5.0; fluidextracti cascaræ, 10.0; tinct. cardamon comp., 25.0; tinct. gentian comp., q.s.ad. 100.0, M. Sig.: Take one teaspoonful in half glass of water t. i. d., before meals. 3. What is apomorphine? State dosage, indications, modes of administration, and action. 4. Discuss the indications and contraindications for the use of the following: ℞ Kalii iodidi, 18.0; aquæ dest., 60.0; syrup sarsaparilla comp., q.s.ad. 125.0. M. Sig.: Take one teaspoonful, well diluted, t.i.d., p. c. 5. Describe and discuss three different modes of administering drugs for therapeutic purposes. 6. Discuss the conditions that modify the effects of drugs. 7. (*a*) Discuss the dosage of drug as influenced by age, sex, size and weight of the individual. (*b*) Define idiosyncrasy and discuss one example. 8. (*a*) Discuss oleum ricini, its dosage, therapeutic action and indications. (*b*) Discuss three contraindications for the use of intestinal evacuants. 9. Discuss the systemic action of alcohol (internally administered.) 10. What is epinephrin? How is it administered? What are its principal effects? 11. Discuss salvarsan (its principal properties, dosage, best mode of administration, indications and contraindications). 12. Describe the bromide salt most commonly used (as to its physical properties, dosage, therapeutic action, and untoward effects.

BACTERIOLOGY AND PATHOLOGY.

1. What changes are found in a stained blood smear in primary pernicious anemia? 2. What elements might you find microscopically in the sediment of a normal urine? 3. Describe the microscopic field seen in: (*a*) a negative Widal reaction; (*b*) a positive Widal reaction. 4. What do you look for in a microscopic examination of stomach contents? 5. Define eosinophilia; name several conditions. 6. What are casts? Describe at least three varieties, and tell under what diseased conditions they are found. 7. Discuss briefly the etiology of chronic interstitial hepatitis, or cirrhosis of the liver, and describe the microscopic appearance of at least two varieties. 8. Describe embolism, infarction and thrombosis, and briefly discuss the pathology of each. 9. Define: (*a*) carcinoma; (*b*) sarcoma. Give the relative frequency of occurrence in the: (*a*) breast; (*b*) liver; (*c*) bone. 10. Describe the gross appearance of a bone at the site of osteomyelitis. 11. What are the causes of jaundice and how do *they* operate to produce this condition? 12. Define: (*a*) cloudy swelling; (*b*) atrophy; (*c*) malignancy.

ANSWERS TO STATE BOARD EXAMINATION QUESTIONS.

California State Board of Medical Examiners.

San Francisco, June 15-18, 1915.

ANATOMY AND HISTOLOGY.

1. The *lumbar plexus* is formed by the union of the anterior divisions of the first four lumbar nerves. The arrangement of the plexus is variable. The iliohypogastric and ilioinguinal come from the first lumbar nerve; the genitocrural comes from the first and second; the obturator comes from the second, third, and fourth; the external cutaneous comes from the second and third; the anterior crural comes from the second, third, and fourth; the accessory obturator, from the third and fourth.

The sacral nerves, five in number, divide into anterior and posterior nerves. The four upper sacral nerves, with the fifth lumbar, and a filament from the fourth, the two latter forming the lumbo-sacral cord, together form the *sacral plexus*. It lies upon the anterior surface of the pyriformis muscles, and is separated from the viscera, the sciatic and pudic branches of the internal iliac artery by the pelvic fascia. Its branches are: Muscular, superior gluteal, inferior gluteal, small sciatic, perforating cutaneous, pudic, and great sciatic.

2. (*a*) Articulations are classified as: *Synarthrodial* (or immovable), as the sutures of the skull; *Amphiarthrodial* (or slightly movable), as symphysis pubis; and *Diarthrodial* (or freely movable), as shoulder joint.

(*b*) The *hip-joint* is an enarthrodial joint, formed by the head of the femur and the acetabulum. The articular surfaces are covered with cartilage. Near the center of the head of the femur is attached the ligamentum teres. The *ligaments* are: (1) The capsular, which embraces the margin of the acetabulum above, and the neck of the femur below. (2) The ileofemoral or Y ligament, which passes obliquely across the front of the joint, and is attached above to the anterior inferior spine of the ilium, and below to the anterior intertrochanteric line. (3) The ligamentum teres. (4) The cotyloid ligament, which deepens the acetabulum, and bridges over the cotyloid notch, being there called (5) the transverse ligament. The joint has a very extensive synovial membrane. It is capable of the following movements: Flexion, extension, abduction, adduction, circumduction and rotation.

Muscles which pass across the joint: Pectineus, psoas, iliacus, sartorius, rectus femoris, gluteus maximus, gluteus medius, gluteus minimus, quadratus femoris, obturator externus and internus, gemellus superior and inferior, biceps, semimembranosus, semitendinosus, pyriformis.

3. The *auditory* nerve consists of two portions:—(1) cochlear, or auditory portion, and (2) vestibular, or fibers whose function is to localize position. The former pass from the cochlea to the (1) accessory auditory nucleus in the medulla, and (2) to the lateral acoustic tubercle in the medulla. These fibers, by means of the lateral fillet, communicate with the inferior corpora quadrigemina. The vestibular fibers pass from the vestibule to the external and internal dorsal nuclei in the floor of the fourth ventricle, and by the sensory decussation to the nucleus cuneatus. *Superficial origin*, from groove between olivary and restiform bodies; *course* winds around restiform body, and passes forward to internal auditory meatus, with the facial; *distribution*, to internal ear by two branches:—The vestibular and cochlear. (Youngs *Handbook of Anatomy.*)

4. The *bony thorax* is bounded behind by the twelve dorsal vertebrae and the posterior part of the ribs; in front by the sternum and costal cartilages; on the sides by the ribs and intercostal spaces with the intercostal muscles. It is conical in shape, being broadest below. It contains the chief organs of respiration and circulation. The aperture transmits the sternohyoid and sternothyroid muscles, trachea, esophagus, thoracic duct, inferior thyroid veins. longus colli; innominate, left common carotid, left subclavian, internal mammary, and superior intercostal arteries; right and left, innominate veins; vagus, phrenic, cardiac, sympathetic, and left recurrent laryngeal nerves; the apex of each lung also projects through the superior opening. Below is the subcostal angle.

5. "The *pleuræ* are two serous sacs enclosing and investing the lungs. Each pleura consists of a visceral and parietal layer. The *visceral* portion covers the lungs, and the *parietal* layer lines the inner surface of the chest walls, the upper surface of the diaphragm, and the sides of the pericardium. The visceral and parietal layers of the corresponding pleura become continuous in front and behind the root of the lung; and below the root a fold, the *ligamentum latum pulmonis* extends downward along the inner surface of the lung to the diaphragm. The mediastina are formed by the visceral layers of each side approaching one another toward the median line.

"The limits of the parietal pleuræ are as follows: Each extends upward into the neck, forming a domelike process over the apex of the lung about two inches above the first costal arch; from this the pleura passes downward and forward to the posterior aspect of the sternoclavicular joint of each side and meets its fellow in the midline at the manubriogladiolar articulation; they pass down together to level of fourth costal cartilages, where *right pleura* passes vertically to level of seventh right costal cartilage in midline; then outward, crossing ninth rib in midaxillary line; then downward and backward along eleventh rib to reach spine at neck of twelfth rib. Behind, it passes upwards on right side of bodies of vertebræ to apex. At level of fourth costal cartilage the *left pleura* arches outwards, leaving uncovered part of anterior surface of pericardium, and lying about ¾ inch from the margin of sternum, to reach seventh costal cartilage, where it follows same line as on right, but is placed at a slightly lower level." (*Aids to Anatomy.*)

6. *Sternocleidomastoid:* The action of *one* draws the head toward the shoulder of the same side and turns the face toward the opposite side. The *two acting together* flex the head upon the neck; and, if the head is fixed, they raise the thorax.

Psoas magnus flexes the thigh on the pelvis, bends the pelvis forward, helps in maintaining the body in the erect position, and assists in raising the body from the recumbent position.

Serratus anterior lifts the scapula forward and raises its vertebral border; it aids in the act of pushing, and in raising the acromion and supporting weights on the shoulder, and in raising the arm to the vertical position.

Deltoid aids in raising the arm from the side, also in drawing the arm forward and backward.

Trapezius raises clavicle and scapula, also moves them downward and backward; draws head backward, and flexes it to same side.

Iliocostalis extends the spinal column, maintains it in the erect position, and bends it backward.

Latissimus dorsi depresses the humerus, adducts it, draws it backward, and rotates it inward.

7. A cross-section of a bone shows *Haversian canals;* around these the bone is arranged in rings or *lamellæ;* between these are spaces (*lacunæ*) in which are bone *corpuscles.* Each canal is connected with the lacunæ which are concentric with it, and the lacunæ with one another by means of fine canals (*canaliculi*) into which project processes of the bone corpuscles. A Haversian canal with its lamellæ, lacunæ, bone corpuscles, and canaliculi form a *Haversian system.* In a section of bone several of these systems may be seen, the spaces between them being occupied by *interstitial lamellæ.* Lamellæ which are on the surface of the bone, parallel with its circumference, are *circumferential lamellæ.* A longitudinal section of bone shows the Haversian canals to be what their name indicates, channels running through the bone. Their communications with one another are also seen. In each canal are an artery and a vein. If a piece of bone is treated with dilute nitric acid, so as to dissolve the lime salts which it contains, or by some other method of *decalcification,* a small portion may be torn off, which upon examination shows the fibrous structure of the lamellæ. Such specimens also show the *perforating fibers of Sharpey,* which hold the lamellæ together; elastic fibers may also be observed.—(Raymond's *Physiology.*)

8. *Duodenum:* Valvulæ conniventes, except in the first inch or two; villi; crypts of Lieberkühn; solitary glands; ducts of Brunner's glands; orifice of common bile duct and pancreatic duct. *Jejunum:* Valvulæ conniventes; numerous villi; crypts of Lieberkühn; solitary glands; Peyer's patches in lower half. *Ileum:* Valvulæ conniventes, few in upper half, none in lower half; few villi; crypts of Lieberkühn; solitary glands; Peyer's patches.

9. A medium-sized artery consists of an endothelial tube covered with three coats. The inner coat consists of endothelial cells placed upon a layer of fibro-elastic tissue. Around this is a wavy band of yellow elastic tissue. The middle coat consists of muscle, elastic tissue and white fibrous tissue. The smooth muscle tissue is circularly arranged and there is very little elastic tissue. The external coat consists of fibro-elastic tissue and contains the nutrient vessels, nerves, and lymphatics.

10. The *portal vein* is made up by the junction of the superior mesenteric and splenic veins. The tributaries of the portal vein are the splenic, superior mesenteric, gastric, pyloric, cystic, and parumbilical. The *splenic* receives the vasa brevia, left gastro-epiploic, pancreatic, and inferior mesenteric veins. The *superior mesenteric* receives the intestinal, ileocolic, colica dextra, colica media, right gastro-epiploic and pancreaticoduodenal veins. The most inferior tributary is the inferior mesenteric vein.

11. *Cervical Sympathetic Ganglia.*—The cervical ganglia consist of three—superior, middle, inferior—of which the superior is the largest and the middle the smallest. These are connected above with the cranial ganglia, below with the thoracic ganglia, and communicate with each other. The *superior cervical ganglion* lies opposite the second or third cervical vertebra, behind the internal carotid artery. It is connected with the middle ganglion, the upper four cervical, and tenth and twelfth cranial nerves, distributes branches to the carotid (internal), cavernous, and pharyngeal plexuses,

and gives off the *superior cardiac nerve* to the cardiac plexus. The *middle cervical ganglion* lies upon inferior thyroid artery, opposite fifth cervical vertebra. It is connected with the upper and lower ganglia and spinal nerves, and gives off the *middle cardiac nerve* to cardiac plexus. The *inferior cervical ganglion* lies internal to the superior intercostal artery, below the last cervical vertebra. It is connected to the middle ganglion, first thoracic, lower cervical nerves, forms the vertebral plexus, and gives off the *inferior cardiac nerve* to cardiac plexus. (Young's *Handbook of Anatomy.*)

12. "The mammary gland is a multiple alveolotubular organ. It is composed of from fifteen to twenty individual compound glands. Each of these possesses its own excretory duct, that has its own opening in the nipple. The entire organ is covered by skin. Each gland consists of lobes and lobules separated and supported by white fibrous and adipose tissues. All of the individual glands are further bound together in the same manner. The ducts converge and end in the nipple, which forms a small projecting mass. Each lobule consists of a number of acini which are tubular or alveolar in structure. The number of these depends upon the state of activity. In the gland of pregnancy, the acini are very numerous, and are lined by simple columnar or cuboidal cells, in which are accumulated the fat globules that form the important constituent of the milk. These cells rest upon a basement membrane, but in places are separated therefrom by peculiar elements called basket cells, which are compared to the smooth muscle tissue of the sweat glands. The ducts are lined by simple columnar cells which rest upon a basement membrane, outside of which circular bundles of white fibrous tissue are to be found. These ducts unite to form the main secretory duct of the individual glands; each main duct dilates to form a small ampulla or sinus lactiferus, before the nipple is reached." (Radasch's *Compend of Histology.*)

PHYSIOLOGY.

1. (*a*) *Hemolysis.* "The act of discharging the hemoglobin from the corpuscles so that it becomes dissolved in the plasma is designated as hemolysis, and substances that cause this action are spoken of as hemolytic agents. A number of such agents are known; but, although the results of their action are the same, so far as the hemoglobin is concerned, the way in which they bring about this result must vary greatly. Some of the known methods of producing hemolysis, or rendering the blood 'laky,' are as follows: (1 By the addition of water to the blood or by diminishing in any way the concentration or osmotic pressure of the plasma. (2) By adding ether or chloroform. (3) By the addition of soaps or of the higher fatty acids, especially the unsaturated acids. (4) By adding bile or solutions of the bile-salts. (5) By adding amyl alcohol. (6) By adding the serum from the blood of certain animals. (7) By adding saponin or sapotoxin. (8) By the addition of an excess of alkali. (9) By various toxins found in snake venom or in the serum of other animals or among the products of bacterial activity (natural hemolysins), or by similar organic substances produced within the body by the process of immunizing. Some of these hemolytic agents, such as ether, bile-salts, and soaps, probably effect their action by their power of uniting with the lipoid elements (lecithin, cholesterin) in the stroma of the corpuscles. The framework of the corpuscles is thus altered so that the hemoglobin is set free. (Howell's *Physiology.*)

(*b*). *Origin of leukocytes:* They are found in the spleen, lymph glands, and lymphoid tissue; also from the leukocytes by direct cell-division in the blood stream; the eosinophiles may be derived from the bone marrow.

Their *fate* is uncertain; it has been asserted that they are converted into red blood cells; they play a part in the formation of fibrin ferment; they are sometimes converted into pus cells.

2. "The *small intestine* is supplied by the vagus and the splanchnic nerves, and although the intestinal movements are independent of the central nervous system it can be shown that these nerves exert a controlling influence. Stimulation of the vagus is followed by contraction of the muscle of the intestinal wall after a preliminary relaxation, but has no effect on the ileocolic sphincter. Stimulation of the splanchnic nerve results in a general relaxation, but in contraction of the ileocolic sphincter. The vagus and sympathetic fibers to the small intestine are distributed in the first instance to the myenteric nerve plexus lying between the layers of the muscular coat. The influence of the central nervous system on the intestinal movements is shown in their inhibition as a result of pain, and also in their exaggeration in consequence of emotional conditions.

"The *large intestine* receives its nerve supply from the sympathetic system and from the pelvic visceral nerves or nervi erigentes. The sympathetic fibers form the inferior mesenteric nerves, running from the inferior mesenteric ganglion to the ascending, middle, and transverse colon, and the hypogastric nerves pass from the same ganglion to the rectum. Stimulation of the sympathetic nerves causes inhibition of the tone of the intestinal wall and cessation of the rhythmic movements. Stimulation of the nervi erigentes causes contraction of the whole length of the colon. The sympathetic is therefore inhibitory and the pelvic visceral nerves are motor in function." (Bainbridge and Menzies' *Essentials of Physiology.*)

3. "The respiratory center is situated in the medulla, and is in reality made up of two centers, one for each side, so that, although anatomically connected and ordinarily acting together, yet if one center is broken up, while the respiratory movements on that side cease, those on the other side continue. Besides this double character of the center, each half is made up of an *inspiratory* and an *expiratory* center. The respiratory center is both an *automatic* and a *reflex* center—*i. e.*, it sends out *spontaneously* impulses which result in movements of the respiratory muscles, constituting its *automatism;* and it may also be excited *reflexly*—*i. e.* by impulses reaching it from without. Its reflex character is most marked, and it is doubtless as a reflex center that its function is ordinarily performed." —(*Raymond.*)

The normal stimulus is the presence of carbon dioxide in the blood; impulses also pass along the vagus nerves from the lungs; further, there are impulses from the brain and various afferent nerves, all of which are capable of modifying the respiratory movements.

4. *Inhibition* is the voluntary or involuntary restraint of a reflex action; it is due to the action of the higher nerve centers.

Diffusion is the intermolecular penetration of two or more gases when in contact with each other.

Osmosis is the passage of liquids and of substances in solution through a membrane or porous substance.

Diapedesis is the passage of the red blood cells through the unruptured wall of blood-vessels; the term is also used for the similar action of the blood as a whole and of the white corpuscles.

Perimetry is measurement of the field of vision.

5. *Metabolism of the embryo.* (1) "At first the ovum absorbs nutriment simply through the vitelline membrane, while passing through the Fallopian tube. The nutrient material is supplied by the secretion of the tube itself, or may consist in part of seminal fluid introduced from without. (2) The vitellus is absorbed by the entoderm lining the umbilical vesicle and alimentary canal, and later it is absorbed and conveyed into the body of the embryo by the bloodvessels of the area vasculosa. (3) When the contents of the umbilical vesicle are exhausted, the chorial villi appear and take up nourishment from the uterine decidua, with which they are in contact. (4) With the disappearance of villi in the chorion læve, the villi of the decidua serotina develop into the placenta, where they take up nutriment from the maternal blood with which they are surrounded. (5) The placenta not only affords nutriment to the child, but is also its respiratory organ. The umbilical arteries carry blue (venous) blood to the placenta, where carbonic acid gas is given off to the maternal blood and oxygen taken in from it, so that the umbilical vein brings back arterial (red) blood to the fetus. The placenta is also an organ of excretion for the infant. Recently the placenta has been credited with a selective function, by which it has power to select from the maternal blood such materials as may be required by the fetus at different periods of pregnancy." (King's *Manual of Obstetrics.*)

6. "The explanation of color-blindness varies according to the theory of color-vision which is accepted. According to the Young-Helmholtz theory, a red-blind person is deficient in the red, and a green-blind person in the green, visual substance of the retina, or else, if these substances are present, all the rays, irrespective of their wave-lengths, stimulate them. In accordance with the Hering theory, those who are red-blind or green-blind lack the red-green visual substance and possess yellow-blue. On this theory there is no difference between red-blindness and green-blindness, but, as

a matter of fact, this is not the case. If the Franklin theory is accepted, then the explanation in the case of the red- and green-blind would be that the white-black, or gray, visual substance had developed into the yellow-blue, but had been arrested in its development before the stage of red-green had been reached. It may be said that objections may be advanced to all the theories, and that no one accounts for all the observed facts." (Raymond's *Physiology.*)

7. *Inhibition.* "Reflexes may be restrained or completely inhibited by impulses, voluntary or involuntary, from the higher nerve centers. If a reflex is elicited in a frog from which the cerebral hemispheres have been removed, and then a crystal of common salt is applied to the optic lobes and the stimulus is repeated, the reflex movement may not occur, owing to inhibitory impulses resulting from the stimulation caused by salt. A reflex act, which is in progress, may also be checked or inhibited by the advent of another stimulus to the central nervous system. Further, inhibition forms a constituent of many reflex actions, the movement of certain muscles being accompanied by the simultaneous inhibition of others."—(Bainbridge and Menzies' *Essentials of Physiology.*)

8. The rods and cones are both concerned in vision, but they differ in structure and in function. The rods are most abundant at the periphery of the retina and the cones in the central area. The generally accepted theory is that the rods are most concerned with vision in dim lights, and with the form of objects, and that the cones are chiefly concerned with vision in ordinary light and with the color of objects.

9. Such variations as can possibly take place in the volume of the brain are due to the possibility of displacement of the cerebrospinal fluid. This is said to be due to changes in the arterial pressure, and also to interference with the venous outflow from the skull during expiration. The swelling of the brain is sometimes synchronous with expiration, and the shrinking of the brain with inspiration. But the reverse of these conditions has also been observed.

10. *The sensation of hunger* is referred to the region of the stomach, and is the outcome of nervous impulses from the stomach. *The sensation of thirst* is located in the back of the pharynx. Both of these sensations are localized expressions of a general need of the tissues of the body for food and drink. The exact seat of the sensations is unknown; and thirst is more painful and more urgent than hunger.

11. Uric acid belongs chemically to the group of substances called "purins," uric acid being trioxypurin. The uric acid which is derived from the purin bodies contained in the food is called "exogenous" uric acid, while that which comes from the breaking down of the tissues of the body which contain aminopurins and oxypurins or nucleins is called "endogenous" uric acid. It is formed in the liver, spleen, and other tissues, as the result of oxidation of certain purin bases which are derived as just mentioned (exogenous and endogenous). These bases are set free by the action of an intracellular enzyme (nuclease) of wide distribution. The subject is summed by by Lyle, as follows:

"Putting the series of changes by which uric acid is formed from the nucleoprotein of the diet (exogenous metabolism), or the nucleoprotein of the tissues (endogenous metabolism), into schematic form: (1) Nucleoprotein is split into protein and nuclein; nuclein is split up with the production of adenine and guanine by the endo-enzyme nuclease; adenine and guanine are deamidized with the production of hypoxanthine and xanthine respectively, by the activity of adenase and guanase and uric acid is produced by the oxidation of hypoxanthine and xanthine, due to the activity of xanthine oxidases."

12. "After section of a cutaneous nerve all cutaneous sensations are lost, but there remain the sensations of deep pressure and of pain due to deep pressure, which depend on stimulation of the afferent fibers in the muscles. During regeneration of the divided nerve, the first sensations to return are those of pain, of heat for temperatures above 38° C., and of cold for temperatures below 24° C. These are the protopathic sensations, and they return from seven to twenty-six weeks after the division of the nerve. Tactile localization and discrimination, the accurate localization of pain in the skin, and the sense of heat and cold between 37° C. and 25° C., are recovered in from one to two years after the nerve section, and constitute the epicritic sensations. —(Bainbridge and Menzies' *Essentials of Physiology.*)

CHEMISTRY AND TOXICOLOGY.

1. *Five salts of mercury:* Mercurous chloride, Hg_2Cl_2; mercuric chloride, $HgCl_2$; mercurous iodide, Hg_2I_2, mercuric iodide, HgI_2; mercuric sulphate, $HgSO_4$.

2. The formula of hydrogen peroxide is H_2O_2. When it is brought into contact with silver oxide both substances are violently decomposed, water and silver remaining. Platinum decomposes it into water and oxygen.

3. *Bleaching powder* is either a mixture of calcium chloride and calcium hypochlorite, $CaCl_2+Ca(ClO)_2$; or a definite compound with the formula $CaCl(ClO)$. It acts as a disinfectant by reason of the chlorine which is liberated when treated by even the weakest acids or by boiling water. The chlorine in the presence of water decomposes the latter, and the nascent oxygen then attacks the matter which requires the disinfection. Hence it acts as an indirect oxidizing agent.

4. *Diffusion and Osmosis:* "When two gases are brought into contact a homogeneous mixture of the two is soon obtained. This interpenetration of the gases is spoken of as diffusion, and it is due to the continual movements of the gaseous molecules to and fro within the limits of the confining space. So also when two miscible liquids or solutions are brought into contact a diffusion occurs for the same reason, the movements of the molecules finally effecting a homogeneous mixture. If the two liquids happen to be separated by a membrane diffusion will still occur, provided the membrane is permeable to the liquid molecules, and in time the liquids on the two sides will be mixtures having a uniform composition. Not only water molecules, but the molecules of many substances in solution, such as sugar, may pass to and fro through membranes, so that two liquids separated from each other by an intervening membrane and originally unlike in composition may finally, by the act of diffusion, come to have the same composition. Diffusion of this kind through a membrane is frequently spoken of as dialysis or osmosis." (Howell's *Physiology.*)

5. *Nitric acid,* when pure, is a colorless liquid with a strong acid taste and reaction; it gives off white fumes in damp air. When exposed to air and light or when strongly heated, it is decomposed into nitrogen tetroxide, water and oxygen. It is a powerful oxidizing agent and destroys most organic substances. Most metals dissolve in it, with the formation of nitrates. The commercial acid is impure, yellowish in color, and contains about 40 to 64 per cent. of pure HNO_3. The fuming nitric acid is of a reddish yellow color and contains oxides of nitrogen. The pharmacopœial acid contains about 70 per cent. of HNO_3, and the diluted form about 10 per cent.

6. *Arsenic* occurs free in small quantities, but chiefly in combination in the sulphides (orpiment and realgar), and in arsenical iron pyrites. Arsenic is a brittle, crystalline solid, or an amorphous powder. Its vapor gives off the odor of garlic; it is insoluble in water and other liquids; when heated, it is converted into the trioxide. Elementary arsenic is not poisonous so long as it remains such, but in contact with water, or saliva, it becomes arsenic trioxide which is soluble and poisonous.

The symptoms of acute arsenical poisoning: "In acute cases the symptoms usually begin in from twenty to forty-five minutes. Nausea and faintness. Violent, burning pain in the stomach, which becomes more and more intense, and increases on pressure. Persisting and distressing vomiting of matters, sometimes brown or gray or streaked with blood, or green (Paris green). Purging. More or less severe cramps in the lower extremities." (Witthaus' *Essentials of Chemistry.*)

The stomach should be emptied, an emetic given if necessary, and the chemical antidote administered. The latter is freshly prepared solution of ferric hydroxide, which acts by producing the insoluble ferric arsenate.

7. The most *common sources of lead poisoning* are the following: "The contamination of drinking water from lead pipes. Contamination of articles of food or drugs by contact with leaden vessels, or from being enclosed in tinfoil containing an excess of lead. Drinking beer, cider, etc., which has been drawn through leaden pipes or allowed to stand in pewter vessels. The ingestion of constant handling of lead or its compounds, as the acetate, nitrate, carbonate (white lead—painter's colic), Goulard's extract, etc. The use of hair dyes containing lead."

Lead poisoning causes: Metallic taste, dryness of throat, thirst, severe, colicky abdominal pains, particu-

larly in umbilical region; pulse feeble and slow; great prostration; constipation; urine scanty and red; violent cramps; paralysis of lower extremities; convulsions; tetanic spasms and (in chronic cases) wrist drop.

The *treatment* consists in administering magnesium sulphate, which brings about the formation of the insoluble lead sulphate, while the purgative action of the magnesia is also useful. It should be preceded by an emetic, or by the use of the stomach tube.—Potassium iodide is also given to aid in the elimination of the lead.

8. A *physiological antidote* is one that acts as such by combating the physiological action of the poison, as belladonna for opium poisoning.

A *chemical antidote* is one which acts as such by uniting chemically with the poison and thus converting it into a harmless or insoluble compound, as freshly prepared ferric hydroxide solution for arsenic poisoning.

9. *Hydrargyrism.* "The first symptoms of salivation are fetid breath, swollen and spongy gums, having a bluish line along their margins, stomatitis, sore and loosened teeth, inflamed and tender salivary glands pouring out a peculiar, thin saliva of foul odor in large quantity, and a metallic taste in the mouth. Emaciation, pallor, edema, ulcerated skin, erythematous, vesicular, or pustular eruptions, headache, insomnia, neuralgia, tremor through paresis of the muscles of the head and extremities, epilepsy, coma, and convulsions may ensue. An influenzal condition is not uncommon. Salivation is most readily produced by blue mass, next by calomel, and less easily by gray powder. Children are not easily salivated. Inhalation of mercurial vapors is likely to affect the nervous system most; its internal administration and that by inunction are more likely to produce salivation. Treatment consists in the withdrawal of the mercury, antiseptic mouth washes, particularly the potassium chlorate, and, later the use of the iodides as eliminatives. Poisoning by the bichloride requires the prompt oral admnistration of large amounts of albumin, the whites of eggs being most easily obtained. The stomach should be washed out, external heat applied about the body, and stimulants to the respiration and circulation given. If death does not ensue at once the organic changes in the gastro-intestinal tract, such as strictures, sloughs, and destruction of the peptic glands and ulceration, generally cause a protracted convalescence, or may eventually result in a fatal issue." (*Cyclopedia of Medicine and Surgery.*)

10. The stomach pump or tube is indicated in all cases of poisoning (except corrosives), to remove the poison from the stomach, and also as an aid in washing out the stomach. Some poisons (such as opium) are excreted into the stomach, and such lavage is then necessary. *Contraindications* are: Corrosives (when there is danger of perforating the esophagus or stomach), and when the poison is in solid form and in large pieces (as meat, cheese, fish, etc.)

7. *Symptoms of carbolic acid poisoning:* Buccal mucous membrane is whitened and hardened; vomiting; burning pain in mouth, esophagus, and stomach; pulse and body temperature are lowered; the pupils are contracted; collapse, and finally death. The urine may become dark.

The *treatment* consists in administering white of egg, sodium sulphate, or saccharated lime, followed by lavage. Alcohol is said to be antidotal. At one time alcohol was much used; just now the older remedies (such as sodium sulphate) are more relied on. Soluble sulphates form with carbolic acid the insoluble sulphocarbolates, which can be removed by lavage.

12. *Symptoms of acute phosphorus poisoning:* "Eructation of gas having the odor of garlic. The mouth, when observed in the dark, is frequently faintly luminous (phosphorescent). After several hours pain in the throat, a sense of heat in the epgastrium, nausea, and vomiting. The vomited matters are sometimes bloody, and frequently luminous when agitated in the dark. The abdomen is tender, and there are diarrhea and colicky pains. After one or two days these symptoms cease, there remaining only pain in the back and limbs and a feeble pulse. Death sometimes occurs suddenly in from two to four days. Usually about the fourth day the patient becomes jaundiced, suffers from headache, insomnia, and retention of urine, rapidly becomes delirious and comatose, and dies." (From Witthaus' *Essentials of Chemistry and Toxicology.*)

Fatal dose: The minimum fatal dose is not determined; it is small, being probably less than one grain. *Fatal period:* From a few hours to several days. *Treatment:* By an emetic or the stomach tube remove from the stomach all of the poison which has not been absorbed; then give old French oil of turpentine or potassium permanganate; the food much be free from fats and oils.

Chronic phosphorus poisoning occurs chiefly among those engaged in the manufacture of matches. The symptoms are much the same as in acute poisoning, but less severe. But, in addition, there are pain in the joints, wasting of the body, periostitis (particularly of the lower jaw) followed by necrosis.

This form of poisoning may be prevented by strict cleanliness and ample ventilation of the work places, frequent cleansing of the mouth with a weak solution of sodium carbonate, and the prohibition of the use of yellow phosphorus in the manufacture of matches.

MATERIA MEDICA AND THERAPEUTICS, PHARMACOLOGY, INCLUDING PRESCRIPTION WRITING.

1. MERCURY. (1) Hydrargyri chloridum mite (calomel), dose gr. ss to x; used in syphilis, as a lavative or purgative, in congested or cirrhotic liver, in diarrhea, and as a diuretic. (2) Hydrargyri chloridum corrosivum (corrosive sublimate), dose gr. 1/60 to 1/30; used as an antiseptic, disinfectant, antiparasiticide, in syphilis, interstitial nephritis. (3) Liquor arseni et hydrargyri iodidi (Donovan's solution), dose ℥v; used as an alterative. (4) Hydrargyrum ammoniatum (ammoniated mercury), only used externally, and employed in ozena, psoriasis, tinea, and other skin affections.

2. In the doses indicated, the tincture of nux vomica as well as the compound tincture of cardamom and compound tincture of gentian will act as a mild bitter tonic, stimulating the appetite and the flow of saliva and of gastric juice. The fluid extract of cascara will keep the bowels open. As a consequence of increased appetite and improved gastro-intestinal activity there should follow an improvement in nutrition and strength, in the case of a patient convalescing from illness or suffering from simple debility or anemia.

3. Apomorphine is an artificial alkaloid obtained from morphine by the action of hydrochloric acid. Its chief use is an emetic, particularly in cases of poisoning, or where the stomach should be emptied promptly; it has also been used in bronchial catarrh, as an expectorant. As an curetic, it should be given hypodermicaly in doses of 1/10 grain, and the solution should be freshly prepared; as an expectorant, the dose is 1/40 to 1/25 grain, by mouth. It is contraindicated for children. It has also been used as a sedative in epilepsy and mental disease, and as a hypnotic.

4. *Indications:* Aneurysm, hypertension, arteriosclerosis, chronic asthma, emphysema, syphilis of the nervous system, pleurisy, pericarditis.

Contraindications: Bronchitis in old people, pulmonary tuberculosis, edema of the glottis, and idiosyncrasy.

5. *Three different methods of administering drugs:* (1) *By the mouth.* This is the most common method. Drugs may be administered by the mouth for their local action on the mouth, throat, stomach, or intestines, or for the purpose of being absorbed. When it is desired to influence the mouth or throat, the remedy is generally given in the form of a lozenge, and the patient advised not to take food or water for at lease an hour afterward. Remedies intended to act directly on the mucous membrane of the stomach should be given when the stomach is empty; that is, half an hour or an hour before meals. Drugs intended to exert a direct influence on the intestine should be given two or three hours after meals, and preferably in firm pills. Sometimes such pills are coated with a substance like keratin that will resist the action of the gastric juice. (2) *Hypodermic method.* This consists in injecting medicinal solutions into the subcutaneous tissue by means of the hypodermic needle and syringe. The advantages of this method are the great rapidity with which absorption is effected, and the certainty of securing the action of the entire dose, since partial destruction of the remedy by the digestive organs is avoided. The disadvantages of this method are the pain inflicted, the liability of causing abscesses, and the risk of throwing the solution directly into a vein. The alkaloidal salts, on account of their small bulk, are especially adapted for hypodermic use. Some remedies, such as toxins and antitoxins, are effective only when administered subcutaneously. (3) *Inhalation.* Volatile drugs are rapidly absorbed from the respiratory tract, and this method is especially employed for the administration of drugs which induce general anesthesia, such as

ether, chloroform, and nitrous oxide. The effect of other volatile substances, like amyl nitrite, is also secured by inhalation. (From Stevens' *Materia Medica.*)

6. *Conditions which modify the effects of drugs* are: Age of the patient, sex, race, body weight, temperament, disease, temperature, habit, idiosyncrasy, method of administration, time of administration, preparation of the drug, and dose. *Habit:* With many drugs continuous use induces toleration; this is particularly true of opium. *Idiosyncrasy:* This is a peculiar susceptibility or insusceptibility of one or more of the tissues to the influence of certain drugs. Less than one-fourth of a grain of calomel has been known to induce salivation. The smallest dose of quinine will in some individuals cause a rash. *Cumulative action:* This is the property which some drugs have, after they have been given for a certain length of time, of producing a severe and more or less sudden effect. It is probably due in most instances to an accumulation of the drug in the tissues; excretion, for one reason or another, being less rapid than absorption. In some cases, however, it may depend upon irregular absorption, a large quantity of the drug suddenly entering the circulation from the alimentary canal where, owing to some accidental condition, there has been an undue accumulation. (From Stevens' *Materia Medica.*)

7. *To determine the proper dosage for a child:* Let x = the age of the patient; then $\frac{x}{x+12}$ = the fraction of the adult dose which the patient should receive. Thus, a patient four years old should receive $\frac{4}{4+12} = \frac{4}{16} = \frac{1}{4}$ of an adult dose.

Sex: Women generally require smaller doses than men, about four-fifths.

Size and weight: This is comparatively unimportant, but as a rule a very heavy muscular individual will require a larger dose than one of slighter build and weight.

Idiosyncrasy: See above, answer to question 6.

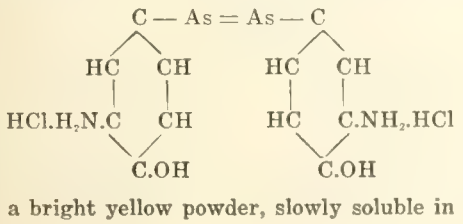
8. *Oleum ricini,* or castor oil is a fixed oil derived from the seeds of the *Ricinus communis.* It is used as a simple purgative, an emollient, a lubricant, and the leaves of the plant are said to have a galactagogue effect when applied to the breasts. The dose is about four fluid drachms. It is indicated wherever a purgative is required, and particularly where it is desirable that there shall be no irritation, as after operations, after labor, in cases of piles, to empty the intestinal tract in children. It is not adapted to cases of chronic constipation. With balsam of Peru it makes a good surgical dressing.

Intestinal evacuants of a strong nature are contraindicated: In pregnancy, as some of them (aloes, for example) might bring on a miscarriage; in very feeble patients and infants, for fear of still further weakening them; and in inflamed conditions of the intestinal tract and peritonitis and appendicitis, also in intestinal obstruction.

9. *Alcohol* sharpens the appetite, is a digestant, a diuretic, a diaphoretic, is slightly antipyretic; it increases the force and rate of the heart beat and pulse; it is a vasodilator, especially to the vessels of the skin; it causes an increase in the blood pressure; it is at first a slight nervous stimulant, but afterward is a depressant; in large doses it is a narcotic, and then causes a reduction of body temperature.

10. *Epinephrin* is the active principle of the suprarenal glands; it exists only in the medulla of these glands. It is generally administered in the form of a 1 per cent. solution, in doses of 10 to 50 minims. It is a cardiac stimulant, is a strong vasoconstrictor, and raises blood pressure, diminishes peristalsis, and depresses the respiratory center.

11. *Salvarsan,* or dioxy-diamido-arseno-benzol dihydrochloride; also called arsenobenzol, "Ehrlich-Hata," or 606. Its formula is $C_{12}H_{12}O_2N_2As_2(HCl)_2$, and it is supposed to have the constitution:



It is a bright yellow powder, slowly soluble in water, has an acid reaction, contains about 34 per cent. of arsenic, is used in treatment of syphilis, but is in the experimental stage only. It would be well not to give up the older remedies yet, and not to believe all the newspaper reports on this remedy. Up to the present it seems to be uncertain whether to use the substance in a solution or in an emulsion, also whether it should be administered into a muscle, into a vein, or under the skin. Further, there are certain contraindications; and bad results have followed its use (or abuse).

Salvarsan is indicated in: "(*a*) Early cases of syphilis in which contagious manifestations are appearing in rapid succession, in spite of efficient mercurial medication. (*b*) Cases in which, for family or social reasons, it is of special importance to limit the production of infective material or cause the disappearance of symptoms in the shortest possible time. (*c*) Cases in which the symptoms are recalcitrant to the action of mercury, or in which, from idiosyncrasy, that drug cannot be exhibited in sufficient dose. (*d*) Cases of syphilophobia and syphilomania, whether showing symptoms or not; its psychic action in these instances being of greater importance than its therapeutic effect. (*e*) Very early cases of the sequelæ of the luetic infection, before organic changes have occurred."

Salvarsan is contraindicated in: "(*a*) Cases that are doing well, *i.e.* in which the disease is pursuing its normal mild course under ordinary medication. (*b*) Cases with serious organic lesions of the eyes, kidneys, heart, or other internal organs. (*c*) Cases with postsyphilitic or parasyphilitic disease of the internal organs, more especially of the nervous system."—(*Progressive Medicine.*)

12. *Potassium bromide* occurs as a granular powder or as cubical crystals; it is white or colorless, odorless, and has a strong salty taste. It is soluble in about 1.5 parts of cold water, and in less than 1 part of boiling water. Dose is about 15 grains. It is a gastrointestinal irritant; it depresses the cerebrospinal system and also the heart, diminishes reflex irritability. Large doses cause bromism, which is characterized by an acne like eruption, fetid breath, anemia, gastric disturbances, mental depression, muscular weakness, loss of memory, sexual weakness, and general apathy.

BACTERIOLOGY AND PATHOLOGY.

1. In *primary pernicious anemia,* the blood shows a great diminution in the number of red corpuscles, also a variation in the size and shape of these corpuscles; many of them are also nucleated; the leucocytes are somewhat diminished in number.

2. In the *sediment of a normal urine,* we might find uric acid, urates, calcium oxalate, phosphates, cholesterin, hippuric acid, leucin, tyrosin.

3. In a *negative Widal reaction* the bacilli do not gather into groups and lose their motility.

In a *positive Widal reaction* the bacilli gather into groups or "clump," and lose their motility.

4. In a *microscopic examination of stomach contents,* we look for pus cells, yeast cells, sarcinæ, red blood corpuscles, and bacteria, chiefly the *Boas-Oppler bacillus.*

5. *Eosinophilia* means an increase in the blood of the number of eosinophiles; it occurs in myelogenous leukemia, filariasis, trichiniasis, osteomalacia, asthma, and certain skin diseases.

6. *Casts* are moulds of parts of the uriniferous tubules of the kidneys; they are usually composed of albuminoid substances, but may have, in addition, epithelial cells, blood corpuscles, or fat globules. *Blood casts* are composed of coagulated blood and blood cells, or are hyaline casts covered with red blood cells. They occur in hemorrhagic conditions of the kidneys. *Hyaline casts* are clear, translucent cylinders, often so pale as to be hardly visible. They are present in all forms of nephritis, in renal congestion, and sometimes in health. *Waxy casts* are much like hyaline casts, but are larger, yellowish in color, and more readily visible. They are present in chronic parenchymatous nephritis.

7. *Cirrhosis of the Liver* is caused by the prolonged use of alcoholic stimulants, malaria, syphilis, passive congestion, irritation of the bile ducts, and (possibly) the uric acid diathesis. "*Atrophic cirrhosis* begins with hyperemia of the connective tissue (Glisson's capsule) and enlargement of the liver results from the development of brownish-red connective tissue elements. The hypertrophied connective tissue presses upon the hepatic cells, causing them to undergo fatty degeneration. As this process advances the organ becomes reduced in size and more dense, and its surface is covered with numerous small nodules ('hob-

nails'). The hepatic and portal circulation is obstructed from obliteration of their respective radicles. The changes in the hepatic structure interfere with the venous circulation of all the abdominal viscera, resulting in venous congestion of the stomach, pancreas, intestines, and peritoneum, and enlargement of the abdominal veins. The hepatic peritoneum is thickened and opaque, and adhesions are formed between the liver and diaphragm, gall bladder and stomach. On section of the liver, firm fibrous tissue is found in abundance distributed between the lobules.

"*Hypertrophic cirrhosis* occurs in younger individuals than the preceding and does not seem to be dependent upon alcohol for its production. The organ is yellowish in color and remains enormously enlarged throughout its entire course. The newly formed connective tissue shows very little tendency toward contraction or toward compression of any of the branches of the portal vein. The connective tissue is developed to a greater extent within the lobules and thus produces obstruction of the biliary channels and consequent jaundice. By some observers it is claimed that there is a new formation of biliary capillaries and a proliferation of the liver cells."—(Hughes' *Practice of Medicine.*)

8. A THROMBUS is a blood clot formed in the blood-vessels during life. The process is called thrombosis. *Causes:* Changes in the blood current; changes in the vessel wall; anything within the blood current not covered with endothelium. Generally more than one of these conditions are present. *Results:* Formation of emboli; infarction; heart clot, and sudden death; cerebral softening; the thrombi may become organized, liquefy, soften, become calcified, putrefy, become discolored, or may resolve.

Varieties of thrombus: Red thrombus, which originates from blood at rest, such as after ligature of the femoral artery for popliteal aneurysm. It is soft, not laminated, consists of a loose network of fibrin which entangles very many red corpuscles and a few leucocytes; it adheres to the vessel wall and later contracts. *White thrombus,* which originates from circulating blood, such as is found in an aortic aneurysm; it is firmer than the above, it is laminated, it is dense; it is composed chiefly of leucocytes, but red cells are also present, as well as fibrin network and some granular material, probably derived from broken down blood platelets. *Parietal thrombus* is one which adheres to the vessel wall, but only partially occludes the blood-vessel, in opposition to an *obstructive or obliterating thrombus,* which absolutely obstructs the blood channel.

An EMBOLUS is a plug in the circulation. The process is called embolism. *Causes:* Thrombi, detached pieces from the heart valves, microorganisms, oil, fat, parasites, pieces of new growths. *Results:* Obstruction to the circulation; infarction, inflammation of blood-vessel; dilatation of blood-vessel.

Infarction is the condition produced by the plugging up of an end artery. It is an area of degeneration and inflammation caused by the presence of an embolus in an artery that has no anastomosis with other arteries. There is a conical shaped area of tissue deprived of nutrition, the apex of this area being toward the interior of the organ, and the base toward the external surface. As a rule the infarct is firmer than the rest of the organ. *Results:* Infarcts may be replaced by connective tissue and scar formation; they may become encapsulated; liquefaction necrosis with cyst formation may occur.

9. A *carcinoma* is a malignant tumor of epithelial origin.

A *sarcoma* is a malignant tumor made up of cells which resemble those found in embryonal connective tissue.

In the *breast,* carcinoma is probably the most frequent malignant tumor; sarcoma is rather infrequent.

In the *liver,* carcinomata are the most common of the tumors found; sarcomata are much less frequent.

In *bone,* sarcoma is especially common; carcinoma is much less frequent.

10. *Osteomyelitis:* "The marrow first becomes red and edematous, then cellular infiltration and proliferation are superadded, and finally collections of pus or diffuse purulent transformation follow. The surrounding bone is involved, becoming more or less infiltrated, softening, and not rarely undergoing necrosis. Small or large sequestra may be formed, or the bone may necrose completely. Periostitis is generally associated, and the tissues around the bone are usually infiltrated and suffer suppurative or necrotic changes. Hypertrophic changes may occur in the periosteum and superficial layers of bone, causing a bony encasement of central sequestra. In such instances a suppurating sinus, extending from the bone to the surface, usually remains."—(Stengel's *Pathology.*)

11. *Jaundice:* "It seems as if true jaundice were always obstructive in nature, with regurgitation of pigment into the circulation. In obstructive jaundice properly so-called, it is obviously so, for there is an obstruction in the bile channel somewhere between the hepatic lobule and the papilla in the duodenum; there may be congenital narrowing or absence of the main ducts, inflammatory swelling of the walls with narrowing of the lumen (*catarrhal jaundice*), growths or foreign bodies within the passage, new growths outside the passage, pressing upon it, or perhaps even a spasmodic stricture of the duct. With any of these the bile channels are distended, and it is found that ultimately the pigment injects a fine intracellular network of channels, connecting with the bile capillaries. This network surrounds the nucleus of the cell but does not enter it, and if distended, throws back the bile upon the cell, where it is at once absorbed by the lymphatics; and perhaps less rapidly, but surely, the pigment makes its way into the hepatic blood; the latter process is much hastened if rupture of bile ducts should occur. A second way in which jaundice can be caused is by the breaking down of a large number of red corpuscles in the circulation; the liver cells, presumably overloaded, excrete a concentrated inspissated bile by which the fine channels are blocked; the obstruction is not complete, the feces may remain colored, and the jaundice may not be very severe; such a form of jaundice may occur in sepsis, and is evidently *hemohepatogenous* in its nature. Yet another kind of jaundice is found in such states as acute yellow atrophy of the liver, in phosphorus poisoning, and in the infective jaundice of children where the pigment is evidently freed from liver cells during their destruction; it must be remembered, in fact, that whenever many liver cells are destroyed at the same time jaundice may supervene. Finally severe shock or nervous disturbance has been followed by jaundice, a phenomenon which we are not able to explain."—(Adami and McCrae's *Pathology.*)

12. *Cloudy swelling* is a form of degeneration in which the cell protoplasm becomes edematous and opaque.

Atrophy is a decrease in the amount of a tissue owing to diminution in size or number of the histological elements of which it is composed.

Malignancy is the characteristic of certain tumors which have a tendency to destroy life, to recur after removal, to produce cachexia, to cause metastases, and to infiltrate the surrounding tissues.

Books Received.

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THEORY AND PRACTICE OF BLOODLETTING. By HEINRICH STERN. Published by Rebman Company, New York; 264 pages.

A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By JAMES M. ANDERS, M.D. Published by W. B. Saunders Company, Philadelphia and London. Twelfth Edition. Price, Cloth, $5.50 net; half morocco, $7.00 net.

THE OBSTETRICAL QUIZ FOR NURSES. By HILDA ELIZABETH CARLSON. Published by Rebman Company, New York; 316 pages.

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Original Articles.

NEWER PRACTICAL POINTS IN THE TREATMENT OF TYPHOID FEVER.

BY BEVERLEY ROBINSON, M.D.,

NEW YORK.

IN some degree toxemia is present in every case of typhoid fever. The degrees of it are very different. At times, even the end of the second or during the third and fourth weeks of the disease, it has seemed relatively mild. There has not been a high range of temperature, there has been only moderate diarrhea—no internal hemorrhages have occurred, and the nervous phenomena have been relatively slight. We are then somewhat inclined to believe it is our rational treatment which has occasioned this desirable state, or if in the hospital ward there have been numerous mild cases, we might think it was evidence of the character of the epidemic.

Many years ago not a few of our ablest practitioners accepted the facts as reported from the German hospitals of the great success of the Brand treatment, and felt called upon to carry out their doings here. Of course it necessitated three or four able-bodied nurses, men or women, to give the baths properly and as often as they were indicated. In well governed hospitals, however, it could be done and was done. In private practice it was another matter, and only in exceptional cases was it really feasible to give the Brand baths. The expense could not be supported. In addition, place for the nurses in the home was a great difficulty, not to speak of extra meals.

Fortunately, some of us were never convinced that the Brand system should be commended in such a wholesale way. We believed that by sponging the body and limbs with water, or water and alcohol at a temperature from 70° to 80°F. we could reduce the temperature, give tone to the nervous system, and promote the comfort of the patient as far as was essential.

If under this treatment the patient developed bad symptoms, we did not believe they would have surely been prevented by employing the Brand treatment. This conviction was established more firmly in the case of women and of weak, nervous patients and where the baths had not been given early in the disease, say before the expiration of the first week.

It would now seem to me, judging by what I have seen, that the majority of practitioners take this view at the present time. I have always insisted, as far as may be, that patients should drink water freely and often. On the other hand, I have not felt like forcing it upon them and as some do, in very large quantities—even as much as two or three quarts in twenty-four hours.

Of course, when the urine diminishes notably in quantity and perhaps gives evident signs of a low grade of nephritis, with casts and albumin present on examination, we must try to remedy these symptoms. Then it is we may with great advantage turn to rectal irrigations with the short recurrent tube of Dr. R. C. Kemp.[1] The irrigations may be repeated several times in the twenty-four hours. Very soon the bulk of the urine increases and other symptoms improve. Notably the heart action becomes stronger, the temperature lowers and the patient is less apathetic, or somnolent. Hence we find it easier to feed him sufficiently, with cereal or other broths.

We owe to Dr. Seibert[2] and to Dr. R. C. Kemp the value of milk-free diet and enteroclysis in typhoid fever. Dr. Kemp[3] writes as follows: "I have noted the tympanites and temperature lessened when milk was withheld, and increased when milk was again administered. With milk-free diet my patients have had much less tympanites and the temperatures have run much lower and the disease has run a milder course. In fact by this method, combined with rectal irrigation and the ingestion of large quantities of water, the temperatures have generally kept below 102.5°F., so that friction bath (Brand), or the Nauheim bath could be omitted."

Whenever for one or another reason we find the rectal irrigations are objectionable, as for example, if they annoy or fatigue the patient very much, or if there has been an intestinal hemorrhage in larger or smaller quantity, we shall find in hypodermoclysis a very valuable adjunct to our remedial armamentarium. To secure greatest advantage from it, however, it must be given with care and strict attention to some details in practice.

These should be: To give the subcutaneous injection slowly, at the right temperature, in the proper locality, and not too much at any one time. Of course, before puncturing the skin with the needle it should be properly sterilized and anesthetized. As a rule, the saline fluid is rapidly absorbed and causes very little distress. But this is not always the case, and occasionally the patient complains of the pain caused by the injection. In many instances this drawback is greatly overbalanced by the good results obtained. The pulse is strengthened and the quantity of urine increased. After one or more injections of three to six ounces of fluid the entire aspect of the patient has notably and visibly improved.

It is usually stated that a dose of calomel or other purgative should be given at the beginning of a typhoid attack, and this treatment is considered highly advantageous. Later on we should rely, in the judgment of most writers, upon enemata to move the bowels properly. According to them, when there are pronounced loose and frequent movements, enemata should be stopped.

With these affirmations I am not in complete accord. It seems to me that even at the height of the fever, or during the second, third, and even the fourth weeks, it is desirable to give an occasional

dose of palatable castor oil, or a little purgative water, like Hunyadi. I am quite confident it is beneficial and carries off some of the poison of the disease. I do not believe it increases the danger of either perforation or hemorrhage. Very probably it has, on the contrary, a desirable local effect in cleansing the ulcerated surfaces and carrying away from them much that is infectious and poisonous. Indeed, in one instance I can vividly recall where there had been considerable and repeated hemorrhages from the bowels, a dose of Epsom salts relieved them completely. As the patient was decidedly constipated at the time, I explained the good effect in part at least, by the breaking up of a hard fecal mass which by pressure was causing the ulcerated bloodvessel to continue bleeding. Whether there be constipation or diarrhea, I consider the laxative by the mouth desirable treatment. It should be given at least every two or three days. I do not think that diarrhea should prevent the use of a moderate saline enema every day. It cleanses the lower bowel and aids the passage of the feces from above in a way which to my mind is curative rather than the reverse. In this connection I would refer to a paper I read not long since, by Dr. Robert N. Willson of Philadelphia, entitled "The Decomposition Food Products as Cardiovascular Poisons," and to the following remarks incidental to the effect of gases in typhoid fever. He writes: "Their toxic influence is apparently due to their absorption as such, and to a direct action on the cardiovascular as well as on all the body tissues. I can easily believe, after observing a number of such instances, that the distress in typhoid tympanites is not altogether mechanical, and that it is not entirely due to overdistension and to dislocation of the heart from its normal position. The intestinal gases appear toxic and the toxic influence is the more prompt and serious." Here again the enema is most useful.

Sometimes when the patient is at a low ebb with weak pulse, faint heart action, oliguria, muttering delirium and twitchings, neither saline irrigations of the rectum nor hypodermoclysis seem to answer the indications so well or so rapidly as an intravenous infusion.

The following account taken from Hare[6] has great value. The best solution is: calcium chloride 0.25, potassium chloride 0.1, sodium chloride 9.0, sterilized water 1000 c.c. "There is now placed upon the market a 'concentrated saline solution' in which the salts just named are dissolved in an ounce of sterile water and placed in a sealed sterile bottle. The contents of one of these vials added to one quart (1000 c.c.) of pure sterile water make a saline fluid ready for instant use. The dry salts, carefully sterilized, are also marketed. The water should be distilled instead of boiled and used as soon after distillation as possible."

To show the value of saline infusion by the vein, I beg to report an unpublished case recently handed me by a distinguished colleague. In addition, I would refer to not a few instances of my own, which will be found in an article of mine published many years since in the MEDICAL RECORD.[8] My colleague's case is briefly as follows: "The only case in which I recall having used intravenous infusion of normal salt solution in typhoid fever was an extreme one—late in its course, high temperature, delirium, and profound intoxication. In this particular instance, the result—for I cannot think it was accidental—was phenomenal. The patient was considered practically moribund, and I had announced the almost certainty of his speedy death. I think the temperature dropped five degrees in twenty-four hours, following two pints by vein—he was, within that time, entirely free of delirium—his temperature rose but slightly, and he speedily convalesced. I used the agent in this case simply to dilute an extreme intoxication and promote elimination, until his own antagonizing bodies could better act."

A great improvement in the use of saline infusions, and also in Murphy's drip method,[7] has been inaugurated by the use of the vacuum, or thermos bottle, which the profession owes to Dr. R. C. Kemp.[8] By the proper employment of this bottle the saline fluid may be kept more easily at the same temperature than it could previously with the use of hot water bag, thermolytes, Elbrecht's apparatus or other contrivance.

During quite a while and in former years transfusion of blood was employed in very critical cases, only to be practically abandoned in view of its difficulties and dangers. During the last few years with a better technique great advances have been made, and not a few great successes may be claimed by this method. A very striking case was reported by Morris Manges[9] only a few years since, and lately others have also fortunately taken place. Thanks to the great courtesy of a late house physician of St. Luke's Hospital, I shall now report one taken from his notes.

This case ran a typical, severe, uncomplicated course for several weeks. Late in February, 1915, a recrudesence occurred and during this period hemorrhages were frequent and copious and not satisfactorily checked by cold, or subcutaneous injection of whole blood, kindly furnished by a friend. Transfusion was done on Feb. 28 by Dr. Edward Lindeman. He used the indirect method as introduced by himself, employing a battery of 20 c.c. Record syringes and injected 900 c.c. of blood in about fifteen minutes. From this time recovery, while not uneventful, was progressive and the convalescence satisfactory. Of late, I am informed, in one large New York hospital the "citrate method" of Lewisohn[10] has been used very satisfactorily. Several of the cases of typhoid fever, complicated by hemorrhages, have been thus treated.

On the other hand, a well-known expert in blood transfusion writes me as follows: "Some three years ago I employed sodium citrate. I found it toxic and never again employed it. I am opposed to the use of citrate, or any anticoagulant in blood transfusion. It is unnecessary, unscientific, and even dangerous. Several weeks ago an article appeared in the *Journal of the American Medical Association* showing dangers in its use. It is not toxic for all persons."

In the latest article on this subject by Dr. A. Lewisohn,[11] entitled "The Citrate Method of Transfusion in Children," the writer reaffirms his confidence in the method. He has now reduced the percentage of the citrate in the blood to transfuse, and considers it quite equal to blood without any such mixture. Indeed, if we may admit the experiments of Dr. J. Spencer Davis[12] to be correct as to conclusions, we should know that "sodium citrate solution mixed with the blood causes it to produce a greater leucocytic response." The citrate may therefore be doubly useful. The non-coagulability of the blood occasioned by it is a matter of common knowledge. A new method of syringe transfusion by Lester J. Unger[13] has also met with success in men, as it had been already employed with that result in animals.

Personally, I am as yet more in favor of saline than blood transfusion in typhoid fever when either is required. At least this is my judgment unless a proper donor can be secured and immunized, or is already immune,* and the blood has been tested in a laboratory, as to agglutination, or hemolysis with respect to the donee. With both methods it is essential to have a good surgeon do the operation, or at least one who has had some previous experience and is familiar with the technique.

I have seen saline intravenous infusions do good; I have also seen them do harm. More than once death seemed to me to be more immediate and certain by reason of this interference. Previous sterilization of everything involved—patient locally, instruments, surgeon's hands—is imperative. Further, the saline infusion must be made slowly and limited as a rule to 8 or 10 ounces at any one time. The two pints used in the very successful case reported by me, are somewhat unusual, I believe. Among the newer and still undetermined methods of treatment in typhoid fever we should now place that by vaccines.

In the paper by Jobling and Petersen[14] on Bacteriotherapy in Typhoid Fever, "the conclusion is warranted at present that intravenous bacteriotherapy offers a reasonably safe method of treatment in select cases of typhoid fever, but that further efforts should be made to overcome the definite toxic effects which of necessity accompany the injections."

Among these toxic effects we should note specially the sudden and considerable rise of temperature with severe chill, the notable depression of the heart's action, and the increased peristalsis, which may occasion hemorrhages and bring about fatal termination. Apparently, from the observations of McWilliams[15] and others, the duration of the disease is notably lessened and the cessation of a high febrile temperature frequently lasting. The great and sudden rise of temperature following within a short time, usually one to three hours, lasts only a short time. Indeed, at the end of twenty-four hours from the time of the initial injection it has frequently dropped to normal. Several deaths may be directly attributed to this method of treatment. Those who uphold it state that a like objection may be used frequently against any novel or advanced system. As the contraindications and dosage are better understood, such fatalities will probably diminish. The dose now employed ranges from one hundred to two hundred and fifty million bacilli. Various types of vaccine occasion similar changes in the blood picture.

Dr. Austin W. Hollis read a paper before the Medical Association of Greater New York on December 20, 1915, on the value of intravenous injections of vaccines in the treatment of typhoid fever. Dr. Hollis's report from accurate observations in his wards at St. Luke's Hospital, New York, is surely, in some particulars, convincing, although the number of his patients was limited. It is also true, I believe, that no comparisons were made between patients treated with vaccines and those who at the same time were treated by former methods. It may be, therefore, that the results obtained are more favorable than would be really justified by a close analysis of different treatments of typhoid fever, carried on at the same time with two sets of patients.

It might be added that at the Mount Sinai Hospital, New York, physicians to the institution have not employed intravenous injections of vaccines in the treatment of typhoid fever, because of the poor results hitherto obtained with them. One of the attending staff writes me, December 27, as follows: "They (the physicians) told me that cases so treated have shown very marked toxic symptoms (literature-reports), and for that reason they have not tried this method."

The latest, published article on this subject, is one by Dr. Joseph L. Miller of Chicago,[16] who gives a detailed report of his own and others' work. After reading it carefully, however, I have not been able to glean much that was to me encouraging in this newer treatment of typhoid fever.

*A donor who has been immunized, or who is already immune by reason of a previous attack of typhoid fever, is not so essential where the transfusion of blood is done to replace blood lost by repeated hemorrhages, as it is in instances of profound toxemia from typhoid fever.

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42 WEST THIRTY-SEVENTH STREET

CONSTITUTIONAL INFERIORITY;

A SURVEY.

BY HENRY M. FRIEDMAN, M.D., LL.B., LL.M.,

NEW YORK.

VOTING ASSISTANT SURGEON, UNITED STATES PUBLIC HEALTH SERVICE.

THE spectacle of the great mass of people who are constitutionally unfitted to take part in our present progress is a painful one to us whether it be from material motives, or from altruistic ones, or from that intangible but still present motive of race pride. Race pride must take the place of the more selfish familial, tribal, or national pride. Race pride is human idealism or unselfishness—yet in a measure very selfish, since it desires to see spring from itself the best. Human inferiority or degeneracy can be ethnic, familial, or personal. Race superiority has, however, always been a changing factor. Races now degenerate, or even entirely effaced, were highly developed ages ago. The very factors which made them disappear are important for the present peoples to bear in mind in order to maintain their own integrity. A high degree of civilization, breeding luxury, excesses of all kinds, and consequent disease and degeneracy—conditions under which no race can long survive—was at the

bottom of the fall of many of the now defunct races.

General Considerations.—In general, the newer races are the best. The older races show a high degree of development, but they have already reached a climax beyond which they cannot go. Old stock is consanguinous and needs new blood to rehabilitate it. Blue blood, so-called, is, for this reason, undesirable. The influx of certain races has had a tendency to raise our physical standards. The factors which militate against the standards of a race are race consanguinity and race mongrelism. In the former breeding is entirely within the confines of a race in the tribal sense. Racial defects become emphasized because no new dominant characters are injected. Yet inbreeding is particularly vicious only when some bad stock happens to be injected into the inbred stock. Then there is caused greater havoc than if there had been no previous inbreeding. In good stock inbreeding may otherwise even be desirable. Mongrelism means the crossing of widely separated and wholly incompatible races. There is really no mixture there, rather only a mere suspension, where every factor of the incompleteness and instability precipitates.

Aboriginal races cannot be included in this discussion since they have not yet quite reached the *man* stage. When attempts are made to develop them they progress up to a very limited degree only, although the rate of development may even be more rapid than in the civilized. It soon, however, ceases entirely. There is a limit to their humanization. Man's civilization, though at present seeming boundless, has brought with it a train of vices, diseases, and defects. Indeed, it is often said with truth that civilization has meant syphilization and degeneration.

Of the five races of mankind we naturally consider the white race the superior one, although other races have had high degrees of civilization ages before that of the white races. Of the European races it is now difficult to say which are the superior. Southern Europe has labored under great disadvantages. It has always played the part of the cockpit in which the best of the races were destroyed, leaving the most inferior to repopulate. Naturally, or as the direct result of the violence of war, there is caused the rapid mixture of widely different peoples, so inimical to stability. Withal, Southern Europe is still the mother of a sort of human genius —the fine arts. It may be that this is exactly the kind of temperament or constitution necessary for its development. Art is emotion translated and depicted. Northern Europeans are of a higher order physically, but because of the greater opportunities for inbreeding they are subject to many individual defects. The fact is that every race has its elements of superiority and inferiority. It cannot be decided what quality or what achievements, or the lack of which, makes a race superior or inferior.

Still less can be said on the superiority or inferiority of individual types. Blonds are said to age sooner, to be more susceptible to adverse environmental conditions than brunets. Sudden and long continued changes of climate seem to effect blonds more seriously than the darker types. The many race and individual types have and will continue to play an important part in the standards of this country.

The term "constitutional inferiority" is comprehensive. Unless this is kept in mind some particular quality will be given too much weight in one's favor, or another may be the basis for a wholly erroneous judgment. Only after lining up all qualities with their respective weights, *pro* and *contra*, can a general valuation be given an individual, which shall place him into the class of the actually inferior, or only into the class of the theoretically inferior in which all human beings belong because of the natural imperfections of all mankind. No one is perfect or free from taint. In so far as we are all imperfect, so far can the evidences of our imperfections be multiplied until there is no one that cannot be included on some evidence. Even the few successful men of history will not be found to be free from some taint of degeneracy handed down by their ancestry. Constitutional inferiority is degeneration—a defective basis; it is a marked deviation from the normal or standard types. "It is a process of natural dissolution, disintegration, mental, moral, or physical." In order to determine the scope and the nature of this inferiority there is required the aid of all the sciences—the medical, the psychologic, the pedagogic, the philosophic, and the sociologic. In the study of this subject the finding of the perfect is not aimed at—in this mundane sphere that might even be highly undesirable. The normal or the perfect, like the classical type of disease, is for the lecture room only. Practically, it rarely, if ever, occurs.

Constitutional inferiority is relative. It varies in accordance with the standards. The higher the standard the greater the number of those embraced. The greater the requirements of progress the more individuals are found to be of grades too low to keep abreast. They are just a stage below the degree of human evolution. Evolution brings in relief new faculties and powers heretofore required, and betrays those who have not these faculties or powers or in whom they are only defectively developed.

All defectives, no matter in what degree or in what manner, are in those respects inferior in composition or in constitution. In speaking of this condition it will therefore be necessary for the sake of localization, unless desiring to designate generally, to state in what respect—in what faculty or system—and in what degree one is inferior. On the other hand, the human body is so bound up within itself that there can be no element of defect in its composition which does not have a baneful effect upon the whole organism. "The system consists of an agglomeration of organs which hold certain relations to each other and which in their ensemble determine the nature and character of the individual." A defect in one part may bring other parts out of tune and cause a general disharmony in the organism. The subtle conditions of various kinds to which man is heir, and which baffle explanation, are due to some disorder in a very fine or very highly developed part of the general organization.

Constitutional inferiority is the basis of all diseases, all conditions, all predispositions and all susceptibilities. It is predisposition and susceptibility *par excellence*. It is basic pathognomy, without the intervention of which exciting causes are of no avail. It is lessened vitality with the tendency to transmit a like or even a lower degree of development. Without added insults, however, there is a tendency for the organism to return to the prevailing type. Some of the offspring of a degenerate are even over vigorous generally, or only with respect to the inferior condition transmitted, so as

the more quickly to regenerate. This may be the explanation for the presence of the genius or the saint in an otherwise bad family. Yet even with the marked likelihood of subsequent regeneration, there is an appreciable delay, during which time the offspring are sufficiently backward to hamper the progress of this, their species. The human race has risen steadily, some of them, at least, under enormous stimulation, but with the rise there has been the sacrifice of a great many who, trying to emulate the enormous efforts, have, because incapable from constitutional weakness, fallen from exhaustion, to form either themselves the class of degenerates, or to pass these qualities on to their progeny.

It is from the study of man's composition that we are to learn his character, his mental capacity, his physical condition, his resistance or susceptibility to disease, his temperance, his moral and intellectual endowments. Human derelicts live in embryo in the constitutionally inferior. Many latent inferiors never become patent ones because of the intervention of some discipline, correcting influence or benign environment. It is the problem of the day to find out these latents and to supply the very influences which only a few receive by accident. The problem is a human one entirely. In animals the derelict element soon perishes. Only the fittest survive to advance the evolutionary scale of their species. In human beings, however, the artificial or medical selection, so-called, of civilization preserves the weak to transmit the condition and to burden society with their care.

In speaking of any condition, subject, type, etc., the question that at once presents itself is—what does it look like? What is there to take it out of the general and put it into the class of the special, peculiar, or atypical? While we may have a definite mental picture of a particular degenerate, without further pathological data, we are usually very vaguely orientated on the class to which this type belongs. We desire more information, for example, on the type of his head, of other parts of his body, his expression, his reaction, his malformations, his mental capacity, his judgment, his social scale, his education, and the like. In short, the questions that naturally present themselves are the very ones which must be answered before one can determine what constitutes degeneracy.

Physical Degeneracy.—Physical degeneracy or inferiority, while apparently a separate entity, is usually found in conjunction with degeneracy in other elements of the human organization. Wherever there is much moral or mental defect there is an accompanying, if not an underlying physical inferiority. *Mens sana in corpore sano* is more than ever true. Physical degeneracy embraces every atypical variation from general malnutrition and poor physical development to the most minute physical defect which might in any way influence efficiency, typical form, or symmetry, or, which in any way points to a degree of evolution below the average. Pure symmetry of form is not aimed at except from the wholly sentimental or artistic standpoint. The desire for mates of this kind alone is in itself a degenerate sign, since there is then an evident inability to appreciate physical or other qualities other than those entirely superficial. Perfect symmetry of face, with the absence of the facial lines of a thinker, is a face unpuckered or unscarred from the battle of thoughts. The lines of great men's faces are beautiful only to those who can read the story of the lines, who can speak their language—to others they are mere hieroglyphics. Indeed, when parents speak of their children as beautiful it will be quite in order to ask not merely for their photographs, perhaps well touched up, or for some other peculiar quality, but to inquire for their survey sheets. There would be pictured the real child. The classical features of degeneracy, so-called, are not true, and the schools that held that form and appearance are real indices of the normal and of the degenerate are fast disappearing. Criminal anthropology, not physiognomy, is now the study of tangible physical defects such as rob the system of the benefits of a normal body. No stigma of degeneration is common to any one condition.

In whatever part of the organism we should look we can find certain features, the so-called stigmata of degeneration, which imply a defective basis somewhere. Rarely are they found in a number of places in the same individual. Physical or anatomical stigmata denote a departure from the prevailing type in the direction of lessened complexity—to a type in a cruder state of evolution. Anatomical stigmata are more nearly akin to the normal in some lower type of being, not necessarily a counterpart but merely a leaning toward—a kinship with some phases in common. Often there are left distinct anatomical structures, in a greater or lesser degree of perfection, which conform strictly to parts in the lower anmals—the so-called teratomata. They are said to be the useless scaffoldings left in the body after the work of developing the species was completed, or rather left there because the newer being was yet incompleted. The presence of these scaffoldings but reflect upon the unfinished and therefore inferior quality of the individual.

Because there is no human perfection there is none who has not one or more signs of this imperfection, who has not some stigma of degeneration. None of us is as yet perfectly differentiated from our animal ancestors. Stigmata are serious only in proportion as they are profound or as they are numerous. A few stigmata mean nothing. Unless the defects or air holes in a chain are very large or very numerous the strength of the link is not effected. On the contrary, a few hollows may strengthen, on the same principle as the hollow pillar is stronger than the solid one.

The Anatomical Stigmata.—Among anatomical stigmata may be mentioned the various misshaped heads, upper jaw prominence of the face (prognathism), ear deviations (the especially known Darwinian tubercle), prominent orbital arches, drooping eyelids, absence of eyelashes, ocular asymmetry, absence or arrested development of the eyeballs, juvenile cataracts, albinism, flattened or saddle-shaped nose, high arched and narrow palate, malformation or malposition of the teeth, harelip and cleft palate, supernumerary or malformed breasts, supernumerary or absent ribs, specially weak abdominal musculature (hernia), malformation of the extremities, shortening of the lower and lengthening of the upper extremities (monkey-like), polydactylism, syndactylism, extradactylism, large hand-like feet and toes, hypospadias, espispadias, median scrotal fissure, eunuchoidism, hermaphrodism, feminism, masculinism, elongated or movable coccyx, spina bifida, lefthandedness, dwarfism, gigantism, malposition of organs, vestigial organs, etc. In the adult the presence of these stigmata mean little since their import to the individual has already become manifest. In the young their pres-

ence should arouse serious concern, should stimulate search for stigmata in the other systems—the mental or moral organizations, and should turn all efforts to find a path in life in which these defects will cause the least amount of friction to the individual.

Moreover, as general stigmata of degeneration are to be mentioned precocity, premature aging, and a generally atrophic condition. Most lower animals reach maturity at ages earlier than man. Precocity in man is, then, a reversion or atavism. Certain races have this tendency, usually the consanguinous or the widely crossed.

Physiological Degeneracy.—While anatomical stigmata are easily detected on any routine examination, the physiological stigmata act pathologically to the system and come under the scrutiny of the physician in that way. The correction of these difficulties forms a large part of every physician's practice. Of these the diatheses and constitutional diseases are usually hereditary. As in the case of hemophilia there is a very peculiar and specific form of hereditary transmission, that can leave no doubt that one deals with some basic familial defect —the defective basis. Diatheses are sensitizations or susceptibilities or physiological weaknesses of the system, transmitted to and increasing in the future generations, unless previously eradicated or weakened by mixtures with stock which is dominant in this respect. They are anaphylactic susceptibilities in contradistinction to the natural immunities transmitted in superior stocks.

Physiological Stigmata.—Among specific stigmata may be mentioned the thyroid states and other evidences of defects of the internal secretory organs, albinism (the visual effect), color blindness, nystagmus, strabismus, myopia, hyperopia, astigmatism, concentric limitation of the field of vision, deafness, tone deafness, movability of the muscles of the ear, and movability of other usually immobile muscles, tics, stuttering, mutism, tremors, epileptiform movements, merycism, lack of vasemotor control (blushing, blanching, and angioneurotic edema), neuralgias, migraine, cyclic vomiting, hyperesthesias, anesthesias, transient albuminuria, achylia, hemophilia, etc. The physical, together with the physiological stigmata come near being the bases on which nearly all the bodily ills are founded. The robust will usually withstand epidemic disease to the very last, whereas the weak and the defective are the first to succumb. They not only lack the immunizing power of the normal system, but they have the anaphylactic power highly developed.

Mental Degeneracy.—It must be conceded that within certain limits a man can find his niche in life without a great degree of physical perfection. This cannot be said of mental development. The mentally inferior hamper and are hampered everywhere and at all times. At best they can do but the coarser work of life. Because constitutional mental inferiority towers so much above every other form of inferiority the term "constitutional inferiority" has come to refer almost exclusively to mental inferiority. Not all mental inferiors are necessarily wholly inefficient. The inferiority may be of one kind or another, in one mental faculty or another—entirely or only partially. Unless called upon to officiate in an endeavor in which the defective faculty would be called into play, they may do very well. They may even be geniuses in their own spheres. Besides, here also it is not the mere presence of defect, but the number and especially the profundity that counts. Even the very defective can be trained in faculties in which they are found capable of doing a sufficiently useful work to become self-sustaining. These are still abnormal, however, because, besides supporting themselves, they are unable to contribute anything to society. That is the test of mental normality. There is no standard, for the requirements are being continually raised to meet the advances of progress. The inferior are those who cannot keep pace with that progress. "On the brain depends the rank, usefulness, guidance, and place in society." Yet "there are mentally diseased persons about whom it can be said that they are removed from a clear view and correct perception merely by a shade of color, a slight variation of light." The borderline condition is that "twilight where brain light and darkness, social fitness and unfitness merge into each other." The shades of mentality are so many that even very slight differences in color are very wide apart.

Starting from the broad basis, axiomatic in character, that there is no human perfection we reach the indistinct and ill-defined conditions that merely mark out some people as different from the mass of people—they who are queer, eccentric, atypical, somewhat dull of comprehension; then to the more individual defects that are recognized as pathological but which yet do not necessarily impair the general or a special efficiency; then to defects that are of such a general or particularly profound character that efficiency and usefulness are impaired unless specially trained, and lastly the absolute inferior who must be under constant care and is of no value to himself or to the community. This, then, is the range of mental inferiority. There is a very gentle gradation—never a sharp line of demarkation between the normally imperfect, and the perfectly abnormal.

The study of psychiatry has yielded but a small mass of the definitely inferior. There still remains the task of combing through the large amorphous mass of the subnormal for more definite pathological classifications. The defective is, nevertheless, a far more definite entity than the normal, for it is easier to say who is defective than who is normal. The defect is limited in the lowest by the ament or idiot; the normal have no highest limit. Every advance makes the distance greater. We are mentally inferior to the extent that we stop progressing, and that, no matter how rapid has been our previous rise. This is the nature of the progress of aborigines—the ethnic defectives. We ought to progress in early years, generally; in later years, specially. Specialism or specialists are later year developments. Normally, specialists are not born; they are developed. The born specialists who include infant progidies, the savant-idiots, and the like, shine only in one faculty to the exclusion of all others. There lies their degeneracy. Where no element in us progresses we degenerate. There is no standing still—no middle course.

In mental inferiority, more than elsewhere, does heredity play an important rôle. Of all the conditions that have a tendency to be visited upon future generations mental degeneracy is the most apparent. Chronic diseases of all kinds, alcohol, drugs, syphilis, arteriosclerosis, immorality, and insanity in the ancestors seem to be converted into mental degeneracy in the offspring. Like all parasites or lower species of less complexity or less differentiated organizations, such individuals are very prolific. The higher the organism, or the more dif-

ferentiated the tissue, the less the power of reproduction or regeneration. Thus while prolificity is the problem in the degenerate, lessened fecundity—race suicide—is the problem in the highly developed.

Mental capacity has nothing to do with education, information, or mere knowledge. "No mind is more poorly trained than one which is crowded with items of information without any inner relation between them." It is not knowledge but intelligence with the ability to think logically which determines mental capacity. The mind craves logic. The ability to think logically is the index of the normal mind. The foundation—the intellect, never changes in quality, but it can be highly polished by education. With a poor foundation it is better for an individual and his offspring that there be no education than a very elaborate one, which it cannot uphold and most soon crumble. On a poor foundation, the more you build, the more elaborate the structure, the greater the ultimate loss. Taking a lesson from the builder, therefore, before starting an education, "borings" in the form of surveys should be made of the ground to find out how much weight, if any, it can stand. Not every ground can stand every weight. Probably the present precocious—the future præcox, might never be had there been less education and had the individual been put in a slower environment. The elaborate structure is likely to be precipitated downward with the slightest wind.

Neither heredity alone nor education alone is the sole factor in shaping the mental character of an individual, otherwise the great mass of men who have no opportunity for education would be especially prone to deterioration; and were the hereditary defectives absolutely irreclaimable then all human effort to improve race and conditions would go to waste; and the fallacy that environment and training cannot influence Nature would be a truism. Proper education *is* a factor. For instance, motor minded individuals for whom the ordinary information cannot be transmitted through the motor paths, must remain defective unless this condition is recognized and provided for by vocational rather than academic education.

The large class of individuals who live in the subsoil of life, just under extreme adversity but never quite above it, who are incapable of meeting their own particular demands on life, and what is more significant mentally, are not concerned about it, are constitutionally inferior. This is the class of the chronic pauper, the beggar, and the like. No one can be in contact with them even for an inconsiderable time without realizing their mental condition. So large a burden are these on the public that it were perhaps best to keep the chronic pauper in at least as much restraint as the feebleminded.

There is no sphere of life into which the quesiton of mental capacity does not intrude itself. More and more people, previously classed normal, are now found among the defective. Genius, precocity, eccentricity—all are under scrutiny. "Genius is neurosis," they say, for geniuses are so often found in known defective families. It is explained on the ground that "before final decline in a line there may be a peculiar blazing up of the psychic forces and power; that frequently the degeneration may be associated with a peculiar gift, which would especially pronounce itself within the realms of imagination and emotion, and cause just these phenomena that demand such a hot subsoil—the creative and the productive arts—to have their homes in these misty regions." Both extremes are found to result from ancestral degeneration—the degenerate pure and simple, and the genius. It is, as it were, that the ancestral condition prevented the complete development of the germinating element in the parent and caused the formation of unfinished progeny. Even mild defect, like mild contagion, may give rise to a severe one in those to whom they transmit.

In mental degeneracy the difficulty of detection is very real since the signs and symptoms are many and varied, intangible and projecting in all conceivable directions, where one must learn to delve and search if one would find. There is nothing apparent to the eye; symptoms are far beneath the skin, and the area of distribution is very large. The tendency to distinct psychoses increases with the degree of the defective basis, with the kind and with the amount of the environmental adversity. There is nothing fixed. The form of psychosis which is considered to be particularly a graft on constitutional inferiority and psychopathic tendencies is dementia precox. There is monideism, a form of temporary specialism, in which there is an inability to apply oneself to more than one subject—an inability to apply oneself to many interests. There is the characteristic self-meditation—the so-called "shut-in" characteristic.

Mental Stigmata.—It is again the profundity and number rather than the mere presence that is significant. Every mental stigma may be the motive force for some irrational or antisocial act. When mental stigmata are found combined with the constitutional psychopathic tendency, that is, with a history of distinct familial psychopathy, they should arouse special concern. Here also do the stigmata prevent contact with the environment, teeming with stimuli for our reception. Stigmata act as insulators to keep us out of the circuit. Some of the stigmata are such slight variations or are present in some yet unknown or invisible organ, yet undifferentiated or unnecessary for this stage of evolution.

Of the mental stigmata, nervous or emotional instability is so general that it is impossible to localize it. Most likely the condition pervades the whole nervous organization. It is usually recognized only after prolonged intercourse. You feel that there is something wrong with the individual, but you can rarely "get the goods" on him, as they say. Hysteria, the neuroses, and neurasthenia are well known examples of weak nervous systems.

Among the more definite mental stigmata may be mentioned the want of harmony, lack of balance, lack of the sense of proportion, disequilibrium of memory, faults of perception, of association of dissociation, of attention, of judgment, of the sense of reality, of foresight, of insight, of reflection, of judgment of memories, of color weight, weight, size, dimension, of initiative, of imagination, of comparison, of constructive or synthetic imagination, of suggestibility, of intelligence, of personality, of will, of consciousness, etc. Sensory stimuli may be poorly transmitted or relayed, and there is not aroused the same train or complexity of thought. There is failure of mental elaboration. Stigmata in one direction may, nevertheless, allow other directions to be fully opened and even overdeveloped. These may even become prodigious—whence the defective prodigies. But they lack initiative and native ability and need guidance. The conditions

enumerated are variations in psychic elements, though not in strictly psychic units. There are, however, many stigmata of a more complex though more appreciable nature, among which may be mentioned the so-called, though not actual, insanity of doubt, echolalia or irresistible repetition, aboulia or destruction of will power, coprolalia or the tendency to obscenity, pyrophobia or fear of fire, agoraphobia or the fear of open places, and as an antonym the fear of closed places, dipsomania or the periodic tendency to drinking bouts, the drug habits, saliomania or the food craze and gluttony, irresistible impulse to homicide or suicide, sexual perversion, aritmania or the desire to be counting continually, onomatomania or the irresistible and incessant search for certain words, mania for certain sports, plays, etc., beyond all reason and endurance—they who never know when they have enough and the like. To this list may be added the subnormal people with the ever-changing fads and crazes, the filias—like zoophilia, the undue solicitude for animals—and the cranks. The latter are often idealists who have divided and subdivided their ideas, their reasons and their emotions until they become amorphous bodies without form, without cohesion and impossible of organization into anything of definite value. It is they who have an exaggerated sensibility and irritability, evidences of their emotional instability, and who are so likely to be guilty of acts of passion.

It must be now apparent what wide latitude of distribution these stigmata enjoy and how difficult it is to make one distinctly mentally defective for being subnormal in one or more of these psychic elements or complexes. The emotionally unstable give the most trouble. They are the ones who get delirium with the slightest disorder, get frequent fainting, crying, or laughing spells, easily lose temper, tear their hair, tremble, and are in other ways quite impossible. They are non-resistant to stimuli. On the other hand, there are others of like instability who are over resistant to stimuli; they are quiet and backward, have no sense of humor and easily become offended. They are of a class one is always at a loss how to treat.

Though surcharged with emotion, the dreamers and the imaginative ones cannot always be justly placed among the inferior. Imagination is a very important part of the normal psyche. If disordered we have the delusion, the cardinal symptom in insanity. A delusion is an infirmity of the imagination. Or, together with the hallucination and the illusion, it may be said to be an acromegaly or gigantism of this part of the psyche. The weak-minded do not distinguish between the unreality of imagination and the reality of fact. The week-minded dreamer makes no use of his imaginative powers; he indulges in its pleasures, abuses them, and goes into a sort of mental debauch—a sort of mental masturbation. Normal imagination is the planner, the inventor, the designer of the mind. Philosophical speculations are entirely creatures of the imagination. Without imagination one can be no more than "a hewer of wood and a drawer of water,"—can do nothing constructive. The design of many of the substantial structures in every endeavor found origin in the imagination. In one with this great power intricately developed and finely functionating, a break somewhere might produce some very bizarre results in themselves inexplicable, but well illustrated in the inexplicable nature of delusions. Analogous results may be caused by disorders in any of the elements of the psyche. Moreover, every psychic stimulation, after producing the impression, leaves a less vivid one in the mind perhaps for future reference, subconscious, however. It is the association or agglomeration and exaggeration of these many less vivid subconscious impressions which are causative of the many peculiar dream states in health or disease. In disease there is the lack of the inner judgment of the present value of these impressions; in sleep there is, of course, the suspension of the power of judgment.

Foresight, insight, judgment, and memory are the cardinal elements of normality. Of these memory is perhaps the greatest faculty and the one to show defect or disorder first. There are as many memories as there are brain territories accepting outside stimulation. Memory is the key to the whole intellectual life. Nevertheless, many inferiors have remarkable memories, but little power of associating them, hence lacking real intelligence or consciousness.

Moral Inferiority.—The criminal and other delinquents have long been recognized as separate social entities, but it is only recently that pathological significance has been ascribed to their personality or to their acts. Their condition is due to a peculiar mental composition which does not allow them to keep pace with the advance of the moral code of their community—"a control of action in conformity with the idea of the good of all." It is altruistic comprehension. Moreover, this peculiar constitution is so often found accompanied by distinct mental and physical defects that one cannot help being confronted with the conviction that there is at least a relationship between them, somatic in nature. Body, mind, and morals seem to me an inseparable trio wherein the free will, the responsibile ego, has no place. Moral control and intellect are both complex brain processes, often apparently, though not always, interlocked. Of whatever nature, however, loss of moral control is a brain enfeeblement, even though other mental combinations, as for example, memory, orientation, etc., may be quite normal. Gross moral lesions are no more visible than gross mental lesions. Neither have yet been localized. Still, as reflecting on the relation between mental and moral deficiencies, it is found that criminals are especially lacking in the power of attention. There is, indeed, a primary instability of attention. They do not pay attention to anything long enough to acquire lasting action. Hence they are inconsistent and unreliable. One can never tell what they are going to do or how they are going to react. There is particularly a lack of logic, coherence, and continuity. They are vacillating, petty, and obstinate.

The criminal is often compared to the savage. Morally, he is a savage, and very much untamed. The chronic pauper and other dependent classes—these poor who are always with us—are, on the contrary, tame savages. Both are parasites incompetent to make their own way. Criminals suffer from an atrophy of the moral sense; the feeble-minded suffer from an atrophy of the intellectual sense or power. Criminals are erroneously classed as the born and as the acquired. If criminality is constitutional inferiority, then all criminals are born criminals, although the disorder may not be aroused in some till later in life. Indeed, not all hereditary qualities to which man is heir appear at birth. They keep coming out during the entire

period of life, some later, some sooner. Some come out in the future lives—that is, of subsequent generations. That accounts for hereditary qualities apparently skipping some generations.

Lack of moral control revolves around defects of cognitive or conscious relation to the environment —defect of moral consciousness, of the sentiments of pity and probity, of inhibitory volition, of reflection and consideration. The secret of morality is the power of inhibition of reflex volition. During adolescence this power is sorely tried and, if lost, spells disaster to the moral constitution.

Moral Stigmata.—In general they have inferior resistance to temptation, want of forethought as to the consequences of an act, and feeble powers of concentration, attention, and remorse. Specifically, they include passionateness, spitefulness, hate, mischievousness, destructiveness, bad habits in general, drug and alcohol addiction, cruelty, brutality, inhumanity, profligacy, licentiousness and libertine habits, lack of modesty, tendency to sex violence, and perversions, sodomy, incest and exhibitionism, vileness, loathsomeness, trickery, meanness, villainy, covetousness, cowardice, egotism, vanity, laziness, indolence, listlessness, dilatoriness, pomposity, jealousy, envy, frivolity, giddiness, silliness, wastefulness, filthiness, untruthfulness, etc. Given any of these evidences of a defective moral basis and an opportunity as well as improper restraints, and the anti-social act is very likely to be brought into being.

However, the emphasis must again be put on the profundity of the stigma rather than on the mere presence of it. For example, untruthfulness in a child is often no more than a misinterpretation of the source of a concept—whether from outside fact or inside imagination. The child has at this period usually more imagination than experience. He takes the imagination for the fact. He really lies truthfully. Besides, the test of an untruth is the injury it does or conceals. Otherwise, there are many lies that are "white"—truths, and many truths that are lies.

There must not be left out of the criminal class those parasites on a larger scale, those engaged in business piracy. If they lack the anthropometric or physiognomonic composition of the lower class criminal they do so only because these are hidden behind the polish of their luxurious surroundings. When deprived of wealth and station they soon drop to their true level.

Criminologists are still at variance with regard to criminal responsibility. Legally, one is responsible for his act who knows the nature of it, and that it is wrong. The irresistible impulse to crime has no recognition in law. In the broader sense any constitution tending to make of one a criminal is irresistible as to the owner of that constitution. Nevertheless, a criminal is freed from responsibility only when his act is due to pathological changes in him such as insanity, epilepsy, feeblemindedness, and the like. Yet it seems that on the same ground of pathological change could be justly included instances in which there is a family history of criminality, insanity, alcoholism, syphilis, etc. These conditions import a pathological condition in the germ and therefore in the individual.

It is obviously impossible to say from appearances who is a criminal, at least before the commission of an antisocial act. The stigmata are suspicious but not convincing. The value given previously by criminologists to appearance and physical stigmata must be very much discounted. Morality may have as much expression in the face as intellectuality. Neither is definite. The face in the criminal may be like "clear eyes, but yet sightless." The criminal physiognomy is not a palpable reality, but a "synthetic expression," an "ensemble of traits," existing in no single individual, perceived only by the mind, and never appearing in the entirety before the eyes. As a creature of constructive imagination it is quite real. Unless strongly inhibited the muscles of expression were purposed to feature reflexly the "workings" of the mind. In constitution, however, criminals are usually underweight, undersized, undernourished, with poor musculature and poor intellectual attainments, even lacking the education of their station and usually having had no vocational training. Their surroundings are usually of the lowest; they are poorly sheltered, poorly clothed, and poorly fed.

Reconstruction.—All discussion of these conditions is of no value unless it includes at the same time the problem of prevention. It is obvious that constitutional inferiority being in the germ—in the natural composition—of the individual, cannot be cured. Nature's failure may range from complete failure to negligible defects, and it is the province of science to find, weigh, and measure these defects and provide against them. In the ideal the whole tribe of these defectives would be anticipated by the prevention of diseases in general and of breeding by the defective. Excess and disease eliminated in the ancestor, constitutional inferiority becomes a negligible factor in the offspring. More practically, it means the comprehension of the nature, latitude, and distribution of the conditon—in the very young, in the school child, in the juvenile delinquent, in the pauper and all others. Physical defects must be corrected when possible, and when not possible training should be intensively along the remaining patent lines. Physiological defects must be treated. Training must be provided for the feebleminded so that he may be self-sustaining. For those that cannot be so trained proper custodial care is necessary. The criminal may be reclaimed if he can follow reason, if his inhibitory powers are not too weak, and if he can be removed from temptation. The teachers must be of a high order, not merely exponents of the three R's. They should be psychologists, students of child welfare, of child hygiene, and of child life in general. They should be able to apply mental or moral orthopedics. There should be individual training and education, not the same kind and amount forced on every child whether capable of absorbing it or not. The yearly expenditure for education in every community is enormous. How much of it is wasted in trying to put a high value education into a low value mind! Delineation of mental capacity before commencement of education would stop a great deal of this wastage.

With respect to the psychoses it is the aim of the psychiatrist to remove from the defective base the burden bearing the individual under. For the psychoanalysts this cloud takes the form of an injury to the sex organization. For them no emotion, no passion, no sacrifice, no nobility of action, no high motive, is other than a sign of weakness linked with a morbid sex base. It is the belief of this school that the explaining away of this mental cloud will effect a cure.

The methods for detecting even gross defects are still crude. They can, if at all, reveal only the

FRIEDMAN'S SURVEY SHEET

Name Age Sex Nativity Race Date of Survey Cause

Nativity—Mother Race Nativity—Father Race If U. S. born, how long after parents' arrival? If foreign born, how long before parents' arrival?

HISTORY

	Stock	Environment	Mental Scale	Moral Scale	Social Scale	Predispositions: Disease	Predispositions: Defect	Details: Items	Details: Page	Valuation
Ethnic										
Familial										
Personal										

GENERAL IMPRESSION

Color	Nourishment	Gait	Posture	Attitude and Reaction	Personal Appearance

ANTHROPOMETRIC MEASUREMENTS

	Height	Weight	Head: Length	Head: Width	Head: Height	Head: Circum.	Head: Cephal. Index	Head Type	Face Type	Chest: Circumference	Chest: Expansion	Chest: Capacity	Chest Type	Breadth of Shoulders	Grip: Right	Grip: Left	Teeth Development	Physical Age Physiologic
Actual																		
Relative																		

PHYSICAL EXAMINATION

Connective Tissues	Alimentary System	Respiratory System	Vascular System	Genito-Urinary	Glandular	Specific Infections	Nervous: Organ.	Nervous: Funct.	Therapeutic Prognosis

SENSORY EXAMINATION

VISUAL

	Organic	Refractive	Muscular	Nervous	Central	Color Vision	Visual Field and Acuity	Therapeutic Prognosis
Right								
Left								

AUDITORY

	Organic: External	Organic: Middle	Organic: Internal	Nervous	Central	Tone Sense	Auditory Acuity
Right							
Left							

Olfactory	
Gustatory	
Tactile	

SPEECH

Organic	Muscular	Nervous	Central	Functional	Therapeutic Prognosis

STIGMATA OF DEGENERATION

Anatomic	Physiological	Mental	Moral

MENTAL EXAMINATION

PSYCHIC ANALYSIS

Memory	Judgment	Attention	Association Time	Perception	Association	Comprehension	Imagination	Concentration	Orientation	Will	Psychic Status	Affective Sentiments	Mental Age

CONFIRMATION TESTS

Binet Tests	Porter Tests	Educational Analysis: Math.	Reading	Language	Writing	Drawing	Spelling	Science	Manual Training	Native Ability	Play Bent

conspicuously unfit. What is needed is a scheme or method of appraisal which will at once be uniform with regard to latitude and will apply to all classes of individuals. The school system, for example, should have complete records or surveys of all its pupils. No court should take action on a delinquent until after a survey with its digest has been submitted. All public dependents should be similarly surveyed. In the school system surveys should be taken from year to year or from class to class in order to apprehend defects that may be acquired or of late appearance. "Eternal vigilance is the price of safety."

The Survey.—The survey here appended begins with the information necessary to identify the individual—the name, age, place of birth, nationality, race, and the race and nationality of the parents. The place of birth and the nativity of the subject requires comment. It is not so much the actual place of birth as the place of conception that should determine nativity. If there are any personal characteristics derived from mere nativity they will be determined rather by the prenatal, conception and postnatal influences. If one has native characteristics because born, say, a month or even five years before the parents have emigrated to a given place, he will have them even if born a month or five years after their emigration.

The body of the survey outlines the scope of the examination with space for noting the results under each heading. If there are significant details the item requiring the detail, and the enclosure number giving it, should be noted in the column appropriated for that purpose. The survey is divided into sections, one for each topic—for history, for general impressions, for anthropometric measurements, for physical examination, for sensory examination, for speech, for stigmata of degeneration, and for the mental examination.

History.—Here are embraced the ethnic, familial and personal histories. Notation on the quality of the stock should be made only after careful inquiry relative to the stock maturity purity, longevity, etc. Environment includes climatic and geographical conditions and mode of living. Disease predispositions must include all conditions to which the race, family, or individual is heir, but especially those which have a tendency to be hereditary or to leave the system sensitive to like diseases.

The General Impression.—To the experienced observer the items in this section almost tell the whole story of the constitution of the subject of the examination.

Anthropometric Measurements.—These are extremely important, especially because from them is determined the approximate physical or developmental (actual) age of the subject. The chronological age tells only the time one is *in esse*. The rate and speed of development of persons of the same chronological age are rarely alike. The most developed are certainly not of the same actual ages as the least. The younger physically are usually younger mentally, and accordingly less should be required of them. They should be judged, educated and placed according to this physico-mental age. Only the particularly signicant physical measurements need be taken. Height and weight are very important indices of the subject's development and health. The head measurements must include at least the circumference, length, width, and height as well as the cephalic index. The important index is that one bearing a relation between the maximum transverse diameter and the maximum longitudinal. It is found by multiplying the lesser of the two diameters by 100 and dividing the result by the greater. This index is normal when between 70 and 90. Short heads are said to be brachycephalic, long heads dolichocephalic. There are, however, many subtypes belonging to either class. Microcephalic and macrocephalic heads are respecively the idiot's and the hydrocephalic's heads. The width of the face, though often varying with the race type, is of no particular significance here. There are two types of face, the orthognathic and the prognathic. The former is the straight or civilized face type; the latter is the upper jaw protrusion type exemplified in the aborigines. Width of shoulders, chest circumference, together with the width, depth, and air capacity in cubic centimeters must be noted. The chest types include the rickety, funnel, and pigeon-shaped as well as the barrel or emphysematous. For ready reference the standard measurements should be noted on the survey sheet under the actual measurements. This will facilitate the ready determination of the approximate physical age—which should be noted in the appropriate column.

Physical Examination.—This must be very complete if it is to be of value. Only the digested results should be noted under headings, but every variation from the normal must be fully detailed in appended notes. Where there are remediable conditions, the fact with the remedy and the prognosis should be noted under therapeutic prognosis. Under connective tissues is included the skin, bones, joints, and muscles. The alimentary system must give especial prominence to the condition of the teeth, their condition having such a marked effect on health. Examination of feces is not a superfluity. With the presence and the effect of the commoner worn diseases every one is familiar. The effect of the hookworm on the physical, mental, and moral constitutions is now realized. "Lazy-man's disease" is an appropriate descriptive term for it. Hookworm is particularly common among the "poor whites" of the South, among the West Indian negroes, among the Hindus, and among the Southern Italians. In the examination of the respiratory system the presence of adenoid overgrowth and obstruction of the nasal passages must receive special attention. Obstruction to the respiratory passages has a very baneful effect on the appearance and on the mental condition of a child. "Criminals" and "feebleminded" are often cured by remedying the obstruction. In the examination of the vascular system neither the Wassermann test nor the manometric determinations must be excluded. Gland diseases or disturbances, whether those concerned with the internal or external secretions, must receive full weight. The importance of the nervous system compels a very searching inquiry into the organic conditions of the brain, cranial nerves, spinal cord, spinal nerves, the ganglia, the sympathetic systems, as well as the functional nervous diseases—the neuroses. In the genitourinary system special consideration must be given genital irritations as from phimosis, paraphimosis and the like, because of the bearing on the child's general attentiveness, its sexual habits, and even its moral habits.

Sensory Examination.—The sensory apparatus receives separate consideration because of its great importance in relation to the mental condition. It is through the agency of the special senses that

CHART OF RELATIVE ANTHROPOMETRIC WEIGHTS, AVERAGES COMPILED FROM VARIOUS AUTHORS

Age in Year	Height (Cm.)	Weight (Kg.)	Head Mm					Breadth of Shoulders (Mm.)	Chest Mm			Grip (Kg.)		Order of the Eruption of the Permanent Teeth
			Length	Width	Height	Circumference	Cephalic Index		Circumference	Total Expansion	Lung Capacity (Cc.)	Right	Left	
VI	112	19 50	177	144	113	509	79	240	550	30	1100	10	9.50	First molars
VII	117	20 75	177	144 5	114 5	511	79	246	565	29	1150	11 35	11	Cent. incisors
VIII	121	23 75	178	146	115 5	515	80	255	585	38	1210	13 25	12 40	Lat. incisors
IX	126 5	26 10	179	148	115 5	515	80	264	615	39	1420	14 50	13.75	First bicuspids
X	131 5	28 25	180	148.5	117	516	80	272	625	44	1480	16 50	15.75	Second bicuspids
XI	135 5	31 05	181 5	148 5	117	520	80	280	645	43	1670	19 25	17 25	Canines
XII	141	34 25	182	150	118	523	81	290	660	44	1900	22 50	20	Second molars
XIII	148	38 55	183 5	150	118	528	81	300	680	46	2400	25 50	23 25	
XIV	153.5	44 20	184 5	151.5	118.5	528	81	310	715	47	2700	31.75	25 75	
XV	160	48 15	186	153 5	119	523	81	325	735	51	2720	40	35 50	
XVI	164	54	188	155	123	539	81	335	765	53	2830	44 50	40	
XVII	172	57 80	189 5	156	124	545	81	340	795	54	3700	50 50	43 50	
XVIII	173 5	62 05	190	157	125	548	82			55		50 40	45	Third molars
XIX	174	62 80	190 5	157	125	549	81							

all the stimuli to the brain must come. A defective or nonpatent sense will impede the development of the brain. Hearing, vision, smell, taste, and touch —all play important parts. Sensibility to pain is diminished in the mentally and morally inferior, as it is in the aboriginal races. Here the determination of the therapeutic prognosis is particularly important.

Speech.—Defects in the power of speech, or the absence of it, must be thoroughly gone into for possible remedy, or, where not amenable, for the possibilities of training and education.

Stigmata of Degeneration.—These have already been enumerated. The mental and moral stigmata can only be determined on searching inquiry into the history, habits, tendencies, addictions, social and moral surroundings, temperament, etc. There might even be moral tests as there are mental—tests of the moral conception. There would many "bright" criminals be found wanting.

Mental Examination.—The survey of the mental faculties is divided into two large headings, the psychic analysis and the tests confirmatory of this analysis. The latter is again subdivided into the mental measurement tests of Binet and Simon—applicable particularly to school children, the puzzle tests, and lastly, as confirmatory of these rather abstract tests, the analysis of the educational application in the various elementary branches.

In this examination one comes into actual—inner mental—contact with the individual almost for the first time. To do this there must be a descending, a putting—oneself in the subject's place. His confidence must be gained, otherwise this particular subject had better be turned over to one who can gain his confidence. Wherever possible, explain the purpose of the test in order that there may be an interest aroused in its evolution. Give plenty of time to think. In fact, urge it—except, of course, where time is the essence of the test. The ability to think sufficiently is what one is after. That is, after all, the supreme test of mental efficiency. Each examiner must formulate his own test questions. It matters not what is asked—or how—so long as it brings out the points desired. Much must be left to the discretion of the medical examiner. That is why he is an examiner. He must have latitude in the nature, but especially in the manner of the examination. Simpler tests or questions must be submitted first. The more difficult ones will be answered more readily by working up to them than otherwise. Initial success encourages and stimulates; initial failure confuses, frightens and discourages. Hasty conclusions are not to be drawn. Nothing is to be taken for granted. Try everything out fully—that makes for the scientific disposition.

While appearance, impression, and expression of the subject during the examination are often valuable aids to a determination, though convincing for the examiner they must not be convicting for the subject. Watching the methods of procedure in doing a test gives the examiner valuable information. The subject's expression is usually the meter of the mind's activity and equilibrium.

The psychic analysis is intended to be only a practical one and without technical organization or consistency. The principal elements are enumerated in the survey sheet. By psychic senses is here meant what might be called the "unspecial senses"—the sense of reality, of personality, of proportion, of the value of life, the muscular sense, etc. The affective sentiments or senses mean the sense of love, pity, honor, loyalty, etc.

The Binet tests and modifications are methods of measuring mental age computed from certain standards already established with average children. If a child of eight does only the tests that are done by the average six-year-old child, he is mentally only six years old. On the other hand this same eight-year-old child may be only six years old physically, and hence on this criterion ought to be normal. In these tests scoring methods deduct fractional credits for failure in some of the tests of a given mental year, or add to it if the child does some of the tests of a higher year. A child may fail in some of the lower and yet do some of the higher and thus the failures and the merits neutralize each other. Moreover, a child may be much older mentally than he is chronologically or physically.

The puzzle confirmatory tests are the outgrowths of the inventive genius of many observers in their quest for more accurate means of determining this most difficult of entities—mental capacity. Most of the tests here referred to were devised by Drs. Gwyn, Mullan, Knox, Kempf, and Loughrin of the United States Public Health Service. The others by Drs. Healy and Fernald of Chicago and the modification of the Seguin Form Board by Dr. Goddard of Vineland, N. J.* These tests have an especial value in illiterates, those who possess little of the verbal refinements of language and the purely motor minded. The tests are in most instances graded for ages and time of execution. These tests are not absolute, nor are they the only ones devised. Every observer of large experience will be impelled to devise his own tests as he does his

*For description and photographs, see Knox, Howard A.: *Lancet-Clinic*, May 1, 1915.

own questions. Defectives may learn or be taught how to execute these tests in the same way that an animal will learn to unlatch a door—reflexly. It does not mean the recovery of such an individual since his own judgment and native ability are the faculties in the balance not his memories or reflex powers. Teaching therefore renders the particular test useless and consequently restricts the range of the test by so much.

In part, the educational analysis must be an inquiry into the history, attendance, behavior, attention, capacity, etc., as well as ability and defect in the various educational units. Where there has been no education this method of confirmation cannot be used and one must confine himself to the Binet, but especially to the puzzle tests. Illiteracy is, however, a sign of defectiveness only when the individual comes from a literate family or environment.

Children may be defective in only one or more of these educational branches, due in all probability to some defect or lack of co-ordination in the psychic elements that govern the acquisition of these faculties. Some are supremely apt in some and very defective in others. An early enough survey will decide where there are gross defects and will counsel energies to be directed elsewhere. Some children are particularly apt in manual training or the domestic sciences. They are usually the motor minded. These should receive this instead of the academic training. The value of determining the child's natural bent or vocational leanings is very important. Handwriting, like other manual expressions—the artist's, for example—is somewhat an expression of constitution, although of questionable value in judging character. A child's play leanings and love should be carefully searched. It is frequently an index of his moral as well as mental leanings.

While the result placed under each subheading in a section is a digest of that heading, the digest of the whole section should be made and placed under the column, valuation or significant feature. Thus, one can quickly look down this column and see valuations for history, general impressions, anthropometric examinations, physical examination, sensory examination, speech, stigmata of degeneration and, finally, mental examination.

Conclusion.—In conclusion it must be said that the value of the survey to the teacher, the social worker, the judicial officer, and others depends upon the knowledge that the conclusions were drawn by the physician examining the individual himself. The examination must not be relegated to lay or other subordinates, unless actually working in common, otherwise the physician credited with making determinations might well hire a sufficient number of them, sit in his office, receive the survey sheets, and make determinations without ever seeing a subject.

351 East Fiftieth Street.

Methylene Blue in Facial Erysipelas.—Nobécourt recommends the application of a 5 per cent. aqueous solution of methylene blue in the treatment of erysipelas of the face. The solution is painted over the affected area and for a distance of about half an inch from it on the apparently healthy skin, and the application is renewed night and morning. This method of treatment is claimed to be extremely satisfactory, a cure usually being obtained within two or three days.—*Société Médicale des Hôpitaux.*

PHYSICIAN, KNOW THYSELF.*

By Andrew MacFarlane, M.D.

Albany, N. Y.

"Life is not only for work: it is
for one's self and one's friends."

The physician who purchases his first automobile anticipates with joy the speed and ease with which he can reach his patients, even when at a great distance, and looks forward to the hours of leisure thereby gained either for reading, diversion with his family or additional time for the further working out of the problems of medical practice.

Alas! he reckons without his host and soon learns to his cost that he has simply added to his troubles and expenses and increased his perplexities in addition to his vocabulary of profanity.

He starts out and finds his car begins at once to heat up, then after a time he remembers he has not put in any water; he comes to a sudden stop at times far from home, and after destroying his chances for heaven, he learns that the gasoline tank is empty; the motor begins to skip and he wonders in a state of daze what has now happened; the car is without power in spite of a large consumption of gasoline and some good Samaritan tells him to look at his spark plugs. However, after a year or two when he has found out to his cost that his car is not entirely fool-proof, he learns to anticipate its needs and thus prevent his troubles.

He now looks after the supply of water; the quantity of gasoline; the need of oil; the condition of the grease cups and every six months or, at the longest, every year, has his car taken down, the parts thoroughly examined, defective parts replaced and all completely cleaned and reassembled in good condition. He has at last discovered that the life and efficiency of a car depend upon its care. Motoring now becomes really a joy and he goes forth each day with a certainty that he will get there.

The machine we all have to work with, our body, though much more fool-proof than any machine ever made by man, can still be so neglected, abused and overworked that it shows the effect of wear and tear before its time and then is able to do its work only imperfectly or finally completely breaks down and is of no further use.

There is no more creditable chapter in history than that describing how the medical profession has fought and successfully annihilated the many scourges which even within our ken, destroyed each year hundreds of thousands of victims; smallpox, malaria, yellow fever, typhus fever, cholera, diphtheria, and typhoid need only be mentioned to this audience to emphasize this fact.

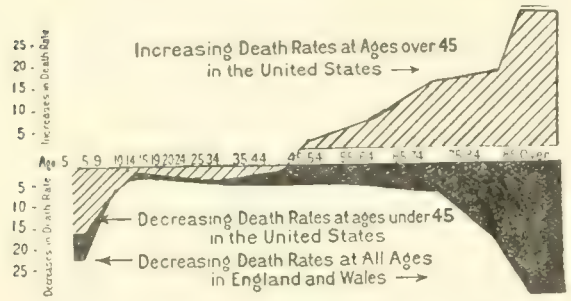
The community which to-day permitted any of these diseases to gain headway would be immediately treated as a municipal leper, avoided by other communities, and would be controlled, if necessary, by the police regulation of the State, as unfit to care for itself until self-purified.

In spite of this splendid showing of preventive medicine, there is still a greater battle to fight, a more stealthy opponent to overcome, and a grander victory to attain. Vital statistics show a most creditable reduction in mortality and a very remarkable increase in the duration of life. This, however, has only been in those diseases vigorously combated by hygienic measures. The percentage

*An address delivered by invitatio nat the annual meeting of the Warren County, N. Y. Medical Society, at Glens Falls, N. Y., on October 13th, 1915.

of decrease of morbidity has been an index of the efficiency of the methods employed and not of the possibility of attainable results. In twenty-two years (1890-1912) the mortality of typhoid fever has shown a decrease of 65.2 per cent., almost two-thirds, and pulmonary tuberculosis of 48.9 per cent., almost one-half in the United States. If a community should show no decrease in the incidence of these diseases, the inference would be inevitable and the cause self-evident.

If we pursue this subject a little further, however, our mortality results are not so gratifying to

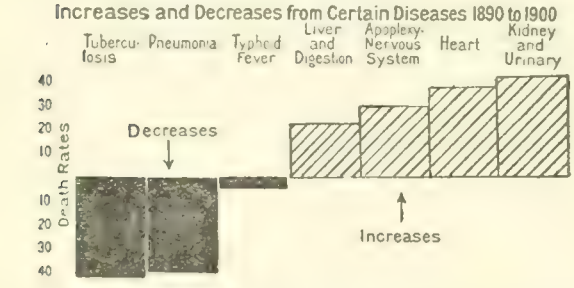


The Death Rate at all Ages is Decreasing in England and Sweden

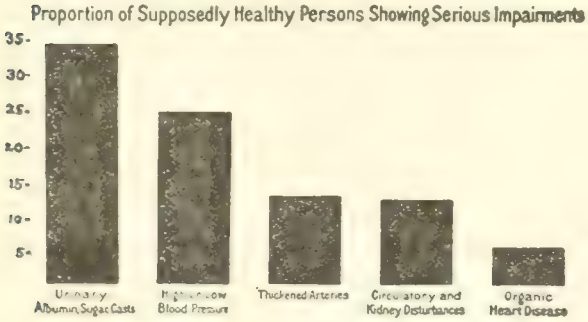
The Death Rate under 45 is Decreasing in the United States BUT

The Death Rate over 45 is steadily Increasing in the United States

We should do as well as England and Sweden



The increasing diseases are Cancer and Diseases of the Brain and Kidneys and above all of the Heart and Blood Vessels



our national record or personal pride. While in England, Norway, and Sweden the mortality from degenerative diseases; *i.e.*, diseases of the heart, blood vessels, and kidneys, the results of the terrific stress, strain and worry of modern life, is practically stationary; in the United States the morbidity from these same diseases has increased with leaps and bounds. In 1880 it was 21.1 per 10,000 population; in 1890, 27.8; in 1900, 33.3; in 1910, 38.7 per 10,000 population.

This rate is 50 per cent more than that of England and Norway to-day and almost double what it was thirty years ago in the United States; *i.e.*, 150,000 unnecessary deaths and probably 300,000 unnecessary invalids per year in this rich and prosperous country. This is well illustrated by 8 charts issued by N. Y. State Department of Health. In ten years among 5,000,000 working people, the death rate has increased as follows: Apoplexy and diseases of the nervous system, 19 per cent.; diseases of the heart, 29 per cent.; diseases of the kidneys and urinary system, 43 per cent.; diseases of the liver and digestion, 34 per cent.

These deaths, too, are at the most efficient period of life and affect especially, and to a greater extent, our most valuable citizens—not the farm laborers or city workers, but the professional men and those engaged in the larger affairs of the world; the so-called captains of industry.

Can anyone estimate the loss by the probably avoidable early death of strong, forceful, active men in our respective communities. They have been cut down when their power for good was at its highest point and their work still far from completed.

Suppose the farmers found that the mortality of their milch cows, their pigs and their horses had doubled in the last thirty years, and that, too, at an age when they had reached their greatest value, would anything be done about it? Would they lie down supinely, do nothing and await more or less philosophically their unnecessary and useless loss?

This condition has an especial significance for the physician, because the strain, worry, anxiety, overwork and exposure of medical life are the factors which especially induce these degenerative diseases.

I know of no more pathetic index of the strain of medical practice than the number of suicides and fatal accidents to physicians. Frequent accidents suggest at least impaired judgment. In 1912 there were 36 suicides and 90 fatal accidents; in 1913, 43 suicides and 101 fatal accidents; in 1914, 27 suicides and 111 fatal acicdents—a truly sorry recital; and more than that, it is probably fair to assume that these statistics are far below the actual occurrences.

These poor devils were often more sinned against than sinning. If the rest of us have been more fortunate in resisting these strains, may they not have left penalties upon our myocardia, arteries, or kidneys which must be paid by less efficiency or an earlier death.

From the columns of the *Journal of the American Medical Association*, the following data were collated:

Year	Cerebral Hemorrhage	Heart Disease*	Kidney Disease	Circulatory Disease†	Unrecorded Causes
1912....	219=14.4 %	238=15.8%	138=9 %	33=2.1 %	593=38.76 %
1913....	195=10.8%	262=14.6%	140=7.8 %	36=2 %	404=22.49 %
1914....	185=10.5 %	257=14.5 %	108=6 %	29=1.6 %	435=24.6 %

*Includes anemia pectoris, myocarditis, endocarditis.
†Includes arteriosclerosis, aneurysm, embolism.

Jan. 1st-Sept. 4th, Incl.—¾ Year. Total Deaths, 1574

	20-50 Years	50-60 Years
Cerebral hemorrhage	20	42
Heart disease	40	35
Kidney disease	17	23
Arteriosclerosis	1	4
Unknown	130	140

There is nothing more discouraging than the

attempt to draw deductions from mortality statistics. In spite of the vast sum of money spent by the United States in the last census, the statistics are practically worthless. Even the data above given have little value, because of the large number of unrecorded causes of death. It would seem as if such a powerful organization as the American Medical Association should set a better example in its mortality statistics.

This great discrepancy between our control of the acute contagious diseases and the lamentable lack of control of the chronic degenerative conditions is partly explainable.

The acute diseases are lightning-like in their onset, rapid and evidently serious in their development, their etiology is well understood and comparatively easily determined, and their contagiousness makes them highly dangerous to the community. It becomes, therefore, the province of the community to combat them and to protect her citizens as it would fight any conflagration.

The chronic degenerative diseases are insidious in their onset, "like thieves in the night," slow and apparently unimportant in their development, their etiology is obscure, complicated, and often impossible to determine accurately and they are absolutely without direct danger to the community. They are in every sense of the word, purely personal—not the subject of direct communal control, but of education and of individual action, *i.e.* of the physician.

That the health of a vast number of people is often seriously affected by such degenerative diseases without a realization upon their part of their condition, is a well-known fact. An insurance company a few years ago offered their policy holders free medical examinations once a year; 2500 with an average age of 46 accepted this service. Forty per cent were found to have some impairment of health, mostly of the heart, blood vessels and kidneys. Of these almost half, or 500 persons were not aware of this impairment. As a result of this knowledge and the ensuing care resulting therefrom, it was found after four years that the mortality was only 50 per cent. of the expected morbidity for these cases. The following results were obtained by the life extension institute in the examination of the employees of commercial houses, banks, etc.:

Fifty per cent. were found to be sufficiently seriously affected to be referred to physicians for treatment.

Organic heart disease	5 38%
Arteriosclerosis (thickened arteries)	13 10%
High or low blood pressure	25 81%
Urinary—albumin, sugar, casts	35 63%
Combined disturbance of circulation and kidneys	12 77%
Other Leisons	7.31%

This finding, though at first astounding, is on further thought easily understandable. The man who dies between 50-60 from kidney, cardiac or arterial diseases has probably been developing for many years an impaired condition of those organs before the final catastrophe occurred.

This subject has been one about which I have thought much for some years past, but had never before put into concrete form. It has, however, also been the subject of thought of others and there was organized as a result The Life Extension Institute in New York City. The service of this institute consists of health examinations to detect disease in its early stages when it can be checked or cured and of an educational campaign to increase physical efficiency by promoting healthful living and protection against disease. It deals solely with prevention. Treatment is left to the family physician.

This institute is largely philanthropic and has in its directorate and reference board men of eminence as Ex-President Taft, Prof. Fisher of Yale, Drs. Fisk, Gorgas, Blue, Wiley, Blumer, Edsall, Vaughan, Chittenden, Welch, and many others. It seeks contracts with life insurance companies and commercial organizations to examine policy holders and employees in addition to making examinations for individuals. Whether this institute is meeting with the success its objects deserve, I do not know, but I do believe that the only way it can accomplish in large measure the beneficent results which are possible, is by securing the co-operation and support of the entire medical profession.

If medical examinations to detect diseases in their incipiency have any value whatever, then the physician should be the first to recognize that fact and at once make use of this knowledge and the opportunity presented.

If a physician is to become a true teacher of health, he must practice what he preaches. He cannot succeed in controlling drug habits or alcoholism if he himself is addicted to these habits. He cannot fight patent medicines and quacks if he uses them and their methods himself. He cannot successfully oppose the social evil unless his own reputation is above suspicion. If he preaches effectively high standards of right living and hygiene, he must exemplify that standard in his own life. He cannot induce his patients to diet or take exercise if he is addicted to the flesh pots and the easy life. Example must be added to precept to secure the best result.

Therefore, to make personal prevention of the chronic degenerative diseases a success, the physician must himself adopt it. The layman naturally looks to his family physician for guidance on matters of health and hygiene. If the doctor does not value personal prevention highly enough to make use of it, when at no personal cost to himself, then the layman has no confidence in the proposition or loses respect for his medical adviser.

If this sinful and useless waste of human life, almost worse than this horrible war, is to cease, then the physician himself must take the initiative, as he has done in all life-saving propaganda and by example prove to the incredulous world its worth.

He will thereby be the gainer, not alone in the personal satisfaction from the accomplishment of a splendid work for humanity, but selfishly by increased personal efficiency and longevity, with the thereby added income. The physician is the only professional man whose income not only ceases during his illness, but may as a result of such illness, be seriously impaired for all time thereafter.

Casper, a German statistician, has shown that the number living at the age of 70 of a hundred people in any calling would markedly vary: of clergymen, 42; of agriculturists, 40; of merchants, 35; of soldiers, 32; of lawyers, 29; of actors, 28; of teachers, 27; of physicians, 24.

Then, too, the prolongation of the life of his patients would be an added asset. The only patients who are of value to a physician are the living ones. Just as soon as a patient dies, that source of income immediately ceases. This would result not merely in a quantitative increase in years, but in a quali-

tative improvement in the physical, mental and moral faculties. It would raise the standard of health, increase the number of people enjoying this blessing, reduce suffering, misery and all the attendant evils, physical, mental and moral, dependent upon ill health thus promoting the joy of living and developing a sensible efficiency. It would in great measure solve the problems of cancer, tuberculosis, and the venereal diseases. This would mean that we would seek to keep people well instead of trying to perform impossible tasks on worn out minds and broken down bodies.

Suppose that all the physicians of a community should agree to have themselves thoroughly examined at least once a year, and to keep a careful record of such examinations so arranged that comparison of vital facts recorded each year could be readily made and pathological changes quickly recognized. The weight, measurements (chest and abdomen), determination of blood pressure, the output of urine and its character, the examination of the chest, abdomen, and, at times, the blood would often indicate, if not incipient disease, at least a too liberal or improper diet; not enough exercise; too much physical or mental strain; insufficient recreation, unwise stimulation, etc. What would be our opinion of a business man who never took an inventory of his stock, who did not know at least once a year just what his assets were and also his indebtedness. Yet what physician takes thought until often too late, of his capital—his mind; his assets on efficient body; his debits possible incipient disease changes. Such an example would be quickly followed by the intelligent layman and it would not be long before the best and most influential citizens would be regularly coming to our offices for their annual or semi-annual examination. (See chart below.)

It is not at all unusual for corporations to insure the life of a valuable manager for $100,000 or more. A small sum expended for medical examinations each year might easily prolong such a life for years in a high state of efficiency.

Even the simple determination of blood pressure year by year would be most suggestive. Dr. Fisher of the Northwestern Mutual Life Insurance Co. has collated some illuminating statistics on this subject. The mortality of 2668 accepted risks of all ages, with a systolic blood pressure of 140 to 149 mm. Hg. average 142.43 mm. was 47 per cent. of the expected mortality. The mortality of 525 accepted risks of all ages with a systolic blood pressure of 150 mm. or over but averaging 152.58 mm. was 70.37 per cent. of the expected. The mortality of 365 rejected applicants with an average systolic blood pressure of 170.36, but with no other discoverable impairment was 144.51 per cent. of the expected.

The mortality of 356 rejected applicants with an average systolic blood pressure of 171.73 mm. and showing one or more other impairments was 161.99 per cent. of the expected mortality. The summary of Dr. Fisher's recent paper, shown on page 327, is so highly suggestive that I have taken the liberty of incorporating it after this address had been delivered.

FAMILY HISTORY Age Health Cause of death

Father
Mother
Brothers (living)
No. dead
Sisters (living)
No. dead
Father's father
Father's mother
Mother's father
Mother's mother

HISTORY IN CHRONOLOGICAL SEQUENCE OF

Consumption, cancer, rheumatism, gout, diabetes, insanity, epilepsy
Accidents at home, at business, with [illegible]

PERSONAL HISTORY.

Birth
Nutrition
Measles, scarlet fever, whooping cough, scrofula, diphtheria, accident, any other illness in childhood, nicknames.

Fevers, rheumatism, pleurisy, tonsillitis, headaches, cough, hoarseness, dyspnea, palpitation, indigestion, defecation, urination, edema, accidents.

Occupations {kind
and
Residence {place
entire life {house

Habits

Eating
Drinking {manner
Tobacco

Tea, coffee, drug habit

Recreation, exercise, sleep

Approximate weight at [illegible] year

Vaccination: smallpox, typhoid

Venereal history

Age Health Cause

Children (living)
No. dead

Wife

Responsibilities
Anxieties

PERSONAL EXAMINATION.

Appearance {Good Fair Poor Stooping Erect.
and
Nutrition Anemic Emaciated Edema Cause
Weight lbs. {recent loss in lbs.
recent gain in lbs.
Height ft. in. Before After exercise
Temp. Pulse.
Vessels (especially sclerosis)
Reflexes pupil patella Romberg Tremor

GROSS EXAMINATION Hair Eyes Ears

Nose deflected septum, enlarged turbinates
Mouth [illegible] gums, carious teeth, tongue
Throat tonsils, pharynx, adenoids, larynx

Neck: thyroid, glands, vessels.

Chest at rest in. full inspiration, in. full expiration, in

Lungs Apices
Rhythm
Rales
Dullness
Apex
Heart Size
Sounds
Action
Blood Pressure Before After exercise
{sys. mm mm
{diast. mm mm
Abdomen [illegible] in Flank [illegible] Bubble
Description: painful areas, appendix, liver, gall bladder, kidneys, congestion, spleen, stomach, glands
Rectum Prost. Sacroiliac subluxation
Testicles Rectum Spine
Edema scars Varicose veins [illegible]
Details of above or other physical lesions

LABORATORY EXAMINATION Microscopic

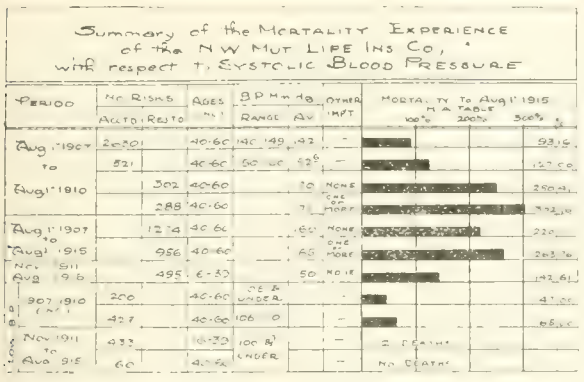
Urine amt.
color
react.
sp. gr.
albumin
sugar
indican
bile
hemoglobin
Blood R. b. c.
W. b. c.
Diff. count.
Sputum
Stomach contents—vomitus
Feces

OTHER EXAMS.

All of us have had the sad experience of being consulted for some seemingly trivial condition by apparently strong, active, forceful men of affairs. The blood pressure would be 170 mm. or more, the urine of low specific gravity, with a faint trace of albumin and an occasional cast. The end was then inevitable. The pathetic thought must have occurred to each one of us—he might have been saved for years of useful life, if he had only consulted his physician earlier.

Every advance in the cure and prevention of disease has been due to the recognition of its cause and to the application of measures directed to eliminate or destroy such cause.

The same method, so successful in the acute contagious diseases, must be followed in the much more difficult problem of the chronic degenerative diseases.



Summary of Dr. Fisher's Paper.

The strenuous life even in play; the strain, worry and nervous depression due to the using up of reserve strength to keep up appearances, overeating and especially large meat consumption, the desire to work intensely with the hope of enjoying rest and ease later on, unfortunately a mirage which vanishes into thin air. Work under high pressure is the modern slogan and efficiency gone mad, the American god.

The correction of these causes means a reformation in the American character, but such a reformation must be made if the American nation is to reach that height of civilization and progress which seem its natural destiny.

In conclusion, consider for a moment what such a campaign would mean in the warfare against frauds, charlatans, and fakirs. The intelligent would quickly learn that there was no marvelous way to cure disease; that each one of us sooner or later must pay the penalty for our follies and indiscretions and that the only way to keep well is to prevent disease.

The accompanying schema for a physical examination which can be extended over a period of years is submitted for consideration and criticism.

Prophylaxis of Scarlet Fever.—Chantemesse has obtained excellent results with the prophylactic measures recommended by Milne. The throats of scarlet fever patients are painted with 10 per cent. carbolized oil at three-hour intervals day and night for the first 48 hours, and then twice a day for a further week. For children the strength of the oil is reduced. Daily frictions of the whole body with eucalyptus oil are used in addition. These measures have proved efficacious in preventing the spread of the disease.— *The Lancet.*

REMINISCENCES OF CHLORINE.

By DOUGLAS H. STEWART, M.D., F.A.C.S.,

NEW YORK.

Chlorine and iodine are well known germicides that possess rare attractions for the pose of a pseudo-Columbus and his simulated pioneer work. The latter on careful examination will be found to progress along familiar paths. The history of one of these halogens, compared with the record of the other, reveals a curious seesaw semblance: for each of them in turn seems to be on the way down to the Valley of Discard, while the other is mounting to the heights of Reinstatement, from which it fell. Reasons for their erratic career might be derived from faddism, fetichism, wanderlust, or, as was said in a certain medical gathering—"If these gentlemen spoke the truth when they recommended a former technique, how are they speaking truth now? Or if they are speaking the truth now, were they not speaking it then?" Perhaps the old law is being followed. "And one by one in turn, some grand mistake casts off its bright skin, yearly, like the snake." In this instance, since there are but two substances, mistake and certainty must alternate. Chlorine, after proving its worth for fifty years, was supplanted by iodine for the absurd but sufficient reason that "chlorine was so very irritant." This statement permitted the impression that iodine was not irritating while it held tacit the facts that iodine was the world's best known counterirritant, and that its results, when used as a germicide, and strength for strength, were not so good as those obtained from chlorine. From 1900 to the present day, the author has tested the latter against pure and mixed bacterial strains, has brought it to the bar of the Petri dish, and has referred all final appeals to the microscope. Dr. Bull and Dr. Dawbarn urged the subject of hand-sterilization, as a very live matter indeed; and among some twenty-eight techniques, which were investigated, the one called by them "Weir's technique" soon proved itself to be preeminent. They stated that it was in use in the New York, Roosevelt, and other hospitals and both agreed that it was as follows (Date 1900 to 1905):

"Five minutes with green soap and vigorous nail-brush scrubbing; five minutes with frictional application of calx chlorinata; and finally, thorough washing off with carbonate of soda and running water." As an additional safeguard (not invariably used) the hands were immersed in 1/5000 bichloride solution.

Given a room with its windows closed, 90 per cent. of negatives were readily obtained and with care better results were possible. The yeasts only would sometimes slip through and could be propagated, but the aforesaid gentlemen took the ground that safety demanded absolute sterility, as its normal; inasmuch as no one could say whether, or when, pathogenic and non-pathogenic germs might not reverse their rôles, Labarraque's solution was neutralized and acidulated with dilute acetic acid, because that was selected as a solvent of calx chlorinata, by the U. S. P. of 1890. Washing the hands with a 3 to 6 per cent. strength of acetic acid would remove not only the calx but even its odor, which carbonate of soda would not do. The negative test cultures at once showed an increased percentage (5 to 8 in different trials). Omitting soda, the chemical antiseptics obtained by mingling the acid and the lime were considered to be nascent hypo-

chlorous acid plus nascent H_2O_2 and the resulting solution bore no more chemical likeness to Labarraque's solution than acetic acid does to acetate of lime. Tartaric, boric, citric, lactic, and other acids were tried but the demand was for something that would stand boiling and be more portable and stable than a liquid. Consequently, two solids were finally adopted, viz., alum sulphate and calx chlorinata. A solution, which was boiled hard for five minutes, and then contained alum sulphate, 1 part, calx chlorinata, 2 parts, and water to 100 was made and was called Stewart's solution. Filtering or the use of the unshaken supernatant solution gave equally good results. Water that boiled away could be replaced or an extra allowance could be made for the loss by boiling. Boiling seemed to be essential for both solution and chemical combination. Full strength was used upon the surgeon's hands and half strength upon wounds or upon the site of operation. In one experiment 1 per cent. of the lime was added to the U.S.P. H_2O_2 solution and wrought such a distinct change from its usual non-bactericidal effects that as one man wrote me, "It almost lived up to the claims of its advertisements." A level teaspoonful of the alum plus a generous heaping teaspoonful of the lime, in two tumblers brimming full of water, only required to be boiled five minutes, and in a rough and ready way Stewart's solution could be approximated at any time or in an emergency (*Annals of Gynecology*, May, 1906, page 261). In short, while the original solution was Labarraque's acidulated with acetic acid (and other acids later) it soon became evident that the soda was not necessary and that acid alum had advantages. But the choice between alum and acetic acid always remained a matter of environment, adaptability, and portability. At present the alum solution is used (in one hospital at least) for an original or first cleansing of a septic wound and on this is placed a wet dressing of Wright's solution.

Repetition of the alum-chlorine is determined by the appearance of the wound at the second or any subsequent dressing. If all is well, then the citrate of soda solution is continued and the other omitted.

The whole technique of hand sterilization might be interesting. It was proven to be so very easy and efficient. Details of the many thousand tests and cultures were published long ago. The technique was: Five minutes, 3 of them with sapolio; add a handful of granulated sugar and rub carefully 2 minutes more. Plenty of water is taken for granted. Hand-test mixtures were inunctions of pus followed by rubbing on of asphalt dirt; no brush; no soap; rubbing continued until the grains of sugar were melted or dissolved. Then five minutes friction with the lime, which was washed off with dilute acetic acid (or vinegar.) For tender skins this latter was diluted one-half and then appeared to work quite as well. Often for the benefit of inquiring friends I have made a hundred successive cultures and scored one hundred negatives; in fact if used every day this method put the hands in such a condition that any good technique would be flattered, and I had to borrow the hands of others to see just what a technique was worth, because my own hands gave altogether too favorable results.

In applying chlorine to a wound, toilet paper should be used and gauze or other cotton wipes abandoned. Trial and estimation upon one's own skin will give a very good impression of the difference in friction, between the two, and explain why one hurts a wounded patient so much more than the other. Iodine and many other things were tested, but for hand sterilization and vaginal work, chlorin-alum followed by Wright's solution (especially upon septic wounds) certainly promises well; unfortunately all but about a dozen or so of the patients were doing badly under iodine before the latter was applied, yet the change seemed advantageous. But, with plenty of material, perhaps some untreated wounds may come under observation; still the iodine cult, or furor, is so extensive that every druggist or first-aider, in a railroad or factory, immediately paints some of the tincture upon any and every wound. Lest some critic may quote my own words to my discomfort, it may be well to emphasize that the solution for which I admit responsibility is iodine, calomel, glycerin, and alcohol, and is no more like the tincture of iodine than Stewart's acidulated chlorine solution is like Labarraque's alkaline one.

At least twenty physicians have spoken to me about various writings that have lately appeared on the subject of an acidulated chlorine solution and it is at the suggestion of some members of the society before which the author's first paper was read (about twelve years ago) that this reminiscence is written. As for chlorine and its modified solutions for douches, enemata, lavage, etc., or for its mixtures with oils, or in ointments, these would each demand an article as long as this. But it may not be out of place to warn any experimenter that glycerin-chlorine is a dangerous mixture, the second and third degree burns from which had some value as mute witnesses against those chemists who maintained and explained that it would not explode. The human skin, friction, glycerin, and chlorinated lime are best kept from contact.

128 West Eighty-sixth Street.

VACCINE THERAPY.

By G. A. EHRET, M.D.,

Cleveland, Ohio.

Theoretically, bacterial vaccines should prove to be a valuable addition to therapeutics; practically, in my use of them they have so proven. However, in perusing the literature on the subject in our best medical journals, the reader is left much in doubt as to their value. My use of bacterins has covered a period of nearly two years and their practical utility has been demonstrated. My experience is confined principally to mixed stock vaccines, having used autogenous but a few times. As the value of any agent used in general medicine is finally determined by results achieved by the great body of general practitioners, it would seem rational to acquire data from their work.

No doubt a certain part of the observations of the general practitioner is inaccurate; but among the thousands of physicians now using bacterins there must be a large number who make fairly accurate observations and whose judgment is balanced and correct.

During a period of twenty-five years of active general practice one comes to a certain conviction of the value of any particular line of treatment. If on the institution of a new line of therapy, recoveries, as a rule, are more certain and prompt than with the treatment used for a period of years previously, it is difficult to escape the conclusion that the results are due to the new treatment.

If my results in the use of bacterins are similar to those of men of longer and wider experience in their use, it is corroborative evidence that the phenomena I have been witnessing are not exceptional but the definite result of a definite cause. The following list taken from case records during my first year's use of them contains cases where no doubt bacterins were given near the crisis of the disease. Experience convinces me, however, that bacterins hasten or even anticipate the crisis. In coryza and acute bronchitis, in which I consider them specific, my use of bacterins is routine. The following cases are submitted with the hope that other men in active practice will also give their experiences, whether favorable or otherwise, in the use of bacterial vaccines.

CASE I.—Colon Cystitis. G. A., 47 years, American. Cystitis of several weeks' standing. Pure colon culture found in urine by Dr. Sanford of Cleveland. April 15, 1912, a stock colon bacterin containing three hundred million organisms per c.c. was used, beginning with fifty million; dosage given every third day and gradually increased to 1 c.c. After six doses the urine was free of infection and symptoms disappeared.

CASE II.—Bronchopneumonia. Baby F., 8 months, female, Italian. February 15, 1914, saw patient at 10 A.M. Illness of 48 hours' duration. Temperature 105.2°. Rapid shallow respiration, rales diffused. Gave 10 minims of a stock bacterin containing, in millions of organisms per c.c., Friedlander bacillus, 300; *Micrococcus catarrhalis* 200; Pneumococcus, 80; Streptococcus 60; *Staphylococcus aureus*, 200; *Staphylococcus albus* 200. Repeated call that evening. Temperature 102°, respiration and pulse slower. Repeated does of 10 minims. February 16, temperature normal, respiration normal. No further indications for treatment and recovery was uninterrupted.

CASE III.— Lobar Pneumonia. J. F. F., 36 years, male, Italian. Seen March 2, 1914, on third day of disease. Temperature 103.8°, pulse 156, respiration 52. Lower lobe of left lung consolidated. Patient delirious and picking at bed clothes. Removed to Canfield White Hospital. Gave 1 c.c. of stock bacterin used in Case II. at 5.30 P.M. Next morning at 8.45, temperature 101°. Repeated dose of 1 c.c. and mild laxative prescribed. At 5.30 P.M. temperature normal, pulse 86, respiration 22. Patient asked for food. Recovery uneventful and patient discharged from hospital able to walk to street car one week from date of entry.

CASE IV.—Chronic Gonorrheal Cystitis and Prostatitis. H. O. F., 26 years, American. Gonorrhea contracted when 18 years old. Repeated attacks. Treated by many physicians, he finally consulted an eminent genitourinary specialist, who diagnosed tuberculosis of the bladder on cystoscopic examination. March 12, 1914. Patient complained of pain in inguinal region and of being obliged to urinate often, up to six times during the night. Under prostatic massage secretion was expelled which showed gonococci, colon bacilli, and numerous other bacteria. Gave 10 minims of a stock bacterin containing, in millions of organisms per c.c., Gonococcus, 200; *Staphylococcus albus*, 800; *Streptococcus pyogenes*, 100; Pneumococcus, 100; Colon bacillus, 200. Dosage was gradually increased to 1 c.c. and given at five-day intervals. Continued treatment for six months with prostatic massage. Patient's body weight increased from 122 lb. to 148 lb. No other treatment used. Secretions showed absence of organisms. Seen recently and reports he has remained absolutely well.

CASE V.—Gonorrheal Arthritis. O. G., 36 years, American, male. March 14, 1915. Gonorrhea followed by arthritis of right shoulder joint, wrists, and left ankle. Used Bier's hyperemia with some benefit. Used stock bacterin of formula used in Case IV. Initial dose 10 minims. Terrific local and general reaction. Next day gave 5 minims. Pain less severe, less reaction. Gave 5 minims daily for ten days. Recovery complete.

CASE VI.—Lobar Pneumonia. Mary B., 28 years, Italian. March 17, 1914. Patient seen at end of tenth day of disease. Temperature 104.5°, pulse 120, respiration 56. Lower lobes of both lungs consolidated. Rusty sputum and blood. Patient had been on orthodox treatment. Removed to Canfield White Hospital. Gave 1 c.c. of stock bacterin used in Case II. at 5.30 P.M. At 7.30 P.M. crisis occurred temperature dropped to normal and remained so. Lungs did not clean up, however, and I gave ½ c.c. same bacterin at intervals of two days. Patient discharged well at end of two weeks in hospital.

CASE VII.—Lobar Pneumonia. A. V., 31 years, male, Italian. March 24, 1914, called to see patient, found classical symptoms of lobar pneumonia. Temperature 103.5°, respiration 32, pulse slow and bounding. Rusty sputum. Lower lobe of right lung consolidated. Removed to Canfield White Hospital. Gave 1 c.c. stock bacterin used in Case II. March 25, temperature 99°, pulse 82, respiration 26. Repeated dose of 1 c.c. at 9.30 A.M. At 6 P.M. temperature normal. No other indications for treatment and patient discharged on fifth day after entry.

CASE VIII.—Chronic Articular Rheumatism. Mrs. C., 35 years, American. History of acute rheumatism three years previously. April 16, 1914. Present condition: knee-joints and right ankle enlarged and painful. Suggested bacterins as a possible help. Began with 5 minims of stock bacterin containing, in millions of organisms per c.c., *Streptococcus pyogenes*, 60; Pneumococcus, 80; *Staphylococcus albus*, 200; *Staphylococcus aureus* 200. Five-minim doses at five-day intervals were given. No. improvement until the tenth injection, when the pain ceased. The patient then disappeared from the office for a year. I saw her at the end of this time and she said she was perfectly well and had taken no other treatment since.

CASE IX.—Neuritis. Mrs. M., 46 years, American. Patient seen July 9, 1914. Neuritis in both arms. Nerves tender on pressure. Four years previously patient took electrical treatment for same, then went to a Sanatorium and remained eight weeks, returning home much improved. Remained comparatively well for a year. Returned to me in 1913 with pain much more severe than ever. I tried electricity, etc., with no benefit. Patient very constipated and usual remedies for same gave little relief. An *x*-ray of the intestinal tract showed dilatation of the stomach. In July, 1914, I suggested bacterins as last resort. July 16, 1914, gave 10 minims of stock bacterin containing, in millions of organisms per c.c., *Streptococcus pyogenes*, 100; Pneumococcus, 100; *Staphylococcus aureus*, *albus*, and *citreus*, each 200; Colon bacillus, 200. Doses were given at intervals of five days and gradually increased to 1 c.c., Twenty-four injections were given with complete subsidence of symptoms. Abdomen massaged and strapped and constipation entirely relieved. The patient has been under observation and has remained well up to the present time.

CASE X.—Bronchial Asthma. Mrs. S., 42 years, American. History of bronchial asthma for six years. Treatment along usual lines. Patient was willing to try bacterins if she could hope to get relief. May 12, 1914, gave 10 minims of stock bacterin used in Case IX. Gave six doses, the last one of 7 c.c., at four-day intervals, and symptoms entirely disappeared. Have seen her from time to time since and she has had no return of asthma.

CASE XI.—Bronchial Asthma. James B., 46 years, American, merchant tailor. Usual symptoms of bronchial asthma, dyspnea severe upon climbing stairs. Patient had tried many remedies and treatments. Sept. 1, 1914, gave bacterin used in Case II beginning with 10 minims. Severe local reaction followed with chill and the patient was obliged to go to bed. Sept. 4 gave 5 minims. Reported next day he felt much better. Sept. 7 gave 10 minims. Patient so much better he considered it unnecessary to take further treatment. He has no dyspnea and climbs stairs to his work shop with no difficulty. He has since referred a number of patients to me.

CASE XII.—Otitis Media. Baby P., 3 years, American. Usual history until rupture of tympanic membrane when I was called. Sept. 14, 1914, I gave a stock bacterin containing, in millions of organisms per c.c., *Streptococcus pyogenes*, 60; pneumococcus, 80; *Staphylococcus albus* and *aureus*, each 200. Initial dose 3 minims and repeated every third day. No other treatment used except to wipe pus from external ear. Symptoms rapidly improved, and ear entirely dry at end of second week.

CASE XIII.—Central Pneumonia (?) Baby Frank C., 5 years, American. Baby sick two weeks when first seen, Nov. 8, 1914. Temperature had averaged for the two weeks, morning 102°, evening 105°. Cough and pneumonic symptoms absent. Slight dilatation of alæ

nasi. Typhoid fever suspected, but Widal was negative. I was unable to define the lesion and requested a consultation with Dr. H. J. Lee of Cleveland who inclined to a diagnosis of central pneumonia. Temperature at consultation 105.5°, respiration 56, pulse 140. Patient restless, insomnia. Expectant treatment advised and I suggested using a mixed catarrhal stock bacterin. Consultant demurred as he thought bacterin useless, but consented to try it. Gave immediately 0.5 c.c. of bacterin used in Case II. Temperature dropped to normal in two hours and child fell asleep. Recovery uninterrupted.

Case XIV.—Otitis Media. Mary S., 22 years, American. History of otitis media since age of two years. Right ear affected and discharging pus. Dec. 15, 1914, gave 10 minims of a stock bacterin containing, in millions of organisms per c.c., *Staphylococcus aureus* and *albus*, each 600. Dose repeated at five-day intervals and increased to 1 c.c. No improvement. Bacterial diagnosis showed culture of *Streptococcus mucosus*. An autogenous bacterin was prepared ,and an initial dose of 30 million organisms was given and increased every five days. Hearing was improved and the discharge had almost ceased when the patient discontinued treatment.

Case XV.—Bronchial Asthma. Mrs. V., 38 years, American. History of asthma for many years. Gave stock bacterin used in Case II, beginning with 5 minims increased to 1 c.c. and given at five-day intervals. Treatment continued six weeks. No benefit whatever.

Case XVI.—Bronchial Asthma. Max P., 26 years, American. Asthma several years standing. Patient was laboring for air when he entered my office. Attacks aggravated during wet weather. Diagnosis of bronchial asthma confirmed on physical examination. Dec. 27, 1914, gave 10 minims of stock bacterin used in Case II. Reaction very severe. Repeated 10 minims in one week. Patient stated he would rather have the asthma than the sore arm. Next dose of five minims, given five days from last injection, gave mild reaction and patient reported feeling better. From this on, the dosage was given at five-day intervals for a period of six weeks, the maximum dose being 1 c.c. All asthmatic symptoms cleared up and he has had no return of the trouble.

[illegible]

A FATAL CASE OF CEDAR OIL POISONING.

By WM. D. McNALLY, A.B.,

[illegible]

Chemist, Cook County Coroner's Laboratory.

The literature since 1845 contains a record of only 19 cases of cedar oil poisoning; 13 were abortion cases, four of them ending fatally. The case which I have to report is that of a young negro woman, 22 years old. The clinical data in the case have been kindly furnished by Dr. S. N. Balderston. Briefly the symptoms were—convulsion, bloody froth at the mouth, irregular breathing, weak pulse, and a cold, clammy skin. The stomach was washed out; the washings had the odor of oil of cedar. Within one hour of taking the oil, the patient died.

The stomach containing 464 grams of contents and weighing 120 grams was submitted to me for examination. Upon opening the stomach a pronounced odor of oil of cedar was noticed. The stomach was hashed and 100 grams subjected to a steam distillation. The distillate yielded but a trace of the oil. The stomach contents were thoroughly mixed and 100 grams acidulated with a few drops of 10 per cent. sulphuric acid and filtered through cheese cloth. The filtrate was extracted with ethyl ether and allowed to evaporate at room temperature. A clear oil was obtained having the odor of oil of cedar. It had an index of refraction of 1.470 at 17° C. From 584 grams of the stomach and contents 5.13 grams of oil was recovered.

A three ounce bottle, bearing a label, "Oil of Cedar Leaf," was found in the room of the deceased. One ounce had been removed. The oil had been purchased at a neighboring drug store a few hours before the woman became ill. The contents of the bottle had a specific gravity of .9383 at 19° C, and a refractive index of 1.471 at 17° C.

Twenty-five c.c. of the oil was distilled with the following result:

Temp. C.	C.C. Fraction	R. Index at 17 C.
Below 78	0.5	1.365
180	1.5	
196	5.5	1.462
200	11.0	1.466
220	4.0	
230	1.0	1.470
Loss and tarry residue	1.5	
Total	25.0 c.c.	

The largest portion of this oil distilled at 200° C. The major portion of pure oil of cedar leaf, distills over below 173° C.[1] The specific gravity of pure cedar leaf oil is from .886 to .920. Pure cedar wood oil has a specific gravity of .940 to .960 and a high refractive index of about 1.505 at 17° C. The above oil examined corresponds more with cedar wood oil than cedar leaf oil.

A number of tests were made on animals with pure oil of cedar leaf with the following results:

Weight	Dose	Symptoms	Duration of symptoms
Rabbit No. 1 [illegible] grams	4 c.c.	Convulsions	Death in two minutes.
Rabbit No. 2 [illegible] grams	½ c.c.	Convulsions	Death in two minutes.
Rabbit No. 3 2000 grams	½ c.c.	Slight.	
Rabbit No. 4 2000 grams pregnant	4 c.c.	Slight.	Aborted during the night: [illegible]
Rabbit No. 5 2599 grams	1 c.c.	Slight.	Did not die.
Rabbit No. 6 3404 grams pregnant	1 c.c.	Convulsions	Death in two minutes without aborting.
Doz No. 7.. 5.5 kilos (pregnant)	4 c.c.	Convulsions	Died in fifteen minutes without aborting.
Dog No. 8. 6.0 kilos, 1st day	2 c.c.	No effect	Twelve hours.
Dog No. 8 6.0 kilos, 2d day	3 c.c.	No effect	Twelve hours
Dog No. 8 6.0 kilos, 3d day	4 c.c.	No effect	Twelve hours.
Dog No. 8 6.0 kilos, 4th day	10 c.c.	Vomited	After six hours ceased to eat, active as ever.
Dog No. 8 6.0 kilos, 5th day	17 c.c.	Vomited	Had tetanic convulsions, appeared to be in great pain, stertorous breathing, pupils dilated, would bite at wire cage. Unconscious part of the time. Had violent tetanic convulsions every ten minutes for one hour. Urine voided had odor of oil of cedar. Dog lived ten hours, appeared very weak and in pain, was then anesthetized with ether until heart stopped.
Dog No. 9 8 kilos	25 c.c.	Convulsions	Vomited, died in 50 minutes.

A small dose seemed to have a greater effect on pregnant animals than on non-pregnant animals. A post mortem examination on dog No. 7 showed an intense hyperemia of all organs. The fetal membrane showed extreme venous engorgement.

I am indebted to Dr. H. G. W. Reinhardt, Coroner's Physician, for a brief synopsis of the necropsy findings twelve hours after death.

There was an edema of both lungs. The heart was normal in size, the myocardium, endocardium, and the valves appeared normal. There was an increase of the pericardial fluid. The peritoneum was smooth and glistening; the vessels of the omentum, mesentery, and pelvis were deeply injected. The stomach was acutely dilated. The subserous vessels of the lesser and greater curvature were intensely engored. Upon opening the stomach a strong odor of oil of cedar was noticed. The serosa of the small intestine appeared normal; there was a distinct hyperemia of the mucosa of the large in-

testine. The liver was slightly enlarged, with intense congestion. The pancreas appeared normal. The spleen was of normal size. The kidneys were slightly enlarged, of a dark red color, the capsule stripped easily leaving a smooth surface. On section both cortex and medulla appeared hyperemic. The urinary bladder was empty. The mucosa was hyperemic. The uterus was enlarged and contained a fetus of about six weeks gestation, the membranes were intact. The ovaries and tubes were markedly congested. The right ovary was enlarged and upon section a corpus luteum of about .75 ctm. in diameter was found.

A few cases[2] of accidental poisoning have been reported. One of these was due to a pharmacist's error.[3] In another case the oil was used in the treatment of gonorrhea.[4] Wait[5] reported four cases, in one of which a young man who had seduced a girl was convicted of her murder. In the second case a young woman, age 26, who took a "large spoonful" recovered with treatment. In a third case, a girl 17 years of age, took one ounce and recovered with treatment. In the fourth case, a woman, age 32 years, died within one hour from taking an unknown amount. Branden[6] reports a case in which a woman recovered from taking one drachm. In Thompson and Archibald's[7] case, in which an unknown amount was taken, the woman died. In Brown's[8] case, the woman took one-half ounce of oil without aborting. The symptoms consisted of dizziness, frothing at the mouth, violent convulsions, unconsciousness, dyspnea, cold perspiration, and suppression of the urine for 36 hours. Other cases[9] have been reported, but in no instance did the woman abort.

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Medicolegal Notes.

Malpractice—Pleading Specific Act of Negligence.—In an action for alleged malpractice in the treatment of the plaintiff's husband during an attack of typhoid fever which resulted in his death, the plaintiff alleged a specific act of negligence, namely, the prescribing for the patient a diet of poached eggs and toasted bread, whereby his bowels were perforated and torn, it was held that, the plaintiff having charged the defendant with a specific act of negligence, could not, under that charge, introduce evidence of other acts and attempt to show negligence therein, although she was not obligated to plead her evidence or set out in detail specific acts, and judgment for the plaintiff was reversed.—Ennis v. Banks, Washington Supreme Court, 152 Pac. 1037.

Contract for Physician's Services Payable by Installments—Effect of Patient's Death.—A patient agreed in writing to pay his physician "five thousand dollars for his treatment of locomotor ataxia, divided into payments as follows: Five hundred dollars every three months till paid." The patient took the treatment for twenty months and then died. In an action against his estate it was held that the physician was entitled to recover the whole of the unpaid portion of the $5,000. Such a contract is not against public policy. It is an entire contract; and the court will not apply to it the principle that in contracts for personal services it is an implied condition that the death of either party dissolves the contract. The court said that a very important thing to be considered in the construction of the contract was that it did not name any period of time during which the treatment was to continue.—Smith's Estate, 59 Pa. Superior Ct. 4.

Infection from Unsterilized Instruments—Hypothetical Questions.—In an action against a dentist to recover damages for injuries to the plaintiff's jaw, the evidence for the plaintiff tended to show that the defendant after having operated on a patient for an abscess of the jaw, immediately afterwards, without having washed his hands, or cleansed or sterilized his instruments, cut the plaintiff's gum after having drilled a tooth, which was sound, at a point where there was no ulceration, and that a few days afterwards the gum ulcerated, resulting in necrosis of the jaw and the ultimate removal of a portion of the jawbone. It was held that the case was for the jury, and a verdict and judgment were sustained. An expert called by the plaintiff was asked a hypothetical question as follows: Suppose a person after having lanced an abscess in one patient without washing his hands, undertakes to lance the gums of another patient, but before doing so handles the cutting part of the blade of the knife with his hands or fingers, and that second patient develops an abscess at the point where lanced a few days later, to what would you attribute that abscess?" "A. Well, to infection." It was held that the question was a proper one.—Norwood v. Goeddel, 58 Pa. Superior Ct. 500.

X-Ray Photographs—Hypothetical Questions.—In an action for personal injuries, it was held error to permit doctors, over objection, to testify what an *x*-ray photograph of the plaintiff's person showed without producing the photograph, for the reason that the photograph was the best evidence.

A hypothetical question, which began: "Assuming that a man whose present condition is as you disclose the condition of plaintiff to be," was held improper, for the reason that the question should have in it all the facts on which the answer is based.—Hammond v. Bloomington Canning Co., 190 Ill. App. 511.

Injuries from Hot-Water Bottle.—In an action against a sanatorium and its superintendent it appeared that the plaintiff had employed the superintendent to perform an operation for hernia. After the operation was performed the doctor carried the plaintiff to the room assigned to him and placed him in bed while still under the influence of an anesthetic. A rubber bottle, filled with very hot water, had been placed in the bed, and the unconscious man was laid upon it, and was burned on his back severely. The witnesses described the wound as being 15 to 18 inches in diameter. He also received a smaller burn on his side; the attendants, believing that his struggles on becoming conscious were due to delirium, having held him down on the bed for a time and then turned him on his side. He was under treatment from the burns for a number of months and suffered excruciating pain. The jury found the doctor, but not the sanatorium, guilty, and rendered a verdict for $5,000, which the trial court reduced to $2,500. On appeal, the court said that it did not mean to condemn the doctor, nor even to say that he was in fact negligent; but, taking the situation as it found it, and as the jury observed it, there was evidence to justify them in finding that the doctor had not exercised proper care; and, having so found, the court had no right to dispute the verdict. It also held that the damages awarded were not excessive.—Grosshart v. Shaffer, Oklahoma Supreme Court, 152 Pac. 441.

Exemption of Charitable Hospital from Taxation.—Under section 170 of the Kentucky Constitution, exempting institutions of purely public charity from taxation, a hospital incorporated by trustees as a charitable corporation having no capital stock and holding property for the maintenance of a hospital for the treatment of sick and disabled persons and for medical and surgical treatment and the maintenance of poor persons not able to provide it for themselves, maintained without pecuniary profit, and having funds invested the income of which was used solely in meeting the necessary expenses, was an "institution of purely public charity," whose invested fund was exempt from taxation.—Mason County v. Hayswood Hospital, Kentucky Court of Appeals, 179 S. W. 1050.

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New York, February 19, 1916.

A THEORY OF DEVELOPMENT THROUGH FUNCTION.

THE fact is well-known and accepted that the complex and highly differentiated organ or system has been developed from a very simple form. Comparative morphology has firmly established that. But what are the causes of such development, the principles of life and the properties of living matter which bring it about? There are those who see an inherent development in the form which produces a complexity of functioning in relation to the environment. Certain investigations, however, suggest the primary importance of function in the evolutionary process.

S. T. Bok of Amsterdam discusses in *Psychiatrische en Neurologische Bladen,* 1915, Nos. 4 and 5, a theory of functional development of the nervous system, his hypothesis being formulated with simplicity and clearness and based upon detailed observations made upon a chick embryo with a consideration of the new facts thus ascertained. He has discovered through new and fine staining methods a system of tracts, a "ground plan" of the nervous system, at once schematic and comprehensible. The striking thing about it is its rectangular appearance, which shows the new neuron in a reflex arc always perpendicular to the previous arc. These observations are important in determining when and where new tracts begin and what their course will be.

The first law is discovered through the position and direction observed in the first outgrowth of neurites. The law is formulated thus: New tracts always originate in neuroblasts situated in the environment of already existing tracts. Since, however, as has been well-established, the neurite grows out sooner than the dendrite, the young neuron has no contact with the activating tract at first. This is stated as the second law. There must then be some sort of bridge through which the action takes place. The third law must cover this. In order to understand this law Bok considers hypothetically an animal that in its adult form stands at the same level as that of the chick embryo under observation. Here stimulations would pass at certain moments and these irradiated stimuli, passing from axones that lie naked in the protoplasm, must emanate into the surrounding protoplasm. This emanation would occur at all unmyelinated tracts when stimulated, but chiefly where there is an accumulation of stimuli. From this the third law is manifest. The new fibers develop in the direction of these stimuli which emanate from the activating tract. Striking examples of the operation of this law may be found in the preponderance of longitudinal and cross fibers in the spinal cord and bulb, also in the structure of the tectum opticum, where the secondary fibers are perpendicular to the opticus fibers, and the tertiary fibers take a third perpendicular course.

It is the protoplasm which adapts itself to the conduction of stimuli, especially through its so-called mnemic power, that which allows a function once performed to be performed more easily a second time. This adaptation results in the formation of neurofibrils. New tracts, therefore, arise when constantly repeated stimulus currents emanate from already existing tracts; the cells which are first pervaded by these stimuli then send out their axis fibers in the direction of these currents. This the author formulates as his hypothesis of the origin of fibrillation from stimulation. The course also of the tract thus formed is determined through function. Following the law of neurobiotaxis the fibers seek simultaneously stimulated regions. Thus the afferent skin fibers or the vestibular fibers, which conduct widely extended stimulation, bend toward each other in the sensory bundles along the lateral root line. On the other hand, a merely local stimulation results in the fibers running through on the same levels.

There are two explanations for this law of neurobiotaxis, which seems to limit to a large extent the course of the neurites. One is the scientific theory that stimuli, which represent a form of energy as yet unknown biologically, will attract each other. The other lies in this theory of fibrillation arising from stimulation, because simultaneously stimulated points are doubly pervaded by stimuli and the protoplasm is thereby adapted to repeated function.

The complexity and diversity of the nervous system might, therefore, be wholly accounted for by this theory of the origin of fibrillation from stimulation. Function appears as the initial factor and the cause of the anatomical substratum. The author, in a fuller discussion of this same hypothesis (*Folia Neurobiologica,* 1915, IX, 5), finds in this conclusion a value beyond the merely anatomical, which gives it a higher significance in the neurological and psychical problems of to-day. He expresses this in the pregnant words of Schiller: "It is the spirit, which to itself the body moulds."

OCCUPATIONAL DISEASES AND INDUSTRIAL HYGIENE.

OCCUPATIONAL diseases are, of course, very prevalent. The pity and in many instances the shame of it is that such diseases may be prevented. Some occupations are notoriously unhygienic, and it is difficult to provide precautions which will rid them of their disease-conveying tendencies, but, on the other hand, much can be done, which is left undone, to better and render more hygienic the condition of toilers, even in the most menacing occupations. Often, perhaps most frequently, bad con-

ditions in workshops and factories are allowed to exist and continue for economical reasons. Employers are only too often more intent on making money than careful of the health of their employees and have to be compelled by law to safeguard the lives and bodily welfare of those who work for them. It also occasionally happens that laws when made are not enforced. In the recent report of the Surgeon General of the Public Health Service the question of occupational diseases and industrial hygiene is discussed at some length. During the year investigations of occupational diseases and the hygiene of workers have been carried on under the direction of Surgeon I. W. Schereschewsky. A comprehensive investigation begun in the fiscal year 1914 was concluded in 1915 and the results recorded in the report. The persons examined belonged to the cloak and suit, and dress and waist industries in New York City, which employ a total of 86,000 individuals. The incidence of defects and diseases was noted in the case of 3,086 workers, and there were recorded 13,457 defects and diseases of all kinds, of which 9,541 were in males and 3,916 in females. The examination showed no vocational diseases peculiar to the garment worker. Nevertheless, it was evident that the effect of sedentary occupations, such as women's garment industries, was to intensify the bad effects upon health and efficiency of certain defects and diseases or to produce them in predisposed individuals. Tuberculosis is the most prevalent disease among garment workers, 3.11 per cent. of the males examined and 0.9 per cent. of the females being found to be tuberculous. Apart from tuberculosis, the most common defects and diseases among garment workers, in order of frequency for both sexes were defective vision, 69 per cent.; faulty posture, 50 per cent.; chronic nose and throat affections, 26.2 per cent.; defective teeth, 26 per cent.; pyorrhea, 26.2 per cent.; dysmenorrhea, 20.2 per cent.; hypertrophied tonsils, 15.3 per cent.; defective hearing, 10 per cent.; nervous affections, 7.75 per cent. The investigation resulted in the making of recommendations to the joint board of sanitary control for the improvement of conditions under the board's jurisdiction. Stress was laid upon education as a means of improving the knowledge of personal hygiene of the worker, the lack of which plays an important part in the causation of the defects and diseases noted in the examinations.

With respect to economic conditions and their relation to the public health, Surgeon Warren submitted a report in which he showed how intimately the problem of disease prevention is related to industrial and economic problems and the necessity for cooperation between public health workers and those endeavoring to solve our economic problems. Hygienic standards were defined and outlined according to responsibility. The most important of these were discussed in order to show the relation of insanitary conditions in places of employment, long hours of labor and fatigue, poor living conditions, cost of living, wages and income, and woman and child labor, to the health of the individual worker and the community. The relation was especially shown by the sick and death rates according to occupation and their effect upon the infant mortality. The relation of sickness to labor unrest was also pointed out.

As we have said, the question of the health of workers is of the utmost concern, not only to the workers themselves but to the community at large. It is obviously false economy and bad policy to avoid taking precautions to guard the health of workers because it costs something. Viewed even from the purely selfish standpoint, it is not economical in the long run. The good health of the people is the greatest national asset, for if disease is engendered and its progress encouraged by the neglect of the laws of health, like a boomerang it will strike those responsible for the conditions and in time will undermine the health of most of the inhabitants. If disease flourishes man will decay and the nation of which he is a part will disintegrate and come to naught. Therefore laws should be made and strictly carried into effect which are best calculated to conserve the health of the workers. The Public Health Service is doing good work in this direction, and its efforts should be forwarded by the authorities that be.

WAR NEURASTHENIA AND HEART DISEASE.

OUR textbooks on neurasthenia state that as a rule this affection is endogenous and appears on a neuropathic substratum; while exogenous neurasthenia, although well marked examples are now and then seen, is relatively rare. The occurrence of earthquakes and similar cataclysmic events has of late years been recognized as equal to the production of neurasthenia in the untainted. But common as this affection has been in its endogenous expression, it is probable that the exogenous form, as determined in the healthy by war hardships, is at the present day far more in evidence than its fellow affection.

Thus Stadelmann, stated to the Berlin medical Society last November (*Berliner klinische Wochenschrift*, November 29) that fully one-half of the invalided soldiers who came before him suffered from neurasthenia—there was literally a great army of these sufferers. They had symptoms without end, but from 50 to 70 per cent. complained of their hearts. Objectively but little could be found to explain the symptoms—perhaps in not more than 5 per cent. of these subjects were there objective finds. Contrary to what is often seen in peace practice, information that no heart disease was present was not well received. These patients are so demoralized that they do not even wish for recovery, which would surely involve a return to the front. All they desire is to return home and take up their regular vocations.

Hence there is a conflict between the surgeon and the patient, for the former's duty is to get the latter back in the ranks as soon as possible. The first step is to refuse a return to the home, which must be replaced by a convalescent sanatorium. At present most or all these are in the West. In any case, these subjects must for obvious reasons be kept away from the great cities. The author further suggests that the men should be kept in ignorance of the diagnosis of their ailments.

THE FUTURE STATUS OF ALCOHOL DRINKING IN GERMANY.

GERMAN efficiency owes nothing to sentimentalism or fanaticism so that the problem of alcoholism is dealt with in a manner radically unlike that affected in the United States. It is admitted that the Empire on a peace footing comprises from 300,000 to 400,000 "alcohol-sick" individuals. These men are heavy drinkers but not necessarily drunkards. In reading miscellaneous case histories, irrespective of the nature of the disease, the patient is often mentioned as an "alkoholiker" or "alkoholist" and his daily consumption of alcohol is given, along with the lesions due to or aggravated by his addiction over and above his special ailments. Such men as a rule attend to their occupations and are husbands and fathers of families. The consumption of the drug is interdicted or greatly curtailed and the patient's health is duly benefited. The first step in solving the problem is to reach this class of people, and this is most wisely done by proper instruction in youth. Many Germans are said, for example, to believe that the use of alcohol protects them from infectious diseases. It is only by teaching the young the falsity of this belief that it can be finally dispelled.

Again the success of restrictive measures in warfare has taught that a certain amount and kind of restriction in times of peace will work no hardship. At present it is too soon to formulate these restrictions but they will clearly come under two heads. First, uniform laws, statutes of central origin, and, second, local police regulations as determined by local exigencies. Enlightenment is of course not to be limited to school children, but will be extended to parents and adults in general. It must take two forms, one dealing with alcohol-temptation—which must differ somewhat with local customs—and alcohol-danger. These features were brought out in detail during a recent Conference for Public Welfare held in Berlin (*Deutsche medizinische Wochenschrift,* December 2). In contrasting German reform methods with our own it is only just to remark that in Germany there are no such subsidiary problems as saloon politics and negro alcoholism and drug addiction.

ACUTE RENAL CONGESTION IN THE TROOPS IN FRANCE.

LIFE in the trenches, even when the enemy is not engaged in bombarding him, is not all "beer and skittles" for Tommy Atkins. A number of painful conditions arise as a result of exposure to wet cold, of insufficient sleep and nervous tension. These symptom complexes are being named according to the part of the body they attack, as "trench back," "trench foot," etc. A development, the connection of which with conditions in the trenches is not obvious, is a transient nephritis which seems to attack soldiers who have been on active duty for long periods. In the *British Medical Journal* for July 17, 1915, an account of a number of such cases appeared. The writer, who was anonymous, came to the conclusion that the soldiers affected must have been exposed to some toxin of unknown character which had a selective action on the renal epithelium. In the same journal for September 25, Dr. Raw reports five cases of this malady. All these patients had albumin and casts, three of them had high specific gravity; in the other two this is not mentioned. All the men recovered. A common feature of all the cases of both these writers was that there had been no previous kidney trouble. Many theories have, of course, been advanced to account for this condition which appears to be associated in some way with life in the trenches. In the above-mentioned journal for October 9 last Dr. Abercrombie describes and discusses this form of nephritis at great length. He is inclined to believe that it is due to some specific organism which has not as yet been isolated. Developments since his article would seem to indicate that it is either a streptococcic or a colon infection. We occasionally see in civil practice a case of acute nephritis developing in an individual who has been put to some unaccustomed strain and these not improbably belong in the same category.

THE HUMAN AURA.

VARIOUS quasi-scientific publications in recent years upon human emanations, *x*-rays, and allied subjects have not been accepted seriously by the leaders of the medical profession, probably because of their imperfections rather than of their intrinsic improbability. Students along these lines had not made out a case, and in addition the subjects smacked too much of spiritism. So far as we know the great scientists who have investigated the phenomena of spiritism and have in some cases become converts to the latter belief, have not expressed themselves *ex cathedra* on the validity of the finds in question. Recently Professor Benedikt of Vienna has made studies along these lines. At a meeting of the Royal Imperial Society of Physicians of Vienna (*Berliner klinische Wochenschrift,* December 13) he stated without comment that when a normal human being is placed in a dark room the face appears blue, the left half of the body blue, and the right half red or orange. A woman who claimed to be able to locate objects with a divining rod seemed broader in the chamber than was actually the case. In particular the thumbs seemed much larger. Another of these women gave off an emanation for part of the time only. Both the women were said to be able to locate water, coal, oil, and metals, the second one only when these were beneath the ground, while the first was also able to find them when concealed in a room. The second woman had a tender area over the spine, and when the rod was placed upon this area violent pains were experienced.

News of the Week.

City Death Rate Drops.—The death rate in New York for the week ending February 5 showed a marked decrease as compared with the previous week and was but slightly higher than the rate for the corresponding week of last year. The decrease in the deaths from influenza, bronchitis, and pneumonia were responsible for the lowering of the rate. During the week of January 29, 1916, there were 1,812 deaths from all causes, giving a rate per 1,000 of 16.46; during the week of February 5, 1916, 1,547 deaths, a rate of 14.5, and during the week of February 6, 1915, 1,464 deaths, a rate of 14.13. Influenza caused 46 deaths, pneumonia 292,

and heart disease 340, during the week of February 5 of this year, as compared with 81 deaths, 339 deaths, and 424 deaths respectively, during the week of January 29.

Insane Hospital Needed.—The New York State Hospital Commission is urging that the proceeds of the suggested sale of the Mohansic State Hospital site be used for the purchase of another site and the erection of a hospital near New York City. The commission believes that this action is imperative because of the overcrowded condition of the State hospitals for the insane, particularly those near the city. The capacity of all the fourteen State hospitals is 27,840 patients, but at the present time they are housing 6,484 patients over the number of those who can be properly accommodated, and each year the overcrowding becomes worse.

The Mary Putnam Jacobi Fellowship.—The Woman's Medical Association of New York City offers the Mary Putnam Jacobi Fellowship of $800, available for postgraduate study. It is open to any woman physician for work in any of the medical sciences. The fellowship will not be awarded by competitive examination, but upon proof of ability and promise of success in the chosen line of work. Applications for the year 1916-1917 must be in the hands of the committee on award by April 1, 1916, and must be accompanied by (1) Testimonials as to thoroughly good health; (2) Letters as to ability and character; (3) A detailed account of educational qualifications; (4) A statement of the work in which the applicant proposes to engage while holding the fellowship; (5) Examples, if any, of her work, in the form of articles or accounts of investigations which she has carried out. Two reports will be expected from the holder of the fellowship, one to be presented about the middle of the work and a detailed report for publication upon its completion. All applications for this fellowship shall be forwarded to the committee: Annie S. Daniel, M.D., chairman, 26 Gramercy Park, New York City; Martha Wollstein, M.D., Helen Baldwin, M.D., Angenette Parry, M.D., Eleanor Tomes, M.D., Rose Cohen, M.D., Josephine Hemenway Kenyon, M.D., Emily Dunning Barringer, M.D.

Personals.—Prof. ELIE METCHNIKOFF, who has been critically ill, according to recent reports from Paris, is now improving and is considered to be out of danger.

Dr. C. G. L. WOLF, formerly assistant professor of chemistry in the Cornell University Medical College, New York, and now a captain in the Royal Army Medical Corps and stationed at Boulogne, has recently been named in the despatches of General French as the recipient of the "Distinguished Service Order."

Dr. PARKER SYMS has been appointed visiting surgeon to the City Hospital, New York.

Dr. GUSTAV SCHOLER has been nominated by Governor Whitman as a manager of the Manhattan State Hospital.

Dr. S. GINSBERG of the Bronx, New York, announces his removal to 1451 Prospect Avenue.

Dr. GORHAM BACON, professor of otology at the College of Physicians and Surgeons, New York, has tendered his resignation, which has been accepted by the trustees of the university, to take effect at the end of the present academic year.

Prof. Ivan P. Pavlov, chief of the department of physiology of the Institute of Experimental Medicine and director of the physiological laboratory of the academy, Petrograd, and the recipient of the Nobel prize for medicine in 1904, died recently at the age of 67 years.

Ohio State Medical College.—At the meeting of the trustees of the Ohio State University, Columbus, on February 8, Dr. Eugene F. McCampbell, executive secretary of the Ohio State Board of Health, was elected dean of the College of Medicine of the University, succeeding Dr. W. J. Means, resigned. Dr. McCampbell will shortly resign as secretary of the health board and will devote himself to the reorganization of the medical school.

Smallpox in New York.—A case of smallpox was reported on February 9 in Bayside, Queens Borough, New York. The patient, a negro, was removed to the Kingston Avenue Hospital for Contagious Diseases, Brooklyn.

Hospital Study.—At the suggestion of the public health committee of the New York Academy of Medicine, the American College of Surgeons has undertaken a systematic study of hospitals, their standards, their efficiency, and their relation to medical education. The Carnegie Foundation of New York will cooperate with the college in its undertaking and give such financial assistance as may be necessary.

Blindness from Wood Alcohol.—The plaintiff in a trial in Baltimore recently was awarded $7,500 for the loss of his sight as the result of drinking whiskey which had been diluted with wood alcohol. The jobber and the saloonkeeper were held jointly responsible for the damages, the testimony showing that the drink had been diluted as claimed and that the victim lost his sight a day or two after he had drunk a part of the two pints purchased.

Liners for Hospital Ships.—The 48,000-ton liner *Britannic,* the largest British ship afloat, is now being used as a hospital ship, having been converted by the British Admiralty immediately after her launching. The *Mauretania* and the *Aquitania* also are being similarly used.

Bequests to Charities.—St. John's Guild, New York, receives a bequest of $3,000 under the will of the late Lillian M. Payne of this city.

A bequest estimated at about $5,000 was left to the Stony Wold Society for the benefit of the Sanatorium at Lake Kushaqua, N. Y., by the will of the late Anna P. Morison of New York.

Crusade Against Alcohol.—On February 21 the New York City Department of Health will begin its campaign against the intemperate use of alcohol by the distribution of pamphlets in all the saloons, hotels, and clubs where drinks are sold throughout the city and by the showing of specially prepared films in the moving-picture houses. Wednesday, February 23, will be Croton Water Day and the teachers in the public schools have been requested to urge on their pupils the advantage of Croton water as a beverage over alcohol.

More Nurses for Siberia.—The American Red Cross has under consideration the sending of another party of Red Cross nurses for service in the prison camps in Russia and Siberia, where, it is said, there is urgent need for further help.

National Committee for Mental Hygiene.—The eighth annual meeting of this committee was held in New York on February 2, 1916, and was attended by a number of prominent alienists, social workers, and philanthropists. Announcement was made of a donation by the Rockefeller Foundation of $22,800 for carrying on surveys of the care of the insane in sixteen States, this donation, together with gifts from members of the committee, making possible a

considerable extension of the work. The secretary of the committee reported that societies for mental hygiene are now active in Connecticut, Illinois, New York, Massachusetts, Maryland, Pennsylvania, North Carolina, District of Columbia, Alabama, Louisiana, and California, and that during the coming year societies will be organized in Michigan, Rhode Island, Minnesota, Indiana, South Carolina, Tennessee, and Texas. It was also stated that the financial resources of the National Committee and State Agencies have increased until now the expenditures for the work are about twenty-five times as much is in 1908, when the first society was founded.

Dr. Walter E. Fernald presented a plan for popular education, surveys, and researches on the subject of mental deficiency, saying that demands for advice regarding institutional provisions, special classes for backward children, and psychological examinations in children's courts had been received from all parts of the country. The medical director of the committee, Dr. Thomas W. Salmon, gave an account of the survey of the insane which had been carried on during the year in South Carolina and Texas, and announced that similar studies would shortly be undertaken in a number of other States. He spoke of the sufferings of the insane improperly confined in county almshouses, jails, and poor farms, and expressed the belief that the surveys made by the committee would result in the complete abolishment of this type of neglect in the next few years. Dr. Salmon reported an increase of interest in the securing for all large cities of psychopathic hospitals where early and efficient treatment for acute and recoverable cases of mental diseases can be provided. Such hospitals, with the out-patient and children's departments now exist in Boston, Baltimore, Chicago, and several other cities. New York has as yet no such institution.

At the executive session, the following officers were elected: *President,* Dr. Lewellys F. Barker; *vice-presidents,* Dr. Charles W. Eliot, and Dr. William H. Welch; *treasurer,* Otto T. Bannard; *medical director,* Dr. Thomas W. Salmon; *secretary,* Clifford W. Beers.

Semi-Centennial of the New York City Department of Health.—The Metropolitan Board of Health undertook the sanitary control in New York City and adjacent counties in March, 1866. It is proposed to celebrate this important semi-centennial by a commemoration dinner to be given on Thursday, March 9, 1916, at 7 P. M. Among the speakers expected will be his Honor the Mayor, the State commissioner of health, Surgeon General Gorgas, Dr. Walter B. James, Henry Bruere, and Dr. Stephen Smith. Subscription $6. Acceptances and checks should be mailed to George A. Roberts, dinner committee, on receipt of which further details as to place, etc., will be forwarded.

Medical Society of the Missouri Valley.—The twenty-eighth semi-annual meeting of this society will be held in St. Joseph, Mo., on March 23 and 24, under the presidency of Dr. John P. Lord of Omaha, Neb. The Buchanan County Medical Society will act as host, and the scientific programme as so far arranged comprises two orations and twenty-five papers. Further particulars as to the meeting may be obtained from the secretary, Dr. Charles Wood Fassett, St. Joseph, Mo.

Associated Physicians of Long Island.—At the annual meeting held in Brooklyn on January 29, the following officers were elected: *President,* Dr. Dudley D. Roberts; *vice-presidents,* Dr. Paul Schmuck, Dr. Lefferts A. McClelland, and Dr. William A. Hulst; *secretary,* Dr. John Cole Hancock; *treasurer,* Dr. Edwin S. Moore.

Obituary Notes.—Dr. EDGAR D. COOLEY of Port Richmond, S. I., a graduate of the College of Physicians and Surgeons, New York, in 1877, visiting surgeon to the S. R. Smith Infirmary, Tompkinsville, and a member of the Medical Society of the State of New York and the Richmond County Medical Society, died at his home from heart disease, on February 9, aged 72 years.

Dr. HENRY PARRISH of Philadelphia, a graduate of the Medico-Chirurgical College of Philadelphia in 1897, died at the home of his son, Dr. Robert T. Parrish, on February 2, aged 68 years. He was a member of the American Medical Association, the Medical Society of the State of Pennsylvania, the Pennsylvania County Medical Society, and the National Geographical Society, and a fellow of the Royal Historical Society. Until his retirement several years ago, he was laryngologist to the State dispensary for tuberculosis patients.

Dr. GEORGE I. CASON of Colusa, Cal., a graduate of the University of Missouri, Medical Department, Columbia, in 1877, and county physician of Colusa County, died at his home on January 15, aged 63 years.

Dr. WILLIAM R. EVE of Burton, S. C., a graduate of the Medical College of Georgia, Augusta, in 1867, died in Savannah on January 21. He was a member of the American Medical Association, the South Carolina Medical Association, and the Beaufort County Medical Society.

Dr. WILLIAM ALONZO ELLIS of Essex, Mass., a graduate of the College of Physicians and Surgeons, Boston, in 1906, died at his home on January 25, aged 31 years.

Dr. PHARES JAMES DUKESHIRE of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1909, died at his home from pneumonia, on February 8, aged 30 years.

Dr. RUFUS ELMER DARRAH of Newport, R. I., a graduate of the Harvard University Medical School in 1890, and a member of the American Medical Association, the Rhode Island State, and Newport District Medical Societies, and the Massachusetts Medical Society, died at his home, on February 8, aged 55 years.

Dr. JOHN C. RYERSON of Boonton, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1860, and a member of the Medical Society of New Jersey and the Morris County Medical Society, died at his home, on February 10, aged 84 years.

Dr. RICHARD CHANNING MOORE of Omaha, Neb., a graduate of the Northwestern University Medical School, Chicago, in 1865, and a member of the American Medical Association, the Nebraska State Medical Association, and the Douglas County Medical Society, died at his home, on January 27, aged 74 years. Dr. Moore was the founder of what is now the Medical College of the University of Nebraska, and was professor of diseases of the mind in that college.

Dr. SILAS ARNOLD HOUGHTON of Brookline, Mass., a graduate of the Harvard University Medical School, Boston, in 1891, and a member of the American Medical Association, the Massachusetts Medical Society, the Norfolk District Medical Society, the Boston Medical Library, the Obstetrical Society of Boston, and the New England Pediatric

Society, died at his home, February 6, after a short illness, aged 52 years.

Dr. JOHN A. DOUGLASS of Amesbury, Mass., a graduate of the College of Physicians and Surgeons, New York, in 1861, and a member of the Massachusetts Medical Society and the Essex District Medical Society, died at his home, on February 3, aged 86 years. Dr. Douglass enlisted in August, 1862, in the Eleventh Regiment of Massachusetts Volunteers, and was honorably discharged from the United States army service in October, 1864. For many years he was a director of the Anna Jaques Hospital of Newburyport, and for some years was chairman of the Amesbury Board of Health.

Dr. JAMES B. DUNCAN of Bedford, Ind., a graduate of the Louisville Medical College, Louisville, Ky., in 1879, and a member of the American Medical Association, the Indiana State Medical Association, and the Lawrence County Medical Society, of which he was formerly president, died at his home, on January 31, aged 65 years.

Dr. DANIEL M. CAMERER of Paris, Ill., a graduate of the Rush Medical College, Chicago, in 1849, died at his home, on January 29, of paralysis, aged 92 years.

Dr. PHILIP FRIEDERICH CHRISTIAN BIEHL of San Francisco, Cal., a graduate of the Kentucky School of Medicine, Louisville, in 1883, died at the Bates Sanatorium, Berkeley, on January 30, aged 65 years.

Dr. JAMES W. GREGG of Brattleboro, Vt., a graduate of the Dartmouth Medical School, Hanover, N. H., in 1867, and a member of the Vermont State Medical Society and of the Windham County Medical Society, died of acute angina pectoris at his home, on February 3, aged 72 years.

Dr. BENJAMIN LOTT LAMBERT of New Haven, Conn., a graduate of the New York University Medical College, New York, in 1883, and a member of the Connecticut State Medical Society and the New Haven County Medical Society, died suddenly at his home, on February 2, aged 62 years.

Dr. CARROLL R. BANCROFT of Anaconda, Mont., a graduate of the College of Physicians and Surgeons, Baltimore, Md., in 1908, city physician of Anaconda, and a member of the American Medical Association, the Montana State Medical Association, and the Deer Lodge County Medical Society, died in Los Angeles, Cal., after a long illness, on February 3, aged 37 years.

Dr. GEORGE W. COIT of Missouri Valley, Iowa, a graduate of Bellevue Hospital Medical College, New York, in 1866, died in Los Angeles, Cal., on January 30, aged 79 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

FITZPATRICK LECTURES ON MEDICINE, MAGIC AND RELIGION—ADVANTAGES OF WARMING ANESTHETICS—ROYAL COLLEGE OF SURGEONS—A DONATION—OBITUARY.

LONDON, Jan. 22, 1916.

THE Fitzpatrick lectures of the Royal College of Physicians for this year have been duly delivered by Dr. W. H. R. Rivers of St. John's College, Cambridge, who took for his subject "Medicine, Magic and Religion," abstract terms, as he admitted at the outset, each of them connecting a large group of social processes by which mankind has come to regulate his conduct. These three groups are more or less distinct from one another. One has gone quite into the background of our social life. The other two have few elements in common, but form distinct social categories. But surveying mankind widely we do not find this separation. Among many peoples the three sets are so closely interrelated that it is difficult or impossible to disentangle them; among others, what we name medicine hardly exists, so closely is man's attitude towards disease identical with that he adopts to other natural phenomena.

The object of the Fitzpatrick lectures is the study of the history of medicine, but Dr. Rivers remarked that the study of its relations to other social processes is a necessary preliminary task, and to this he addressed himself. Time would not allow an exhaustive inquiry, so he limited himself to the field of his own researches—Melanesia, New Guinea, and slight reference to Australia. The time has gone by in sociology, he said, when we tried to understand human institutions by comparing examples from any part, and the present trend is to limit inquiries to a series of related peoples.

The distinction between magic and religion is not easy to draw, and we need a word to include both—in default of a better he used one sometimes heard, magico-religious. This implies from our point of view phenomena dealt with by supernatural means, and this implies the concept of the natural, but this is lacking among certain peoples. The essence of medicine as we now understand it is that it regards disease as a phenomenon subject to natural laws. What is the concept of those who fail to distinguish it from magic and religion? When speaking of magic, Dr. Rivers means a group of processes on which man uses rites which depend for their efficacy on his own power, or a power believed to be in certain objects and processes used in those rites; religion, on the other hand, comprises processes the efficacy of which depends on the will of some higher power, so it differs from magic by belief in a power in the universe greater than man's own. They differ in themselves by their attitudes towards man's attempt to influence the universe. On the other hand, medicine comprises whatever man tries to do to control a group of phenomena affecting himself, unfitting him for his functions, lowering his vital powers, tending towards death. These phenomena, distinguished from other natural groups, we call disease, and this concept includes the factor of causation. There are three principal classes of cause: (1) Human agency, as to which it is believed that disease is directly due to action by some human being; (2) the action of some spiritual being, or rather some non-human but more or less definitely personified agent; (3) what we call natural causes. All three beliefs are met with now, and were common in the not very remote past. By the profession and the laity alike the belief is general that the production of disease is the result of changes in our environment, independent of either human or superhuman agency. But this is not so among uncultured peoples.

In medieval magic non-human agents took a most important part, acting as immediate producers of disease and other effects, but they were held to be subjected in some way or other to the power of the human magician, and this not merely in cases of illness without any obvious antecedent, but in others which the natural cause seems obvious enough. A man's fall from a tree is attributed to a sorcerer;

so is death from a wound in battle, or a snake bite, or any event to which we should apply the term accident. Considering three main classes, the lecturer distinguished: (1) those in which a morbific agent is projected into the victim; (2) in which something is abstracted from the body; (3) in which the sorcerer acts on some part of the body of a person, or on some object which has been connected with that body, the belief being that thereby he acts on the whole person.

The advantages of warming anesthetics is, I understand, fullly appreciated on your side, but it is only recently that it has attracted much attention here. Dr. Shipway, the eminent anesthetist of Guy's and the King George hospitals, has lately stated his experience and described an apparatus for the administration of the vapors. The case for warming has been pretty freely criticised, but seems to have survived the trial of experimental and clinical observations. Gwathmey investigated the effects on animals of giving the vapors in a room at a temperature of 100° Fahr., and found the plan safer than otherwise. He found it took 20.35 minutes on the average to kill seventeen animals with warm chloroform, whereas it took only 6.57 minutes to kill sixteen at ordinary room temperature. The results with nitrous oxide were similar. The heart's action and respiration were irregular during the experiment. Gwathmey came to the conclusion that warm ether vapor is twice as safe as cold, and that all anesthetics warmed to blood heat are more valuable as to life without being rendered less effective in any respect.

Dr. Shipway gives the vapor by an "open method," in which it is breathed from an atmosphere of warm ether vapor and air instead of a cold vapor through a fabric. This preserves the best points of "open ether," viz., simplicity, free respiratory exchange, and equable dosage. It is economical of ether, as less is taken in at each inspiration, a constant percentage is established, none is lost by evaporation, very little during expiration. Moreover, warm vapors are more pleasant to breathe, more readily absorbed by the blood and act more quickly and more easily render a deeper calming effect. In very hot weather the room temperature will suffice. In cold weather artificial warmth will be required to raise the vapor to 85-90° Fahr., the latter level being better for patients who are feeble or shocked, and for operations involving much exposure or loss of heat or blood. Too great heat produces sweating and flushing of the face and neck, with extra bleeding from the wound through dilatation of cutaneous vessels.

The Royal College of Surgeons have voted the sum of 50 guineas to the joint fund of the Red Cross Society and the Order of St. John of Jerusalem. They have appointed Sir G. H. Makins, who is acting as consulting surgeon to the expeditionary force in France, as the next Hunterian orator at the college.

The handsome anonymous donation of 10,000 guineas toward the cost of extensions to King Edward's Hospital, Cardiff, was announced on Monday evening.

Dr. Herbert Williams, M. O. H. for the Port of London, died after a long illness. He was one of our chief authorities on port sanitation, was born at Weymouth in 1862, fulfilled his curriculum at St. Bartholomew's Hospital and graduated M.D. London and D.P.H. Cantab. In 1892 he joined the city corporation staff at Gravesend under the port sanitary authority. Later he was appointed to the hospital at Denton, and in 1901 succeeded Dr. Collingridge, who passed from the port office to that of M. O. H. for the city. Dr. Williams promoted or initiated a number of reforms affecting the health of passengers and crews, and improved the accommodation provided for seamen. He was formerly a major in the Royal Kent Garrison Artillery Volunteers and acted as adjutant of the corps during the South African war.

Dr. George Oliver died on the 27th ult. He was born in 1841, son of a Durham surgeon. Following his father's profession, he took M.D. London in 1873. As a student he was deeply attached to Professor Sharpey, and for a time afterward was a colleague. He practised many years at Harrogate during the season, spending the winter in London or at a pleasant country home. You will remember his device of testing with slips of paper, known now everywhere as "Oliver's test papers." His work on blood pressure is equally well known. His inventive power was remarkable. An instance, the hemocytometer and other instruments connected with his studies of the blood may be named. He founded the Oliver-Sharpey lectureship at the Royal College of Physicians, and delivered the first course, subject, "Studies on Tissue Lymph."

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 3, 1916

1. Gun-Shot Wounds of the Soft Parts. Beth Vincent and Robert B. Greenough.
2. Some Observations on 600 Heart Cases. Mark H. Wentworth.
3. Are There Different Anatomical Types? A Reply to Dr. Hooton. Joel E. Goldthwait.
4. Abscess of the Tongue, with Report of a Case. Joseph Prom.
5. An Operation for the Correction of the Deformity Due to "Obstetrical Paralysis." Mark H. Rogers.

1. Gun-Shot Wounds of the Soft Parts.—Beth Vincent and Robert B. Greenough give a description of these wounds and of the methods of treatment used at the American Ambulance, under the care of the Harvard Unit at Neuilly-sur-Seine, based on 318 cases. An analysis of these cases in regard to the regions involved shows that there were 24 wounds of the head and scalp, 76 of the face and jaw, 64 of the trunk, 55 of the upper extremities, and 80 of the lower extremities. Compound fractures of the jaw were of frequent occurrence, there being 63 such fractures in 76 wounds of the face. The treatment of the jaw fractures was carried out by the Dental Department of the Ambulance, by means of interdental splints, wedges, wiring, and bridging work, and very remarkable results were obtained by the ingenuity and skill of this service. The wounds were of every kind, lacerated, penetrating, perforating, or wide surface abrasions. In the treatment of these wounds the usual procedure was as follows: The patient was given a general anesthetic, the skin was shaved, painted with iodine, and the wounds enlarged as much as the extent of the infection required; the crushed edges of the wound of entrance and all necrotic tissue were excised; all the foreign material, such as dirt or particles of clothing, was removed. Some wounds were irrigated and some were simply wiped dry. Drainage was accomplished by means of cigarette wicks or drains made of folded rubber tissue. Raw surfaces were covered with sheets of rubber tissue. The use of rubber tissue for wicks and as protective covering, saved the patients much suffering. The most septic wounds were given continuous irrigations of sodium hypochlorite solution (1:200), others had frequently

changed wet dressings, but most of the cases were dressed with plain sterile gauze. Even the very septic cases did surprisingly well, due, in part, to the good general condition of the French soldiers, and in a large measure to the skill and care with which they were treated by the house staff. A well balanced unit needs, for such work as this, comparatively few surgeons to do the operations, but should have a large number of well trained men to look after the patients in the wards. In the location of foreign bodies the means most used at the American Ambulance were the fluoroscope, *x*-ray plates, and the Bergonier electro-magnet. For routine work the fluoroscope proved to be the most rapid, accurate, and economical means of locating lodged missiles.

2. Some Observations on 600 Heart Cases.—Mark H. Wentworth writes that between March, 1912, and May, 1914, he assembled at the Boston Dispensary 600 cases of children between the ages of six weeks and fifteen years with one or another form of heart weakness, rheumatism, or chorea. Of the whole series there were but 30 which had rheumatism not followed by a heart disturbance of some sort, and most of these were admissions of comparatively recent date. This series was carefully tabulated with reference to the character of the heart lesion and its etiology. Of all the cases in the series, 270 were apparently caused by rheumatism or tonsillitis, 82 by acute infectious diseases. The etiology was undetermined in 239 cases. The writer finds that children are far more liable to attacks of rheumatism than others, recurring attacks are more frequent in them, and cardiac involvement following rheumatic infection is more frequent. He doubts the wisdom of always recommending the removal of the tonsils and seldom advocates it except in cases which have had marked recurring attacks, or in which it is evident from the past history that the child is subject to tonsillitis. Two hundred and fifty-seven observations were made on the blood pressure, an effort being made to see how it was influenced by rest, and by rest and tincture of digitalis medication. In the cases in which no drug was used, the patients having simply stated periods of rest and supervision of their hygiene, the effect upon the systolic pressure showed nothing striking, though there was a tendency to a slightly rising pressure. Under the influence of digitalis, which was combined with rest, the results on the systolic pressure showed a much greater and more uniform tendency to rise. The diastolic pressure when treated with digitalis showed much the same readings as when the patients were given rest only. Digitalis should not be used with a free hand or indiscriminately. Its action should be carefully watched. Where no appreciable effect is noted on the pulse, one should examine the heart and general circulation before increasing the dose. In cases showing degeneration of the heart muscle digitalis may be absolutely contraindicated. In cases of tachycardia the writer has found that minute doses of aconite or strychnine may be used to better advantage than digitalis in reducing the accelerated pulse.

5. An Operation for the Correction of the Deformity Due to "Obstetrical Paralysis."—Mark H. Rogers describes an operation for the correction of the deformity which usually follows brachial paralysis occurring at child-birth which has been in vogue in Germany and has been described by Vulpius and Lange, and reports a case in which he has performed this operation. The operation is simply an osteotomy of the upper portion of the humerus about two inches below the shoulder joint, followed by a one-quarter rotation of the whole arm below the line of fracture. An incision is made between the muscle planes sufficiently long to be sure that there is no nerve involvement. A clean cut osteotomy is done, and before the incision is closed the arm is brought out at a right angle to the body and the lower fragment is rotated outward, while traction is kept on the hand. The tip of the finger is held on the fracture to see that there is no overriding and that the position is good. The wound is closed and the arm and body are encased in a shoulder spica with the arm full-length at right angles and the palm of the hand pointing upwards. It is then treated as an ordinary fracture. The results of the operation are a normal carrying position of the arm, with the elbow at the side, and a normal position of the hand.

New York Medical Journal.

February 5, 1916.

1. Acute Appendicitis. John B. Deaver.
2. The Prompt Cure of Gonorrhea. George A. Wyeth.
3. Criminology from the Standpoint of a Psychiatrist. Morris J. Karpas.
4. Pollutions in the Male. Max Hühner.
5. Bronchiectasis from the Standpoint of the Bronchoscopist. Sidney Yankauer.
6. A Case of Eclampsia. Albert Comstock.
7. Meningeal Hemorrhage in the Newborn. Maurice J. Lippman.

1. Acute Appendicitis.—John B. Deaver says the important points that have to be learned about this disease are that it is the most common intraabdominal inflammation; that indigestion is often a forerunner, preparing the soil for the infection; that being an infectious disease and the most common infectious disease of the abdominal cavity, the appendix constitutes the avenue by way of which infection most commonly invades the upper abdomen. He considers acute appendicitis from the anatomical, etiological, bacteriological, and pathological standpoints; the points of the latter touched upon chiefly are in connection with peritonitis and abscess. The portions of the peritoneum most susceptible to infection are the diaphragmatic and enteronic. The differential points between a diffuse and a localized peritonitis are that in the former the pain is greater, the abdominal breathing more restricted, and the rigidity and tenderness embrace a greater area of the overlying abdominal wall; upon auscultation the peristaltic waves are heard over a greater area and the abdominal breathing is less marked in the diffuse than in the localizing variety. In the early stages the tenderness and rigidity are best elicited by slight pressure. If the symptoms and signs, namely, pain, vomiting, fever, tenderness, and rigidity are interrupted, the diagnosis of acute appendicitis may be considered doubtful. Leucocytosis is of value as a confirmatory symptom when the patient reacts well to the infection. The most important point in the differential diagnosis is the distinction between acute cholecystitis and acute appendicitis. Acute pancreatitis, perforated ulcer, or perforated gall bladder, present symptoms so much more intense than those of acute appendicitis that they should not give rise to confusion. As to the treatment, the writer states most emphatically that in all cases of acute abdominal pain nothing in the shape of a purgative or aperient medicine should be given until the cause of the pain is understood. In his experience purgatives play the greatest amount of havoc in acute abdominal conditions; 90 per cent. of cases of perforating peritonitis have been purged. In the presence of peritonitis and in the absence of operation the patient should be set up in bed, given nothing by mouth, not even cracked ice; he should be given enterocylsis by the Murphy method and have an icebag over the site of rigidity and tenderness; the icebag is useful to prevent the doctor from making too many examinations and for its local anesthetic effect. The idea that it has any effect in controlling inflammation is fallacious. In

diffuse peritonitis, in the absence of peristalsis and of a definite point of localization, it is the writer's practice to defer operation until the peritonitis becomes a localized or localizing one. The principles of anatomical and physiological rest, assisting the functions of the peritoneum, absorption and exudation, are defeated by any treatment other than the foregoing.

2. The Prompt Cure of Gonorrhea.—George A. Wyeth, after reviewing the pathology of gonorrheal invasion, states that if a patient is seen within twenty-four hours after a pus discharge has begun a cure can be effected in 60 per cent. of the primary cases within six or seven days, leaving the patient free of gonococci and all discharge, with urine clear and able to withstand all provocative tests. Since in the early stages of gonorrhea nature's mode of fighting gonococci is by phagocytosis, the indications in treating this disease are to employ remedies which, first, stimulate leucocytosis; secondly, act as mild gonococcocides, and thirdly, cleanse thoroughly the urethra without injury to the tissues. Thus, the aim is to increase the discharge, and not to check it as has been the time-honored custom. In the writer's experience, after much experimenting, chemically, bacteriologically, and serologically, these indications are best met by the use of protargol, in a 0.25 to 0.5 per cent. solution, or of any mild therapeutic agent which fulfills the indications. In a 2 per cent. solution it is astringent and in this strength is to be avoided as long as gonococci are present. The anterior urethra is flushed with 300 to 450 c.c. of the solution of the strength above mentioned, and successive flushings are continued until the whole amount of solution is used, always with care that no undue pressure is exerted. The patient is instructed how to inject the urethra himself every four hours. On the second day the initial treatment is repeated. After the third day, if no gonococci are found, the frequency of the injections is decreased. No internal medicine is given and no diet regulation attempted beyond the interdiction of alcoholic drinks and highly seasoned foods. In cases in which a cure is not realized in six or seven days, by continuing this treatment the duration of gonococcal infection can be limited to from three to six weeks instead of the usual six weeks to three months.

3. Criminology from the Standpoint of the Psychiatrist.—Morris J. Karpas emphasizes the point that crime is an expression of maladjustment, and in a large majority of instances, the instinctive life or the unconscious is the determining factor. The more complex the social organization, the greater the number of crimes, because adjustment in such communities presents some difficulty. The writer considers criminals under three groups: (1) Casual, environmental, or social; (2) constitutional or habitual; (3) symptomatic. He urges that our present treatment of this class must undergo a radical change. A person who has been subjected to a number of repeated attacks of crime should be declared irresponsible and placed in an artificial environment fitted to his peculiar mental make-up, where his energy may assume a constructive tendency rather than make him a subject of dependency and humiliation. A more hopeful way of attacking this intricate task would be to turn our attention to the study of the juvenile delinquent since the juvenile delinquent is the father of the habitual criminal.

4. Pollutions in the Male.—Max Hühner distinguishes between normal and pathological pollutions and states that for the latter no treatment succeeds so well as bromides in large doses. He prescribes 15 grains of sodium bromide three or four times a day, well diluted, after meals. The primary effect of this treatment is remarkable and the psychic effect of the rapid diminution of the number of pollutions is also well marked. At the same time the congestion or other pathological condition in the posterior urethra must be relieved. For this purpose the writer has found the instillation of weak silver solution through the Bangs sound syringe to be most efficient. The strong cauterization of the verumontanum, as recommended by German authorities, he has found of no use whatever. As a prophylactic against pathological pollutions boys approaching adolescence should be instructed as to the harmlessness of normal pollutions and advised to abstain from alcoholic beverages, tea, coffee, and erotic thoughts.

Journal of the American Medical Association.

February 5, 1916.

1. Conservation of Vision and Prevention of Blindness. G. E. de Schweinitz.
2. The Etiology of Syphilitic Aortitis. Douglas Symmers and Guy H. Wallace.
3. The Reactions and Results of Treatment in Cerebrospinal Syphilis. George Draper.
4. Intraspinal Administration of Mercurialized Serum in the Treatment of Syphilis of the Nervous System. Edward Livingston Hunt.
5. Selective Sensory Regeneration in an Ulnar Nerve Lesion. Isador H. Coriat.
6. Exstrophy of the Bladder: Report of Two Cases. James J. Moorhead and Edward L. Moorhead.
7. Plastic Operations for Acquired Deformities of the Face. J. Shelton Horsley.
8. Clinical Determination of Renal Function by an Index of Urea Excretion. Franklin C. McLean.
9. Foreign Bodies Swallowed by an Insane Woman. Donald C. Balfour.
10. Cauliflower Ear. Don H. Palmer.
11. Case of Direct and Indirect Unilateral Hernia. Carleton Dederer.

1. Conservation of Vision and Prevention of Blindness.—G. E. de Schweinitz believes it safe to say that fully 100,000 men, women, and children in this country are, within the strict definition, blind; one-fourth of these need not have lost their sight. About 25 per cent. of the inmates of schools and asylums for the blind have lost their sight from ophthalmia neonatorum. The writer considers the measures devised and in operation for the elimination of this preventable cause of blindness, namely, education, compulsory notification, the punishment of offenders against properly constructed legal regulations, and compulsory prophylaxis. Of these compulsory notification represents the most effective method at our command, since a notification which should go at once to a legally qualified physician can quickly command the services of some one skilled in the treatment of ocular disease. The National Committee for the Prevention of Blindness should insistently urge that hospitals accepting State aid should make provision for the care of cases of ophthalmia neonatorum. This should be done not only because it is a real work of humanity, but also because it would mean a reduction in the number of blind and therefore a lessening of the economic loss to the commonwealth. The ravages of ophthalmia neonatorum have been so conspicuous that there has been a failure to recognize the importance of trachoma and glaucoma causing blindness. The writer believes that the work of a national committee for the prevention of blindness should not be concerned alone with the prevention of blindness in the strict sense of that term, but ought to be concerned with the elimination of the evils which spoil eye efficiency and suggests that a national committee such as the one in existence should have a subcommittee entirely concerned with the important question of illumination. Finally, in discussing schools for the blind, and partially blind, Dr. Schweinitz expresses the opinion that much could be gained by a sensible application of the principles of modern psychological research, since an investigation of this character would help in the classification in accordance with the need of the case of each child.

2. Syphilitic Aortitis.—Douglas Symmers and Guy H.

Wallace state that the mesaortitis of Heller and Döhle is essentially a syphilitic lesion, but its production is favored by certain other factors, among which age, sex, the length and character of antisyphilitic treatment, intercurrent disease, especially infections such as acute rheumatic arthritis, alcoholism, and occupations necessitating prolonged physical strain, play a not unimportant rôle. Syphilitic aortitis occurs most often in males, having been found in 80 per cent. of their series. This is a fact which assumes additional importance when taken in connection with occupational influences. Syphilitic aortitis is a lesion of comparative youth, occurring oftenest between the ages of thirty and fifty years, having been found at this age period in 71.4 per cent. of their cases. In untreated or neglected syphilis the average interval between infection and death with anatomical confirmation of the existence of syphilitic aortitis is 20.5 years, from which fact it is apparent even in the least favorable circumstances the lesion rises late in the course of syphilis. About 30 per cent. of all patients with syphilitic aortitis develop aneurysm. At least 15 per cent. of all cases of syphilitic aortitis are attended by dilatation of the first portion of the aorta. About 30 per cent. of all cases of syphilitic aortitis eventuate in sclerosis and retraction of the aortic valves. Leaving out of consideration the occurrence of such clinical phenomena as angina pectoris and cerebral disturbances referable to occlusion of one of the larger branches of the aorta it appears to be probable that few cases of syphilitic aortitis pursue a course free from subjectively appreciable or even detectable clinical manifestations.

3. **Reactions and Results of Treatment in Cerebrospinal Syphilis.**—George Draper has made observations on thirty-eight cases, watched over periods of from three months to three years. These thirty-eight patients were given 1,126 intravenous injections and 355 intraspinal injections of medicated serum, the technique of administration being the usual one. He found that the severest reaction to intravenous injections was of the anaphylactic type. The most frequent reaction to the intraspinal injections was pain. The severest was an aseptic meningitis, which might have been anphylactic in origin. Twenty-six patients out of the total of thirty-eight were economically useless before treatment. After treatment twenty-two were back on full-time work. The rapidity and the degree of improvement depended directly on the intensity of the treatment. It is important to keep the patients at work during the months of treatment.

4. **Intraspinal Administration of Mercurialized Serum in the Treatment of Syphilis of the Nervous System.**—Edward Livingston Hunt presents a record of work done at the City Hospital on Blackwell's Island, New York, where they have been trying the intraspinal administration of mercury. The cases treated were forty-five in number; forty were given intraspinal injections of mercuric chloride, and five were given sublamine injections. These patients were at the same time given intramuscular injections of mercuric salicylate every week, and in the very early ones intravenous injections of salvarsan. The cases treated comprised cases of tabes, general paresis, cerebrospinal syphilis, taboparesis, clinical tabes (tabes with a negative serology), and syphilitic hemiplegia. The writer concludes as follows: 1. The reaction from mercuric chloride or sublamine in no way differed from the reaction which followed the administration of salvarsan. 2. The sublamine did not seem to give the same reduction in the cell count or clinical improvement as did the mercuric chloride. 3. No ill results followed these injections. The three deaths could be easily accounted for, as the patients were practically moribund at the time of the treatment, and were given the injections as a last resort. 4. The patients with tabes and cerebrospinal syphilis were helped more than any others. 5. Such improvement as did occur was evident in the feelings of the patient, in the sphincter control, in the pains, in the gait, and in the serology. There was no improvement in the reflexes. 6. Such intraspinal treatment can be given only at intervals of two weeks, because a cell count does not fall sooner. 7. The reaction obtained was one in which the cell count was first greatly increased, and then diminished. 8. The cell count and the globulin yielded much sooner than did the Wassermann.

5. **Selective Regeneration in an Ulnar Nerve Lesion.**—Isador H. Coriat reports a case which offers evidence of the independence of the sensory nerve endings of the skin as demonstrated during regeneration of the ulnar nerve. The patient was accidentally cut with glass on the left wrist, completely severing the ulnar nerve. After about two months the nerve was sutured. Six months later examination shows that the ulnar side of the left hand is the seat of severe tingling and, at times, pain. It is decidedly hyperalgesic to various stimuli, such as rubbing, touching, etc. The little and ring fingers are glossy and mottled. All the muscles innervated by the ulnar nerve are weak and atrophied. Isolated pain points can be demonstrated in a completely anesthetic area, while inside this area the pain points are so closely crowded together that they form a zone of extreme hyperalgesia. Deep sensibility is intact. This condition proves that the specific receptors for pain are not only independent but also are more capable of rapid regeneration than the specific receptors for touch. The condition is best termed a selective sensory regeneration.

6. **Exstrophy of the Bladder.**—James J. Moorhead and Edward L. Moorhead report two cases of exstrophy of the bladder, a condition which they state occurs about once in 29,000 births. The first case was in a male, and a modified Maydl operation was performed. The patient died a week afterward and a limited post mortem revealed a circumscribed peritonitis in the region of the transplantation. Venous thrombosis was present in the region examined and pulmonary embolism was probably the immediate cause of death. The authors believe that development of the technique of this operation on lower animals is essential to success. The second case was unique in that, according to the literature, it was the first in which the patient was a mother. Childbearing had been followed by prolapse of the uterus and vagina. The patient was operated on in two stages. At the first operation the cervix was amputated and the pelvic floor repaired. Three weeks later a modified Maydl operation was performed. This patient left the hospital in five weeks, at which time urine was retained four hours during the day and caused her very little discomfort at night.

8. **Index of Urea Excretion.**—Franklin C. McLean presents a relatively simple method, based on the laws of Ambard, for the direct quantitative determination of the state of the function which has to do with the elimination of urea. He finds this method applicable in a wide range of cases, easy of performance, and giving results which should prove of great value in the recognition, prognosis, and treatment of certain conditions associated with impairment of the renal function.

The Lancet.

January 22, 1916.

1. Investigations on Clinical Thermometry: Continuous and Quasi-continuous Temperature Records in Man and Animals in Health and Disease. G. Sims Woodhead and P. C. Varrier-Jones.
2. On the Bactericidal Power Acquired by the Serum After the Administration of Salvarsan or Neosalvarsan. S. R. Douglas and L. Colebrook.

3. A Contribution to the Biology of the Vermiform Appendix. W. Colin MacKenzie.
4. Notes on Friedländer's Pneumobacterium. A. R. Friel.
5. Stretchers for the Wounded in the Trenches. G. H. Colt.
6. A Case of General Tetanus Following Local Tetanic Spasms of Injured Limb. Thomas B. Mouat.
7. Gastrotomy in a Baby Aged Six Months. C. P. G. Wakeley.

2. Bactericidal Power of Serum.—S. R. Douglas and L. Colebrook find that neosalvarsan and salvarsan in watery solution possess a very distinct bactericidal power against staphylococcus when the strength of the solution is 1 in 6,000. When the solvent largely consists of blood or serum this power is slightly diminished. The bactericidal power of solutions of both these preparations appears to be practically the same. The administration of neosalvarsan in ordinary doses renders the blood fluids markedly bactericidal. This power lasts but a short time and seems to reach its maximum about one hour after the administration of the drug, diminishing rapidly after the third or fourth hours. Heating the serum to 60° C. for ten to twenty minutes has no deleterious effect on this bactericidal power, showing that it is not in any way due to the development of immune bodies in the serum, and this fact together with the short period in which the serum is found to be bactericidal strongly suggests that the bactericidal power is due to some arsenic compound in solution in the blood serum. Salvarsan, which has almost the identical bactericidal power as neosalvarsan *in vitro* experiments, gave practically no demonstrable bactericidal power to the patient's serum when ordinary therapeutic doses were administered; but organisms which had been treated with the serum obtained within three hours of the administration of the drug grew very much more slowly than normally and were agglutinated into masses. The author voices the hope that the administration of neosalvarsan, or some similar preparation, would have a beneficial effect on wound or other septicemias and might assist in the sterilization of deep and irregular suppurating wounds.

3. A Contribution to the Biology of the Vermiform Appendix.—W. Colin MacKenzie has made a study of the two monotremes and the various marsupials of Australia which he has found offer a unique opportunity in aiding the solution of many important biological questions, and especially those pertaining to the gastrointestinal tract. He finds the biological teaching decidedly against the inutility of the large intestine. It is also noteworthy that the ultimate disappearance of the appendix is a coordinate action and not necessarily associated with such frequent inflammations as we are witnessing in the human type. Although a large number of wombats has been examined in no one case has any evidence of inflammation been seen, nor has the writer as yet heard of an instance. In the case of man the question arises: What is the factor interfering with proper coordination? Is the leakage dietetic, or is it a question of environment or due to the erect posture? The author says we can scarcely expect surgery to give the reply.

4. Notes on Friedländer's Pneumobacterium.—A. R. Friel calls attention to the fact that Friedländer's pneumobacterium which is present as a general rule in cases of ozena, is usually very resistant to phagocytosis. However, these bacteria can be phagocyted, and in large number, by using the serum of a rabbit which has received two or three intravenous injections of a living or killed emulsion of the Friedländer organism. This serum is so active that the bacteria are agglutinated and opsonized, and if left long enough (one hour) in contact with the serum are dissolved. To prevent the bacteriolytic action of the serum taking effect, it can be heated to 56° C. for half an hour. If one volume of the Friedländer organism be mixed with five or six volumes of inactivated immune serum and allowed to stand for three to five hours at the room temperature, and if the clump of bacteria which has then formed be removed and washed in salt solution and planted on a sloped agar culture tube, a good growth will have taken place by the following day. If this process is repeated for a few days it will be found that a marked change has taken place in the bacterium, and this change is preserved for several subcultures without further treatment with immune serum. The bacterium can now be slightly agglutinated and readily opsonized by ordinary human serum. In treating patients suffering with ozena, the writer finds that to get rid of the Friedländer infection it is advantageous to give the vaccine intravenously, and he is in the habit of using as a dose two million of a sensitized non-sterilized emulsion in salt or distilled water, which is injected into a vein at the bend of the elbow or in the forearm. He also presents as an explanation of why an intravenous injection of the Friedländer bacterium is superior for purposes of treatment to the subcutaneous one that it may be that for the production of some immune bodies an internal organ such as the liver is an essential factor, and if the vaccine is given intravenously the production of immunity is more rapid than by cutaneous injections.

British Medical Journal.

January 22, 1916.

1. The Soldier's Heart. James Mackenzie.
2. The Irritable Heart of Soldiers. R. McN. Wilson.
3. A Note on Certain of the Vascular Phenomena of Cardiac Disease. Basil Parsons-Smith.
4. The Heart's Action in Jaundice. J. Davenport Windle.
5. From the Visible to the Gamma Ray Spectrum. Sidney Russ.
6. Sodium Hypochlorite in the Treatment of Septic Wounds. Frederick J. A. Dalton.

1. The Soldier's Heart.—James Mackenzie, who has charge of an inquiry into disorders of the heart for the medical history of the war, has been associated with Dr. Wilson and together they have examined 400 cases. They find that 90 per cent. of the cases that have been certified and treated as heart affections were not primarily heart cases, and that the principles applicable to these cases are widely different from those applicable to cases of heart failure. The signs and symptoms in these cases are great vasomotor instability, a sense of fatigue and exhaustion, breathlessness on moderate exertion, more infrequently pain over the region of the heart. The heart's rate is often not increased; in some it is persistently increased. Murmurs, systolic in time and heard in different regions, are frequent, while an increase in size is not at all uncommon. Irritability and depression are frequently noted. This condition is brought on by the strain of life in the trenches or may be the reaction of the heart to toxin. In the treatment of these cases the patients are encouraged to take moderate exercise so long as it gives them pleasure and causes no distress or discomfort, but to stop or slown down as soon as a sense of exhaustion, breathlessness, or pain is experienced. The writer suggests that this view of the nature of the soldier's heart should be communicated to the medical officers, in order that the diagnosis should be in conformity with the actual condition, and in this way prevent the grievous injury that is done to the sick soldier by implanting in his mind the depressing idea that he is suffering from an affection of the heart.

3. Vascular Phenomena of Cardiac Disease.—Basil Parsons-Smith emphasizes the fact that considerable importance should be attached to a complete investigation of the blood vessels in all cases of heart disease. He suggests that venous auscultation be not forgotten,

for by its aid one gains additional advantages, abnormal sounds become audible; for instance, the well known *bruit de diable*, characteristic of anemic states which, caused by loss of tone in the vein walls, is heard best when the patient is in the standing position, also the upwardly conducted vena-cava murmur, the sounds resulting from the closure of the venous valves, and, lastly, the clicking sounds to which the rapidly contracting auricle of auricular flutter gives rise. One should listen specially for the normal second aortic sound in the neck of patients with aortic incompetence; also ascertain if the murmur is conducted into the vessels, its relative loudness in this situation and at the aortic cartilage, and should base his prognosis upon the results of such an examination, combined with the ordinary careful physical examination.

4. The Heart's Action in Jaundice.—J. Davenport Windle has investigated the heart's action in a number of jaundiced patients; in some he has found the pulse infrequent, in some irregular, in others both infrequent and irregular, but he has not been satisfied in any case that the jaundice was responsible for the infrequency or the irregularity. He says it has been stated that the pulse may fall as low as 40 a minute; if by "pulse" is meant rate of ventricle, this rate he finds must be rare, for he has not met with one instance in over 100 cases of jaundice. A pulse rate of 50 to 55 per minute is not uncommon in patients with jaundice when free from fever and the patient is kept in bed, but this is not proof that the jaundice is the cause of the slow pulse. In a number of cases the writer has found a pulse rate of 40 and below; but the heart rate has been double the pulse rate, the infrequent pulse being due to an alternate premature beat of the ventricle too feeble to send a wave to the wrist. His experience indicates no proof that patients with jaundice are more liable to develop extrasystoles than are patients suffering from other toxic conditions. All the cases of jaundice with premature beats which the writer has met have occurred in persons past middle life. Irregularity due to extrasystoles may be favored during jaundice, but it is not, in the opinion of the writer, because of any action of the bile salts on the cardiac muscle, but because the illness keeps the patient resting. In catarrhal jaundice there is usually fever with rapid pulse before the jaundice appears; when the jaundice comes out the fever goes and the pulse rate falls. The writer has observed no case of heart block during jaundice.

6. Sodium Hypochlorite in the Treatment of Septic Wounds.—Frederick J. A. Dalton submits the report of the committee sent to the Gallipoli peninsula to make observations on the efficacy of hypochlorites in the treatment of infected wounds. This report describes the preparation of the hypochlorite solution, the methods of use, cites a number of cases, and concludes that the advantages observed in the use of the sodium hypochlorite solution in the treatment of septic wounds are as follows: 1. The simplicity and cheapness of preparation of the antiseptic. 2. Being non-toxic and non-irritating to the tissues when properly prepared according to Dakin's formula, the hypochlorite solution may be safely used in large quantities over long periods of time without ill effects. 3. The deodorant action of the solution is remarkable. The fetor from gangrenous tissues usually disappears in twenty-four hours. 4. The rapidity with which sloughs separate and clean granulation tissue is formed in a wound under its influence. 5. The infrequency of redressing required by cases treated as described with hypochlorite, compared with the constant change of dressings required in large wounds with other forms of antiseptic. 6. The fact that injections of the hypochlorite solution into the rubber tubes used in the dressings may with safety be entrusted to very imperfectly trained orderlies without fear of ill results, once the case has been adequately dealt with by the surgeon.

Berliner klinische Wochenschrift.

December 27, 1915.

What Will Be the Future Attitude of Germany Toward Foreign Drugs?—Lewy refers first to the so-called elegant pharmaceuticals prepared in France. These include articles dispensed as "pearls," "dragés," "cachets," etc., which command a high price. The menthol preparations had a large following in Germany and were kept in the hospitals. German imitations even when sold at a much lower rate cannot supplant these imported articles. Two famous French antiarthritic mixtures, despite the publication of their formulæ for the benefit of druggists, belong under this head. Moreover, some of these French preparations are misrepresented. There is a great demand among nervous women for a high sounding proprietary which is evidently only a coal tar sedative, perhaps the very one which it apparently seeks to supplant. The Bulgarian bacillus remedies have a strong demand in Germany. One is cited which contains only podophyllin. Various arsenicals (cacodylates) are not as represented. Coming now to England, we find compressed tablets and tabloids the chief vehicle for medicaments because they can readily be shipped to the various parts of the empire. These have been used extensively in Germany for twenty years and are not to be confounded with synthetics. Their success has been remarkable, yet the best sellers are of very simple formulæ, not private. The tremendous patriotic movement at the beginning of the war to drive out all of these old popular favorites has not been entirely successful. The old proverb, "the German hates the Frenchman but loves his wines," might be rewritten to include French and English proprietary medicines. Foreign cosmetics and nutrient preparations are more or less "quacked" in Germany through preposterous claims as to efficacy. Organotherapeutic preparations of French, English, and even Russian origin sold largely in Germany before the war. At present France is endeavoring to prepare against a flood of German preparations after the war is over, but the author is certain that all people will buy medicine without regard to sentiment. The great importing drug houses do not propose to lose their business and are not friendly to the idea of domestic substitution. Again many manufacturers have branch factories in foreign countries. Substitution may be good in a way for Germany but it is not strictly a business proposition, and business will always be business.

Removal of a Large Orbital Tumor with Sparing of the Eye Ball.—Halben reports a case which may be unique. The growth removed was a fibrosarcoma as large as an apricot. While it filled the orbit, thrusting the eye forward, it proved to be nowhere adherent, either to the bone, optic nerve, or muscles. Nevertheless compression of the orbital wall had diminished their resistance. The optic nerve was flattened against the nasal wall. Krönlein's technique was used to enter the orbit. The growth was in contact with all the orbital walls but was readily enucleated with the finger. The extraction was strikingly like delivery of the fetal head in labor and was followed by a gush of blood. There was complete amaurosis but the ophthalmoscope showed that the fundus was normal. In a few days the patient was able to count fingers.

Münchener medizinische Wochenschrift.

December 28, 1915.

Acute Yellow Atrophy of the Liver After an Accident.—Curschmann states that his is the third recorded case of this association. The patient was a child two years of age and of good antecedents, although he had rickets of moderate degree and had had teething convulsions. When stricken with the liver affection his condition and mental disposition had been good up to the time of the severe fall across the back of a chair. He struck squarely over the abdomen and ecchymoses developed. Nevertheless he continued to climb until he had a second accident the counterpart of the first. In from 2 to 3 days afterwards, he showed a subicteric tint on the conjunctivæ, but went about as usual. Five days after the accident he began to vomit bile and displayed more jaundice. For two days more he was able to play but now developed a delirious attack which was the first evidence of serious mischief. This soon ended in unconsciousness. The full picture of jaundice was now in evidence. At the hospital the chest finds were normal. The abdomen was also normal but percussion showed that normal hepatic dulness had almost disappeared. The nervous system aside from loss of consciousness seemed absolutely intact. The chief finds, aside from the small liver and jaundice, were moderately high fever and rapid, feeble pulse, and the urinary symptoms (leucin crystals present although as tyrosin). The diagnosis—and prognosis—was only too obvious. Death took place in coma, preceded by restlessness and temperature rise. The liver weighed about half a pound only. The microscope showed that it was almost completely necrotic. In theory the trauma must have started up some latent infectious or toxic process. The published reports of the two other (Italian) cases of traumatic acute atrophy of the liver were not accessible to the author, but, as far as his recollection went, they were set down to the activation of an infectious process. The most plausible supposition is a latent congenital lues, although no suggestive history was obtainable, and unfortunately the Wassermann reaction was not employed.

Red Vision after Eating the Seeds of the Solanum Dulcamara of Linnaeus.—Hilbert while on military duty was summoned to treat a village child, a girl 8 years old, who had become violently ill after eating red berries the presence of which was evident in the vomitus. The child was very restless, complained of pain in the head and stomach, vertigo, palpitation, and anxiety. She also insisted that "everything looked red" like the color of the berries she had eaten. The patient's face was reddened, pupils widely dilated, so that reading was impossible. The skin was dry; pulse 120, occasionally intermittent. As there was no stomach pump available the child was made to drink warm water until the vomitus came away clear. After a draught of cold milk the gastralgia abated and the child fell asleep. Next day she was pale and depressed, pupils still dilated. The red vision was no longer complained of. In about 5 days she was quite restored. The toxic effects are to be ascribed wholly to the solanin in the berries which is closely related to atropine, scopolamine, duboisine, hyoscyamine, and datune. All these alkaloids are nerve poisons, mydriatrics, and paralyzers of accommodation. Both atropine and duboisine have been known to cause red vision. We know nothing, however, Hilbert said, of the intimate chemical constitution of either of these bodies. Fortunately for the child, not more than a dozen of the berries had been swallowed. The author had no antidotes at his disposal, not even morphine or tannic acid.

Deutsche medizinische Wochenschrift.

December 23, 1915.

Action of Hypophysis Extracts upon Graves' Disease and Hyperthyroidism. — According to Pal hypophysis extracts have no effect upon the normal thyroid gland and certain strumas. But when given for the thyreotoxicoses, the toxic state improves. Even if the gland is increasing in size improvement is noted. This increase in size is evidently due to distention of the follicles, so that the toxic secretions of the thyroid must have a separate origin and be antagonistic to the active principle of the follicular substance. The author has used hypophysis extract in 16 cases of Graves' disease and hyperthyroidism. The reaction was not the same in all cases. The remedy was first given internally. Although one surprising result was thereby obtained he proceeded to use the hypodermic method. Finally his chief interest was absorbed in the cachectic cases with low blood pressure, and showing every token of deep intoxication. In nine such cases in which an operation could not be performed, he obtained a gain of weight in seven. There was also improvement in restlessness, tremor, and outbreaks of perspiration. The tachycardia showed a gradual improvement, but returned as soon as the medication was suspended. In three of these severe cases was seen especially the paradoxic symptom already mentioned—swelling of the thyroid; and in a fourth case of apparent atrophy of the thyroid with profound thyreotoxicosis, the latter was not only overcome but the patient acquired a new thyroid and there is no doubt that his life was saved by the extract. Animal experiment has shown sufficiently that thyroid and pituitary extract are in part antagonists—for example in their action on the circulation; and the author assumes that the latter also inhibits the secretion of the former. At the same time some antagonistic substance normally held in check by the thyreotoxic substance appears to be generated in excess and to produce swelling of the gland.

Treatment of Pyodermatoses of the Lower Extremities in the Field.—Strauss refers to the frequency and obstinacy of these lesions in the troops. These baffle sufficiently the dermatologist while the regiment surgeons find the problem correspondingly greater. At the outset the lesions are mild, and there is no general reaction and the surgeon dislikes to retire the victims for treatment. Hence the importance of a satisfactory early management. The rationale is simplicity itself. The soldier cannot care properly for his lower extremities which accumulate dirt. He cannot change his underwear and socks, and one result of this status is itching, which leads to violent scratching and traumatism. The ordinarily innocent staphylococcus becomes pathogenic and different types of suppuration result, including folliculitis. Boils do not result, but large, infected excoriations form and develop crusts which when removed reveal a bleeding corium. These superficial ulcers show very little tendency to heal but develop readily into ecthymatous lesions. As a result various suppurations which differ in kind and degree tend to multiply—a certain predisposition is at times in evidence—until a serious, disabling condition is present. Reinfection is doubtless an active factor. The treatment is simple but any treatment is difficult to carry out. Soap and water, with benzine frictions bring about mechanical sterilization. All foci of suppuration should be exposed and all raw surfaces treated with an ointment which consists chiefly of silver nitrate and Peruvian balsam. Very hairy limbs, varicose limbs or an unusual degree of inflammation furnish special indications.

Book Reviews.

TEXT-BOOK OF NERVOUS DISEASES, FOR THE USE OF STUDENTS AND PRACTITIONERS OF MEDICINE. By CHARLES L. DANA, A.M., M.D., LL.D., Professor of Nervous Diseases in Cornell University Medical College; Consulting Physician to Bellevue Hospital; Neurologist to the Montefiore Hospital; Neurologist to the Woman's Hospital; Consulting Physician to the Manhattan State Hospital; ex-President of the American Neurological Association; ex-President of the New York Academy of Medicine; Corresponding Member of the Société de Neurologie, etc. Eighth Edition. With 262 Illustrations, including 4 plates in black and color. Price, $4.25 net. New York: William Wood and Company, 1915.

THIS is the best of eight editions of a standard text-book on nervous diseases by an American author. The volume is considerably smaller than the seventh edition, due chiefly to the omission of former detailed chapters on anatomy and on therapeutics, and of the part devoted to mental diseases. Special anatomical descriptions of the nervous system are not now required, in the judgment of the author, in text-books on nervous diseases, owing to the great improvement of late years in these descriptions in the anatomical text-books. The same remark applies to neurological therapeutics as described in special treatises. The part devoted to psychiatry is promised later in a separate volume. A chapter on paresis and articles on some of the minor psychoses, however, are retained in this volume. Several chapters throughout the book have been revised and rewritten, largely owing to recent discoveries and advances in neurological science and practice. Such revision is noted in the author's descriptions of diseases of luetic origin; also in special chapters, by collaborators, on anterior poliomyelitis, on epidemic cerebrospinal meningitis, and on spinal and brain tumors. The chapters on diagnosis and on disturbances due to glandular disorders, and some other chapters have also been rewritten. The psychoanalysis of the Frendian School the author does not apparently subscribe to; but he states that he has given it "a place in the interpretation and occasionally in the therapeutics of the minor psychoses."

One or two of the rarer nervous diseases, *e. g.* family periodic paralysis, have for some reason, been omitted. On the whole the improvements in the present edition bring the book down to date and increase its value and should enhance its popularity both as a book of reference and as a text-book for students.

DISEASES OF THE SKIN AND THE ERUPTIVE FEVERS. By JAY FRANK SCHAMBERG, A.B., M.D. Professor of Dermatology and Infectious Eruptive Diseases in the Philadelphia Polyclinic and College for Graduates in Medicine; Dermatologist to the Philadelphia General Hospital, the Jewish Hospital, and Samaritan Hospital; Fellow of the College of Physicians of Philadelphia; Member of the American Dermatological Association. Fully Illustrated. Third Edition Thoroughly Revised. Price, $3.00. Philadelphia and London: W. B. Saunders Company, 1915.

BY far the largest part of this handsome volume has appeared in the author's well known "Compend of Skin Diseases." To this is added an important section on Acute Eruptive Fevers. The present edition contains new chapters on the value and interpretation of the Luetin Test in Syphilis, and on Rocky Mountain Spotted Fever; the chapters on Therapy of Syphilis and on the mild type of Smallpox have been amplified and brought up to date. The book is well printed and adequately illustrated, and should prove of considerable service to the general practitioner. The inclusion of the Exanthemata in a work on Skin Diseases is an important feature, and one which cannot fail to be appreciated by every reader.

THE GYNECOLOGY OF OBSTETRICS. An Exposition of the Pathologies Bearing Directly on Parturition. By DAVID HADDEN, B.S., M.D. Fellow of the American Association of Obstetricians and Gynecologists. Fellow of the American College of Surgeons. Price, $3.50. New York: The Macmillan Company, 1915.

IN this volume the author shows the importance of perineorrhaphy and trachelorrhaphy; and emphasizes the fact that while they may be classed (surgically) as minor operations, they are of the utmost importance to the happiness and physical well being of the patients. Another feature of the work is the description of the anatomy of the perineum and the structures of the female pelvis. The book is lavishly illustrated; but while the color photographs are all that can be desired as works of art, less pretentious but larger plates or diagrams would be of more service to the reader. The volume is sure to be useful to every one who practises obstetrics, and will prove a valuable addition to the textbooks on that subject.

CASE HISTORIES IN DISEASES OF WOMEN, including Abnormalities of Pregnancy, Labor, and Puerperium. A clinical study of pathological conditions characteristic of the five periods of woman's life, by CHARLES M. GREEN, A.B., M.D., Professor of Obstetrics and Gynecology in Harvard University, Senior Surgeon for Diseases of Women, Boston City Hospital, Visiting Physician Boston Lying-in Hospital. With 11 full-page plates, one cut, and 25 charts in the text. Price, $4. Boston: W. M. Leonard, 1915.

THE author divides his book into five sections, dealing with the five epochs of woman's life, namely. Infancy and Childhood, Puberty and Adolescence, Maturity, the Climacteric, and Senility. Each section has a short introduction, followed by a brief discussion of the functional disorders, malformations, infections, traumata, and neoplasms incident to its particular epoch. Then follows in each section the presentation of illustrative cases. It is this feature that gives the book its distinctive character. Each case is discussed under the following headings: history; diagnosis; treatment and result; comment. The comments are very valuable, as in them the author thoroughly analyzes the diagnosis, treatment, and result, frequently making valuable comparisons between the case under discussion and similar cases that may require different handling. The book has the stamp of authority and presents in a thorough and interesting way the whole subject of gynecology.

ANATOMY OF THE BRAIN AND SPINAL CORD WITH SPECIAL REFERENCE TO MECHANISM AND FUNCTION, FOR STUDENTS AND PRACTITIONERS. By HARRIS E. SANTEE, A.M., M.D., Ph.D. Professor of Nervous Anatomy in the Chicago College of Medicine and Surgery, Medical Department of Valparaiso University; Professor of Anatomy in Jenner Medical College, Chicago; Member of Association of American Anatomists, etc., etc. Fifth Edition, Revised and Enlarged with 158 Illustrations, 46 of which are Printed in Colors. Price, $4. Philadelphia: P. Blakiston's Sons & Co., 1915.

THE fourth edition of this work appeared in 1907, and considerable new matter has been incorporated without involving much increase in the size of the volume. A chapter is added on the embryology of the cerebrospinal axis. Aside from this the original arrangement has practically not been disturbed, this even including the paragraphs, the innovations appearing chiefly in the text of the latter, and in the form of citations from recent authors. Nearly one half of the illustrations are original, and new ones are to be found throughout the book, which may, perhaps be referred to as almost a classic.

WISHFULFILLMENT AND SYMBOLISM IN FAIRY TALES. By Dr. FRANZ RICKLIN of Zurich. Authorized Translation by Dr. WM. A. WHITE of Washington, D. C. Price, $1. New York: The Nervous and Mental Disease Publishing Company, 1915.

THIS number of the Nervous and Mental Disease Monograph Series presents an exceedingly interesting discussion of the psychology of fairy tales. The importance of the part played by wishfulfillment is easily recognized in the heroes and beautiful ladies and bags of gold, to say nothing of supernatural accomplishments like the seven-league boots and the hat that made its wearer invisible. The matter of symbolism is not so clear. One can of course see the wealth of symbolic expression found in all folk and fairy tales, and the author has demonstrated how cleverly these symbols can be translated. Sex instinct is, of course, made to play a great part and no doubt rightly so since it must have been even more dominant in the days that the fairy tales were made than at the present time. Dr. White's translation is admirable in its preservation of the spirit of the original and in its easy style.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held January 6, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

The Importance of Syphilis Often Unsuspected in the Production of a number of Apparently Unrelated Disorders.—Dr. LEWELLYS F. BARKER of Johns Hopkins University presented this paper which was read by Dr. Sidney R. Miller of Baltimore in which he summed up twelve discoveries in the last ten years which had led to the speedy improvement in diagnostic methods and an increase in the efficacy of therapeutic measures in the treatment of syphilis. He declared that it might justly be said that in the knowledge of no other disease had so many advances been made in the last decade. On reading the accounts of cases studied before the newer diagnostic methods were available, one felt how sadly at a loss the older clinicians were in arriving at a certain diagnosis; they had to be contented largely with "conviction" and "belief" rather than with objective data which was decisive in the differential diagnosis, even though now a probability diagnosis was the only one possible, especially when there was a question of the simultaneous existence of a constitutional lues and of some disease of an organ that might or might not be due to lues. But to a very large extent, the mere "belief" of former days could now be replaced by "certainty." Dr. Barker epitomized the histories of seven cases of syphilis where the existence of the disease was denied and the patients presented symptoms respectively of bronchiectasis following pneumonia; sacculated aneurysm; general arteriosclerosis; indolent swelling of the tonsil; epilepsy; sudden loss of vision in one eye; diabetes mellitus with aphasia and general atherosclerosis. The Wassermann was positive in every case and the patients improved under antiluetic therapy. He gave a list of nineteen conditions in which it was especially important not to overlook the possibility of an existing lues. They were as follows: (1) Long-continued fever otherwise unexplained. (2) Obscure nervous cases, both functional and organic. (3) Chronic laryngitis, tracheal and bronchial stenosis, bronchiectasis and unexplained infiltrations of, or masses, in the lungs or pleuræ. (4) Aneurysms. (5) Aortic insufficiency, especially when unaccompanied by other valvular lesions. (6) Heart-block and other cardiac arrythmias. (7) Arterial and venous thrombosis. (8) Certain grave anemias. (9) Paroxysmal hemoglobinurias. (10) Indolent nodules in the tongue and tonsils. (11) Enlargements of the liver and of the spleen. (12) Strictures of the rectum. (13) Atypical joint diseases, and especially obscure diseases of the spine. (14) Thickening of, or nodules in, the bones, especially when accompanied by nocturnal pain. (15) Unusual forms of renal disease. (16) Chronic orchitis, or nodules in the testes. (17) Repeated miscarriages without apparent cause. (18) Stillborn children. (19) In disorders of metabolism and of internal secretion, especially in bizarre cases. Dr. Barker then gave the histories of two cases in which it was possible to rule out syphilis though the patient himself feared that he had it. In the first case the roentgenological reports favored aneurysm; the Wassermann was negative but he improved under radium treatment. The second case gave a history of ulcus motte two years before which had been followed by salvarsan treatment. He was suffering from syphiliphobia and feared also impotency and insanity. The Wassermann was negative and the patient gained weight and there was marked amelioration of the symptoms under a treatment of reassurance and a thorough rest-cure with cacodylate of soda injections. such an instance as this showed how helpful it was to be able definitely to say to a patient or to his family physician that no luetic infection was present. Among the many conditions often believed to be luetic in origin, and in which sometimes it had to be admitted that a luetic factor was present, but which often occurred in the entire absence of lues were the following: (1) Cerebral apoplexy. (2) High blood pressure cases. (3) Contracted kidneys. (4) Multiple sclerosis. (5) Certain suspicious lesions, especially those due to sporotrichosis, or blastomycosis of the bones, lungs, or subcutaneous tissue. (6) Psychoneurotic states accompanied by syphiliphobia. (7) Graves' disease. The more his experience grew, the more was he inclined to take as a diagnostic aphorism "When in doubt have a Wassermann test made; when not in doubt, still have a Wassermann test made."

Syphilis in General Surgery.—Dr. EDWARD MARTIN of the University of Pennsylvania presented this communication. He said that to the surgeon syphilis was of import because of its prevalence; its protein clinical manifestations, closely simulating tumors, or the proliferation, or destructive effects of other infections; but more particularly because, unlike all other infections, its direct lesions were so consistently, effectually, and promptly bettered or cured by medication that, with some exceptions, operative measures constituted a species of malpractice. Hence, to the surgeon, the questions of incidence and diagnosis were major ones. As to the incidence of syphilis; a clinical examination of the West Point cadet corps failed to show a single case of syphilis, but the Wassermann survey indicated a five per cent. incidence, from which it seemed clear that from two to five per cent. of the commissioned personnel of the army were syphilitic at the time they entered the service. Since applicants to West Point were physically picked men, the prevalence of syphilis among college men in general was probably slightly greater than it was among West Pointers. (Vedder's "The Prevalence of Syphilis in the Army.") From a Wassermann survey of candidates for enlistment, he concluded that about 20 per cent. of the young adult male population from which the army was recruited were affected with syphilis. Out of 100 cases taken at random from the medical wards of the University of Pennsylvania hospital, there was a positive Wassermann reaction in 19 and of these only two gave clinical evidence of syphilis. These cases entered the hospital for the cure of diseases ranging from cholecystitis, renal sclerosis, gastric ulcer and tuberculous pyelonephritis to goiter and most of them exhibited neither characteristic history nor clinical signs of specific disease. Concerning diagnosis, the surgeon asked two questions: 1. Was the lesion under consideration syphilitic? 2. If not, had an underlying syphilis a distinct influence on its progression, or upon the outcome of surgical intervention undertaken for its cure? If these two questions could be answered in the negative, the query as to whether the patient had or had not syphilis was of minor immediate moment, though it was true that the spirochetæ, exhibiting a special predilection for the perivascular tissues and the heart muscle, by the devitalizing effect consequent on impaired nutrition predisposed to all other infections, to neoplasms and to slow ulcerative processes. Regarding the first question "Was the lesion syphilitic," with one exception, the extragenital chancre, surgical intervention was rarely proposed for the relief of either primary or secondary syphilis. But not infrequently, chancre, occupying other than its usual habitat, was regarded as epitheliomatous and excision was ordered, particularly in the case of digital chancre as it affected medical men; it was painful, persistent and atypical in appearance and not until it had been cut, curetted, cauterized, and otherwise stimulated to wider growth, and usually not until the axillary nodes had been excised by a sympathetic colleague, did the patient come to "the man higher up," by which time, even though spirochetæ were not receovered from the ulcerating surface, a positive Wassermann and often a secondary eruption established the diagnosis which should have been made by the microscope weeks before. The rapid evolution of chancre of the lip with the prompt and characteristic lymphadenitis were sufficient to exclude cancer. Nevertheless, some of these cases were operated upon; but the cutting of a wedge, quite inadequate for cancer, did no particular harm in syphilis, though there was resultant deformity. The major difficulty experienced by the surgeon was in the distinction between gumma and malignant tumor, a difficulty greater than ever before, since the profession was waking to the need of early intervention, and differential diagnosis of tumor cases in the early stage of development, either from rate of development or physical characterization, was impossible. Concerning bone swellings, the *x*-ray gave, even at the early stage, such pictures as usually enabled the determination with a fair degree of certainty, the syphilitic, tubercular, or neoplastic nature of the enlargement. But no such help was afforded in tumor of the soft parts; and in the absence of a history, or associated signs, the method of choice was microscopical examination, or wide excision, when it involved neither crippling nor gross deformity; or laboratory tests and the effect of vigorous antisyphilitic treatment. If

within a week, or at most two weeks, antisyphilitic treatment did not cause improvement, regardless of a positive or negative Wassermann, the lesion should be considered non-syphilitic and so treated. The betterment of a specific lesion under well directed treatment occurred quickly. There were in hospitals at this moment thousands of patients perishing from the corrupting influence of a positive Wassermann upon the mind of the surgeon; drained by the steady progression of a condition which called for prompt surgical relief, and even more actively sapped by the long-continued and futile administration of mercury, arsenic and iodide of potassium. When the lesion was surely non-syphilitic, though the Wassermann was positive, the question arose as to supplementing the surgical procedure by specific treatment; nor, if it be accepted that a positive Wassermann was a proof of active spirochetæ and that a harmless course of treatment would either quiet or kill them, would any but an affirmative answer seem logical. The reason for not so answering and acting was based on the absence of gross functional or structural changes.

Syphilis in Neurology.—Dr. JOSEPH COLLINS discussed the subject from the standpoint of the neurologist. He stated that it was universally believed that certain diseases of the nervous system, with definite, unvarying lesions, had their sole origin in syphilis; these were tabes, general paresis, and most instances of cerebral and spinal endarteritis. They caused subjective and objective symptoms that were so constant and unvarying as to be considered characteristic or pathognomonic. When all the diagnostic means at their disposal were employed, they offered little or no difficulty of early recognition and all hope of their successful treatment rested upon their early detection. If the so-called positive reaction was found in the serum and cerebrospinal fluid, if the globulin of the fluid was increased, if it reduced Fehling's solution, and if the number of cells was increased beyond 4 c.c., then the diagnosis of syphilitic disease of the central nervous system or its constituents was assured. There were, however, many other dieases of the nervous system whose origin was in syphilis which were not attended by pathognomonic subjective or objective symptoms, and they were far more numerous than the rank and file of the profession suspected. They paralellled in their clinical display nearly every organic disease of the central nervous system and many of the functional ones. Dr. Collins said that, excluding cases of tabes, general paresis, and cerebral endarteritis, he had tabulated 245 cases that were diagnosticated syphilis of the nervous system and distributed them under the various diseases to which they conformed clinically. This list justified the statement that syphilis was of great importance in the production of a number of apparently unrelated disorders, and that syphilis of the nervous system might display itself in the guise of nearly every functional and organic disease of the nervous system that pursued a subacute or chronic course. This statement was not so appalling as it might appear at first sight, since the syphilitic diseases that caused these clinical syndromes were all susceptible to amelioration, and if treatment was applied early, vigorously, and appropriately, to cure, in many instances. Moreover, when these diseases were due to other causes than syphilis, many of them were in no wise amenable to treatment. This was the chief incentive to the detection of their origin. The recognition then of the true dependency of these diverse conditions upon syphilis became an important matter. One should suspect syphilis as the cause of disease of the nervous system in every instance in which the cause was not obvious. One should be more than suspicious of its existence in individuals who were sterile or barren, or who aborted without attribution. One must make the diagnosis conclusively of syphilis of the nervous system in every instance in which a positive reaction was found on more than one occasion and by different observers, in the blood serum and cerebrospinal fluid. The serological examination constituted the most important evidence that was available in the procedure of diagnosticating these atypical cases of syphilis of the nervous system. Dr. Collins said the staff of the First Division of the Neurological Institute did not make a diagnosis of syphilis of the nervous system from the laboratory reports, but in every case of nervous disease in which the cause was not obvious they made the complement fixation test upon the serum and cerebrospinal fluid, and the latter was examined for globulin and pleocytosis. When the laboratory report was inconclusive or paradoxical the fluids were submitted to two other laboratories, and the results compared and a decision made according to the preponderance of the evidence. In the face of negative laboratory report on the serum and cerebrospinal fluid a positive diagnosis of syphilis was not made in the class of cases under consideration unless at least one of the pathognomonic symptoms existed. Of these the most important was the pupil of irregular outline, which did not respond to light. The pathognomonic symptoms were never early symptoms, and if one waited for their appearance before naming a diagnosis their disease would have reached a stage when it would no longer be amenable to treatment. In this class of cases the symptoms were frequently not even suggestive of syphilis of the nervous system, but there was something about their character in tensity, association, and conduct that suggested to the experienced physician their true origin, but it was difficult to give specificity to such symptoms or features for there was nothing that was characteristic. In a general way it might be said that the occurrence of headache, fugitive or persistent pain in the neck, the extremities, the trunk, stiffness, paresthesia, disorder of urination, transient ocular palsy, mental depression without obvious attribution, or discoverable cause, should suggest syphilis. Yet it would be absurd to say that any or all of these symptoms were so suggestive of syphilis of the nervous system that the diagnosis should be made. The Wassermann test was not made as a routine measure in the Out Patient Department of the Neurological Institute, but in the nine months that elapsed from April 1 to December 31, 1915, syphilis must have been suspected in 465 cases and the reaction was found to be positive in 150 of them. In several cases in which their suspicions were not substantiated, further investigation of the serum and of the cerebrospinal fluid revealed syphilitic disease. If the cases of "root neuritis" were included under meningitis, where undoubtedly a great many of them belonged, a third of their cases were to be found in this category, and it might safely be asserted that upwards of one-third of all cases of syphilis of the nervous system were founded anatomically in meningitis. The enormous importance of serological studies in all cases in which there was any suspicion of involvement of the meninges should be emphasized. Dr. Collins cited cases which brought out points in reference to the diagnosis and the difficulties in determining the diagnosis in pseudo-paresis and general paresis, disseminated cerebrospinal syphilis and insular sclerosis, syphilitic myelitis, syphilitic muscular atrophy, cerebrospinal meningitis in the guise of syringomyelia, syphilitic root neuritis (a dependency of meningitis), acroparesthesia, which was a root symptom in the majority of cases, neurasthenia redivivus, insomnia, epilepsy, neuritis and polyneuritis, shivering attacks and choreic movements, and rheumatism in which syphilis of the nervous system was the underlying pathological condition. Multiplicity of symptoms had been regarded as a striking feature of syphilitic disorders, but the allegation was not founded in fact. Many of the patients who had furnished the foundation for this contribution had one or two symptoms only, or at least that was all they related. The character of the symptoms often varied in such a way as to indicate that different tissues were involved at different times. Again syphilis often involved simultaneously several components of the nervous system and different levels. The symptoms might indicate that the entire cerebrospinal axis was involved. The best designation that could be given these cases was cerebrospinal meningitis, predominantly vascular, or parenchymatous. In the treatment of syphilis of the nervous system one must take cognizance of both the disease and the individual; for the former, salvarsan and mercury; for the latter, consideration and encouragement.

Dr. BERNARD SACHS said that the point of view regarding syphilis as an etiological factor in nervous diseases was of tremendous importance. He had been most impressed with the large number of cases of grave syphilis that existed. Therefore he thought it well that he should devote a few minutes to the consideration of this especial subject. It was astonishing to find how often during the past few months at the Mount Sinai Hospital, they met with these cases of grave syphilis. There were cases of cortical encephalitis which yielded promptly to treatment, but perhaps the gravest of all

forms of syphilis which were met with, a surprisingly large number, were the instances of basilar syphilis, cases in which the symptoms began with involvement of the cranial nerves, particularly the cranial nerves which had their origin in the pons or medulla. These cases began, as a rule, with general malaise, followed by rigidity, headache, intracranial pressure, and marked respiratory and bulbar symptoms. In one case artificial respiration was maintained for hours to prevent a fatal issue, and after normal respiration had ceased. The cases of basilar syphilis were not as frequent as compared with the other forms, but they were quite characteristic. He believed that the next gravest group of cases were those of cortical encephalitis, but many of these yielded to treatment. With regard to other forms of grave syphilis of the nervous system he thought it worth while to mention the large group of epilepsies. The number of idiopathic epilepsies was growing smaller and smaller. The cases appeared suddenly in adult life without renal or cardiac diseases. Some of these were unquestionably of syphilitic origin. Dr. Sachs took issue with what had been said with regard to the diseases supposedly due to syphilis; this disease could be associated with every form of central nervous disease. In his experience and service at the hospital and in private practice the Wassermann reaction was of extreme importance as a diagnostic aid. But there was a certain number of Wassermann-fast cases in which the treatment could not change the blood reaction. Regarding the inclusion of the typhoid spine, he said that gave him an opportunity of speaking of a group of cases of syphilitic spondylitis; he had met with many cases of spondylitis syphilitica, in which the tuberculous and traumatic element could be excluded, where the examination of the blood and spinal fluid led to the diagnosis. The greatest of all surprises in regard to the syphilitic origin of the disease occurred in trigeminal neuralgias. There were many cases that would not yield to any form of treatment, even after the teeth had been extracted, deviations corrected, etc., but after the administration of salvarsan and mercurials the neuralgia disappeared promptly. Dr. Sachs said he wished to paraphrase the remarks of Dr. Barker:—"If in slight doubt have a Wassermann; if in grave doubt have it done by two or three observers."

Dr. Boleslaw Lapowski said that the papers presented, according to the program, were to bring to their consideration pathological conditions which, although due to syphilis, not only had been treated as such, but their connection with syphilis had not been even suspected. Only the advanced methods of the diagnosis of syphilis taught the physician to recognize the true etiology of the disease and thus its proper treatment. Considering the papers of the evening, and especially the paper dealing with diseases of the nervous system, from that standpoint of view, he wondered what the syphilographers, who were no more with them, Robert W. Taylor, Prince A. Morrow and others, for instance, would have said could they have come back to earth for a few hours to-night and listened to the last reader's discussion of 250 victims of about 30 diseases of the nervous system due to unsuspected syphilis which were discovered only by the new methods of examination of the patient. They would ask why did the reader of the paper not suspect syphilis and look for it in those patients? He said they would refer them to the old classical books on syphilis, from which it could be learned that in many of the mentioned diseases the prime factor was syphilis, and in nearly all of them, even including trigeminal neuralgia, discussed by Dr. Sachs, syphilis was to be suspected and searched for. By a thorough and critical examination of the clinical symptoms obtained not from a standpoint of the neurologist alone, but from the examination of the skin, the eyes, visible mucous membranes, bones and the internal organs, a corroborative evidence of past or present syphilis could be found. And in cases where clinical or laboratory examinations failed to show the presence of the suspected syphilis, the classical method of "exjuvantibus" even at present still remained the ultimate unfailing refuge of the physician. There was an advance in medicine, especially in their knowledge of syphilis which helped them to detect this disease in unsuspected cases, but it had not, in his opinion, been presented to them in the symposium of to-night.

Dr. Hugh B. Blackwell called attention to syphilis as it affected the auditory nerve; in the advanced cases of deafness it was almost impossible to help these patients; but if recognized early and active treatment was instituted this grave condition might be prevented. This condition affecting the auditory nerve was one of the most tragic of all their diseases. If the general practitioner was more on the lookout for such cases and treated them actively these serious symptoms would be prevented.

Dr. Leon T. Le Wald said that out of a series of 2,000 cases referred to them for examination, syphilis of the stomach was shown in 11 instances. Some of these cases had been submitted to operation; sections had been taken but no microscopical examination made. What was removed was considered to be either an ulceration or a new growth.

Dr. Max Einhorn spoke of syphilis of the liver where the symptoms simulated cancer. Under antisyphilitic treatment these patients did well.

Dr. Jerome M. Lynch said that he thought it was important that the surgeon should be on his guard and eliminate syphilis, for, whereas the physician could not do any harm, the surgeon could aggravate the condition by his activity. He referred to a few cases under the branch of surgery in which he was interested, that was, diseases of the intestines and rectum. A man suffering from hemorrhoids for a number of years had been treated at various clinics and operation had been finally suggested, which the patient had postponed owing to the demands of his occupation. On examination, Dr. Lynch was struck by the relaxed condition of the sphincteric muscle. It was characteristic of syphilis of the spinal cord to find this muscle absolutely contracted and on examination of such a patient to find it flabby and relaxed. The patient denied syphilis, but admitted being exposed to it on several occasions. A Wassermann was made and it was four plus; the man was referred to Dr. Fordyce and appropriate antisyphilitic treatment instituted, under which the patient improved. If there had been an operation the condition would have been very much aggravated. Dr. Lynch cited other cases; one of severe abdominal pain; another, a doctor from Australia, in which the gall-bladder had been drained, and the appendix removed; on examination it was found that the patient had tabes; he was referred for antisyphilitic treatment and his condition improved.

Stated Meeting, Held January 20, 1916.

The President, Dr. Walter B. James, in the Chair.

The Serum Diagnosis of Syphilis.—Dr. Homer F. Swift said that although the application of the Wassermann reaction had become one of the most common diagnostic procedures, one still occasionally heard objections as to its value. It had been thought that the reaction was due to a true antigen antibody (complement combination) but the discovery that lipoid substances also gave fixation with syphilitic sera showed that there was a new, or rather heretofore unrecognized, mechanism in immunity. This with the fact that certain other diseases also gave positive reactions with so-called Wassermann antigens, caused the confusion and doubt which had arisen. The true nature of the reaction was not understood, nor could it be satisfactorily explained in terms which were used in other immune reactions. In performing the test, five different biological substances were employed, four of which might be considered as the reagents which had not the fixed value of chemical bodies, but varied in their properties according to the method of preparation, age, manner of preserving, and other factors which were not understood. The problem was to grade the strength of the various components so that the highest percentage of specific reactions might be obtained and at the same time the minimum number of non-specific reactions. Because of the lack of uniformity in performing the test the results should be judged from the clinical viewpoint. The most satisfactory reactions were performed in a laboratory which was in close touch with the clinical material from which emanated most of the sera tested; in such a laboratory the controls were not alone the sera which were introduced especially for the purpose but many others tested each day. If the reports from a laboratory varied to any marked degree when the sera from a group of patients was submitted from time to time it was safe to conclude that the methods employed in that laboratory were not well standardized. Keeping in mind that it was possible to grade the intensity of the reaction, as either too sensitive or too weak, it was well to know that

whatever level was chosen could be fairly closely maintained by paying attention to the following points: (1) A certain standard for the various components of the hemolytic system, which must be tested each day; (2) the use of several antigens and the comparison of a new one with old ones of known value before accepting it; (3) the insertion as controls not only of sera which had on the previous day given strong positive and completely negative reactions, but also of a serum which had given partial fixation. This was the most important control, for by means of it one was always able to determine whether his reactions were of approximately the same intensity from day to day. This uniform level of the reaction was especially required when the serum of a patient was to be tested after the provocative injection of salvarsan. In regard to types of antigens, practically the only variation from the techniques which had stood the test of time had been the substitution of various forms of lipoids for the extracts of syphilitic livers originally used as antigens. The antigen with the most constant value was the cholesterin reinforced alcoholic extract of human or guinea-pig hearts, which also gave the highest percentage of positive reactions in all stages of syphilis, but especially the late forms; it also persisted longer in the serum of a patient under treatment. The chief criticism brought against it was that it gave too high a percentage of positive reactions in non-syphilitic patients, but with proper precautions the occurrence of non-specific reactions was rare. One occasionally encountered a serum which gave a positive reaction with one method or antigen and negative with the others, and repeated tests with serum obtained at different times from the same patient showed the difference to be constant. This paradoxical reaction emphasized the necessity of testing each serum with at least two, and better, three or more different antigens. It was well recognized that the Wassermann reaction was not a specific reaction for syphilis, but one highly characteristic of the disease and that positive reactions were found in a fairly high proportion of some other diseases, but it was safe to call the reaction non-specific only if the percentage of positive reactions exceeded the percentage found in all people. In the Wassermann there were group reactions as well as in the other diseases caused by spirochetes, namely, yaws and relapsing fever, also trypanosomiasis and malaria which reacted positively and were amenable to salvarsan therapy. It was well established that during the period in which numbers of the malarial parasites were in the circulating blood a positive Wassermann could be obtained, but this disappeared rapidly under genuine therapy. In tuberculosis, malignant disease, and diabetes, the reaction had been reported positive, but this might often be explained by the presence of a concomitant syphilis. In certain of the acute infections, such as scarlet fever, pneumonia, and poliomyelitis, a transient positive reaction was occasionally encountered, but it disappeared with or shortly after the crisis; a positive reaction in the cerebrospinal fluid of these patients was never encountered. Occasionally the blood of uremic patients reacted positively, which did not necessarily mean they were due to the uremic state for syphilis was doubtless a contributing etiological factor in many cases of Bright's disease. The demonstration of the *Treponema pallidum* in a suspicious ulcer proved the lesion to be syphilitic; the demonstration of a positive Wassermann reaction proved that generalized distribution of the virus had taken place, and the earlier diagnosis was made and treatment instituted, the better was the chance of complete eradication of the disease. When an untreated individual in the primary stage showed a positive Wassermann reaction, he was the subject of generalized syphilis. The appearance of a positive reaction usually occurred in the third week after exposure, and as that was the most favorable period for treatment, it was very important to realize the comparative value of the Wassermann reaction and spirochete search. It had been found that combined treatment with salvarsan and intramuscular injections of mercury affected the reaction more rapidly and permanently than did the administration of either alone. The reaction disappeared more rapidly in the early stages of the disease than in the late ones, but disappearing reactions in late syphilis were better indicators of sufficiency of treatment than in the early stages. Little attention should be given to negative reactions in the first year of the disease and treatment should be continued for ten or twelve months. A persistent positive reaction indicated the presence of syphilis somewhere in the body and in the first three or four years treatment should be continued until the reactions remained negative. With reactions that could not be influenced a course of treatments should be given annually. In aortitis, persistent reactions while the patient was under mercury and salvarsan disappeared upon continued administration of iodides. In conclusion, Dr. Swift said the Wassermann reaction should be regarded as a biological response to the activity of the syphilitic virus in the body, a reaction not specific but highly characteristic of the disease, and it should be recognized that it might occur in certain other conditions which should be considered in cases of doubt. Because of the variability in the various reagents and the lack of uniformity in performing the test in various laboratories, it was essential that there be close cooperation between the laboratory and the clinician, for the clinician should be the interpreter of the reaction.

The Study of the Cerebrospinal Fluid, and Its Value to the Practitioner.—Dr. GEORGE DRAPER said that in order to discuss intelligently the cerebrospinal fluid in syphilis it was necessary to consider certain points which might sound almost like truisms, but which perhaps, therefore, should be seized upon and held the more firmly. In the first place syphilis was a general systemic infection by the *Spirochæta pallida*. The body's reaction to the invasion was unusual in the development of a partial immunity, so that the disease tended to become chronic with localizing areas of infection. Extremely acute reaction might occur. But the important point was that syphilis was not a disease of the skin, or of the heart, or of the bones, or of the central nervous system, any more than typhoid fever was a disease of the intestines, or rheumatic fever a disease of the joints. Syphilitc immunity was at present not understood, but it appeared that there was a very definite immunity developed during the long course of the malady, as witness the latent periods, the disappearing of the spirochetes from the blood, and the localization of the disease. Since the introduction of salvarsan and the appearance of the amazing phenomena of Herxheimer and nerve relapses it had been suggested that isolated foci of infection, which lay dormant under the influence of the immunity induced by active lesions elsewhere, showed increasing activity when the immunity stimulating spirochetæ of those other lesions were killed by salvarsan. These four generalizations indicated clearly that syphilis in the human was a biological problem, one so complex that it must be attacked by every effort of clinical observation and the more accurate biological methods. One of the latter methods was the lumbar puncture and the study of the spinal fluid. The time had come when hesitation to use this procedure should cease. The technique was simple and safe and practically painless. Under no circumstances, however, should the diagnostic puncture be made with the patient in any but the horizontal position in bed. Four examinations to which the fluid was subjected were a cell count, globulin determination, Wassermann reaction, and Lange gold test. Any changes from the normal must be looked upon with suspicion, no matter whether the serum Wassermann was negative and the patient honestly denied any knowledge of the infection. Such changes were (1) definite increase of pressure; (2) multiplication of cells; (3) positive globulin, no matter how faint, and (4) positive Wassermann reactions in amounts of 1 c.c. or less. It was clear that a lumbar puncture was an absolutely necessary part in the diagnosis and treatment of the early days and weeks of the disease. In conclusion Dr. Draper summarized as follows: (1) The cerebrospinal fluid showed changes in 100 per cent. of the early cases. (2) The globulin test was the first to appear positive and the last to go. (3) There might be marked pathological changes in the fluid of cases of late syphilis for long periods of time before any signs or symptoms developed. (4) All cases of frank tabes, paresis, cerebrospinal syphilis, etc., had pathological fluids. (5) In a certain group of syphilitics with vagus nerve disturbances, the spinal fluid might be normal in all points except the globulin. In such instances the isolated globulin finding became highly suggestive of meningeal involvement of syphilitic nature. A provocative treatment should be instituted in these instances. (6) Under treatment pathological fluids could be brought to normal, but the globulin was the last pathological change to disappear. (7) Examination of the spinal fluid was absolutely essential to the proper care and study of general syphilitic infection.

The Value of the Colloidal Gold Test in the Diagnosis and Prognosis of Syphilis of the Central Nervous System—and the Value of the Microscopical Diagnosis by Dark Field Illumination. Illustrated by Lantern Slides.—Dr. JOHN A. FORDYCE said our conception of syphilis as a general infection had been a process of gradual evolution largely due to clinical observation. The methods of precision elaborated in this field of medicine had not only confirmed these observations but had added so much exact knowledge during the past ten years that it might well be said a notable epoch in our real conception of the disease had been made. He said it could not be emphasized too frequently or too emphatically that the fate of the syphilitic individual depended largely upon the early diagnosis of his infection and the intensity with which his treatment was carried out in the first six months. It was in the accomplishment of this purpose that the modern aids to diagnosis had rendered the practitioner invaluable service. The speaker cited cases to illustrate that it was impossible for even a trained observer to recognize by his sense of sight and touch alone all that could be revealed by the laboratory. Chancroids frequently harbored the organism of syphilis and owing to the longer incubation period of the latter did not develop their characteristic features until after the expiration of two or three weeks, or might entirely fail to develop any induration. The secretion of all these lesions should be searched for the *Treponema pallidum* and failing to find it a favorable prognosis should be withheld until repeated examinations, including the Wassermann reaction, had been made. Initial lesions were so protean in appearance that atypical chancres would frequently go unrecognized without this means of corroboration. The dark field was especially valuable in developing chancres before they acquired their clinical characteristics as their nature might be confirmed in a few minutes. The promptness with which treatment could be instituted in these cases and their favorable prognosis was obvious. The examination of the spinal fluid enabled them to determine the activity of the luetic process in the brain or cord, to distinguish the various pathological types affecting the central nervous system and in many cases to differentiate between these and non-luetic infections. The writer cited cases to show how the tabetic syndrome might be simulated by the multiple neuritis of diabetes or alcoholism and the real nature of the trouble only revealed by the spinal fluid analysis and the blood test. On the other hand patients with syphilitic involvement of the central nervous system and suffering from obscure pains, febrile attacks, irritability, gastric and rectal crises, memory failure, etc., were often treated for years for neurasthenia, rheumatism, neuritis, surgical affections, and various other conditions. In the light of more recent investigations an analysis of the spinal fluid was not complete unless the colloidal gold test was performed in addition to the Wassermann reaction and a cytological and chemical examination. The speaker gave a résumé of the theory of the reaction and its technique, and added that as a rule there was a parallelism between it and the other positive findings in the fluid. The typical paretic curve had been met with in every case of paresis examined and in three cases had been reversed by treatment to the leutic curve. This improvement, however, did not run parallel with the abatement of clinical symptoms, as one patient who in addition was negative in all the other laboratory findings was slowly deteriorating in spite of treatment pushed to the point of tolerance. Definitely syphilitic processes, as cerebral endarteritis, abortive or stationary forms of tabes, and some types of cerebrospinal syphilis, might give a completely negative Wassermann. It was in these cases that a supplementary gold test was of value in demonstrating the luetic nature of the conditions. Its greatest value, however, was in distinguishing between paresis and the conditions which simulated it as well as its prognostic significance in tabetics who showed no mental impairment but gave a paretic curve. Dr. Fordyce quoted a number of patients with tabes in whom the typical cerebral disorders as writing and speech defects, tremor and memory defects were absent, who gave with the gold chloride a complete discoloration in the first five to eight tubes. While these cases had not been observed long enough to warrant any definite pronouncement as to the prognostic significance of the paretic curve, post-mortem findings had taught that the anatomical changes in paresis may long antedate clinical manifestations. He felt that in patients who were under continuous observation, and especially those who were receiving intraspinal treatment where the fluid could be examined at regular intervals, the presence or the development of the paretic curve should excite a strong suspicion that later these patients might develop the clinical syndrome of paresis, and he was advising the family or business associates of such patients of the possibilities in the case. Active treatment in these cases might anticipate, delay, or arrest the degenerative cerebral changes. Lumière lantern slides were shown to demonstrate the complete precipitation of the gold solution in the first four to eight tubes in paresis, the so-called paretic zone, as well as the color changes in other types of syphilis of the central nervous system.

Dr. SYDNEY R. MILLER of Baltimore said that the ground had been very thoroughly covered in the papers of the evening, but at Dr. James' suggestion it might be interesting briefly to state the point of view at present held in the clinic of the Johns Hopkins Hospital. The opportunity seemed especially fortunate by reason of the fact that within the past week a paper had been read before the Johns Hopkins Medical Society by a physician from New York, in which the views presented were diametrically opposed to those outlined this evening. They were to the effect that inasmuch as the Wassermann reaction was a non-specific one, since it was often absent in cases known clinically to be luetic and by reason of the fact that their conception of the treatment of syphilis had really been very little modified since the introduction of the test, and since the same serum examined by five different observers frequently yielded widely divergent results, therefore the reaction was dangerous, of little clinical value, and probably had better be left alone. There could be no argument concerning the non-specificity of the reaction in the Ehrlich sense of the term. There was little danger of their seeing cases of yaws, recurrent fever, and frambesia in this part of the world. It was interesting, however, as was pointed out by Dr. Swift, that these diseases were etiologically and biologically closely related, and it might therefore reasonably have been predicted that a positive Wassermann reaction in these conditions would not be infrequent. Practically the only other disease which had ever given them questionable results had been malaria, but this condition was practically always easily ruled out by finding the malarial parasites and in the failure of this, a course of quinine, followed by a second Wassermann would usually decide a doubtful case. As a result of the experience of five different laboratories, they had come to feel that an unequivocal positive Wassermann reaction, preferably with three, but not less than with two, antigens, in a technique suitably controlled in which accuracy of result had not been sacrificed to delicacy of method, was clinically a specific evidence of existing syphilis. Where the Wassermann was positive and the clinical evidence had not been such as to lead one to expect this result, a rigid investigation was instituted with the result that one side or the other was shown to be incorrect in its conclusions. They felt that their experience had been by no means unique in that the Wassermann reaction had cleared up most difficult cases and in a number of instances had clearly shown the casual or constant etiological relationship of syphilis to the diseases under consideration. The point which needed the greatest emphasis, however, was that the closest cooperation must exist between the laboratory worker and the clinicians in the ward. The attempt to divorce one from the other was bound to lead to dangerous misinterpretations. This, however, was no more true of the Wassermann reaction than of all other laboratory methods with their recognized sources of error. There was nothing particularly remarkable about the fact that cases known to have clinical lues, from time to time gave negative Wassermann reactions, even in the absence of anti-luetic therapy. There were so many analogies familiar to one who had followed the general subject of immunology that it was scarcely necessary to go into them at this point. With reference to the statement that the Wassermann reaction gave discordant results in the hands of different observers though using the same antigens in testing the the same sera, it should be pointed out that in the endeavor to simplify the technique of the original test and devise time-saving methods, that numerous modifications had been made, a number of which were lacking in the essential details described by Wassermann. This could scarcely be interpreted as an error inherent in the method, but undoubtedly was a strong argument

in favor of its universal standardization. The fallacy of the statement that their treatment of syphilis had not been advanced since the introduction of the Wassermann reaction, would become apparent to anyone who calmly analyzed the statement. It might be true that to a certain degree their ideas had not been materially changed; the point to be remembered, however, was that since the Wassermann reaction came into existence, more known luetics had been intelligently and persistently treated than ever before, particularly after they had passed into the symptomless stage of their disease. Moreover, more unsuspected conditions due to syphilis had been discovered and treated than was ever posible prior to the laboratory method of diagnosis. No doubt cases had been treated which were not suffering from syphilis, but rather from the faulty application or interpretation of a Wassermann test. The harm done by such misplaced therapy was nothing as compared with the good that had been achieved on the great mass of unfortunate sufferers. Just a word might be said here of the paradoxical reactions referred to by Dr. Swift. Out of a series of approximately 1,500 Wassermann reaction tests in which each serum or spinal fluid was tested against three different antigens, the results were parallel absolutely in over 97 per cent. of the cases. In seven instances fixation was given alone by the cholesterinized human heart antigen. In all of these a subsequent lumbar puncture revealed the fact that the individual was suffering from some type of central nervous system syphilis. This brought up two points which needed particular emphasis: 1. That a suspected spinal fluid should not be regarded as negative unless it was so when ten times the original volume suggested by Wassermann was used in the reaction. 2. The fact that physicians should demand a report which clearly stated against how many antigens and in what amounts a spinal fluid or serum had been tested. The cases referred to by Dr. Draper in which weak globulin reactions were the only evidence of some underlying abnormal condition, were extremely interesting and suggestive. Similar findings had been noted by them and in general they had found that positive globulin tests were most frequently the earliest signs of central nervous system syphilis and the last evidence of its existence to succumb to suitable treatment, the colloidal gold reaction excepted. In testing for increased globulin content, they had been impressed with the superiority of either the Ross-Jones or Pandy test, preferably the latter, by reason of the fact that but one drop of spinal fluid was necessary to give an immediate and decisive answer. This reaction described originally in 1910, deserved a much wider application. In their experience it had not proved over-sensitive.

Dr. E. L. Keyes, Jr., said he agreed enthusiastically as to the status of the methods of precision in the diagnosis of syphilis as laid down in the paper of Dr. Swift. He could take no exception to any of his remarks or to the details of the technique as he had presented them. It was interesting to know that Dr. Miller in his conclusions did not agree with one of the other speakers. The Wassermann and other cerebrospinal fluid tests required no defense when properly and intelligently performed. What Dr. Miller said with reference to the necessity of a proper correlation of clinical and laboratory findings should be emphasized; there had been too much dependence on these tests in a perfectly stupid manner. For instance, he had recently seen a patient treated six months previously by salvarsan. Unfortunately his condition was not checked up by observations of the cerebrospinal fluid. The patient had drifted away after a short time having received insufficient treatment. One year afterward he had a relapse of his syphilis in the nervous system. The patient had this relapse not because the salvarsan had been given, but because it had not been followed up to sufficient lengths and guarded by a series of intramuscular injections to prevent an outbreak of syphilis in the patient whose resistance to the disease had been lowered by salvarsan. This same physician could not believe salvarsan was needed when the patient returned since the blood remained negative. He gave pills and the iodides. The lesions of the nervous system were little better for this treatment. There had been no examination of the cerebrospinal fluid. The laboratory findings had obscured the clinical indications in this instance. A little dabbling in laboratory findings leads the inexpert clinician astray, and it was to be hoped that if there were any such inexperts in this vicinity they were present this evening to hear Dr. Swift's paper.

Dr. Edward D. Fisher said that his discussion would be from the clinician's standpoint, but that while he was speaking from the clinical side it should not be taken to mean that he was opposed to the laboratory. From his personal standpoint he would place the diagnosis of syphilis much more surely on clinical observations than on the laboratory findings. The clinical side had been studied for so many years that a pretty exact knowledge of the manifestations of syphilis of the nervous system had been established. He had been interested in the report that stated that the cerebrospinal fluid in apparently every case of primary syphilis gave findings showing a pathological condition. In this connection it might be mentioned that one might have syphilis of the heart, of the lungs, of the liver, of any organ, that syphilis, in other words, had a selective choice as to situation. Probably not more than 10 per cent. of the patients affected with syphilis had disease of the central nervous system. Again there was a selective choice of certain parts of the nervous system; in some cases there might be involvement of the meninges and blood vessels and in others of the cell structure. That had been observed clinically by Mott of London when he divided cases into meningovascular and cellular or parenchymatous, as tabes and general paresis. These conditions were entirely different; and they did not pass necessarily from one into the other, that was from the vascular to the cellular. Dr. Fisher said that in his experience with the early symptoms of syphilis one sometimes got a basilar meningitis and ocular paralysis and that under proper treatment these almost invariably cleared up. The laboratory might help one where he had cases of cerebral or cerebrospinal syphilis passing into general paresis; if that could be done they would have gone a great way in diagnosis. There were some clinical conditions in respect to which all seemed to be agreed and one of these was that paresis was rarely preceded by tabes, if the latter was typical in character.

Dr. Sigmund Pollitzer said he shared the feelings of the previous speakers with reference to the necessity of correlation between laboratory and clinical work, and he had been in close touch with the laboratory for many years. As to the colloidal gold test, he was familiar with it though he had had no personal experience. It was of the greatest utility when it worked, but it was exceedingly difficult to carry out and on this account he doubted if it would ever be extensively employed. It was the duty of the practitioner when he saw a case of primary syphilis to make an examination for spirochetæ in the initial lesion. If he failed to do this he was guilty of the grossest neglect, because syphilis during the first few weeks or months was curable. He had not seen a case in the past five years which was properly treated during the first three months which was not cured. When one saw a case of syphilis in the early stage the diagnosis might be made by the dark field illumination, but this was not the only way. The India ink method, using the Grubler ink and taking pains to keep the ink free from contamination was absolutely reliable. As to the cerebrospinal fluid examinations, the majority of syphilitics showed during the first weeks some irritation of the central nervous system, but only a small proportion developed cerebrospinal syphilis and to treat these early cases for cerebrospinal syphilis by intraspinal injections was, in the present state of our knowledge, an injustifiable procedure. Before dismissing a patient as cured the provocative salvarsan test should be employed and an examination of the cerebrospinal fluid made. Even when the Wasserman reaction was negative the cerebrospinal fluid should be examined. When the Wassermann test remained persistently positive in spite of all treatment, the cerebrospinal fluid should be examined. To come to the Wassermann test itself, Dr. Pollitzer mentioned that he had read the first paper on this subject from this rostrum nine years ago and soon after that had the Wassermann test made on his patients. He had had from four to five thousand Wassermann tests performed and so could speak authoritatively from the point of view of the correlation of clinical and laboratory findings. There was no single test that had the value of the Wassermann test, but it must be interpreted with a little intelligence. So far as the diagnosis of syphilis went, he felt that they would be lost without the Wassermann test. In many cases that were doubtful the Wassermann test gave definite information and subsequent treatment had demonstrated its correctness. Sometimes clinical observation and the Wassermann reaction were not in harmony and when this was the case the Wassermann test must be re-

peated, since there was always a possibility of some mistake in the laboratory. The Wassermann test was not an automatic process and it was perfectly possible for a mistake to occur. He had had several instances in which a case was reported strongly positive or negative in which he had expected the opposite result and he had sometimes proven the mistake in the laboratory on having the test repeated. A few years ago he had sent 30 specimens to four different laboratories, three of them connected with hospitals. The reports from the three laboratories on the same serum were in practical harmony, but those from the fourth, a private or unattached laboratory, did not agree. The warning deduced from this experience was obvious. It was the duty of the practitioner to employ the Wassermann test and have it made in a reliable laboratory; to make an examination for the spirochetæ on every suspicious ulcer, and in the later stages of syphilis before discharging the patient as well as in every case of a persistently positive Wassermann despite thorough treatment to have an examination of the cerebrospinal fluid.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

DISEASES OF THE SKIN. By HENRY H. HAZEN. Published by C. V. Mosby Company, St. Louis; 243 illustrations, including four color plates; 539 pages.

INJURIES OF THE NOSE, THROAT AND EARS. By ANDREW MAITLAND RAMSEY, J. DUNDAS GRANT, H. LAWSON WHALE, and CHARLES ERNEST WEST. Published by Oxford University Press, Warwick Square, E. C. London. 160 pages. Price, $1.00.

INSTINCT AND INTELLIGENCE. By N. C. MACNAMARA. Published by Oxford University Press, London, England. 216 pages. Price, $2.00.

DISEASES OF THE THROAT, NOSE, AND EAR. By WILLIAM H. KELSON. Published by Oxford University Press, London, England. Illustrated. 270 pages. Price, $3.00.

EXTRA-PREMIEN. By H. BRAUN, Dr. Phil. Published by Nationale Levensverzekering-Bank, Rotterdam. 130 pages.

A GUIDE TO GYNECOLOGY, IN GENERAL PRACTICE. By COMYNS BERKELEY and VICTOR BONNEY. Published by Oxford University Press, London, England. 452 pages. Price, $6.50.

TRACHOMA, ITS PREVALENCE. By GORDON L. BERRY. Published by National Committee for the Prevention of Blindness, 130 East Twenty-second Street, New York. 40 pages. Price, $40.00 per thousand.

DIE PATHOLOGIE UND THERAPIE DES ILEUS. By PROFESSOR W. KAUSCH. Published by Carl Marhold Verlagsbuchhandlung, Halle. 51 pages. Preis M. 1.40.

MODES OF RESEARCH IN GENETICS. By RAYMOND PEARL. The Macmillan Co., New York. 182 pages. $1.35.

STATE HOSPITAL COMMISSION. Twenty-Sixth Annual Report. October 1, 1913, to September 30, 1914. Published by J. B. Lyon Company, Printers. 709 pages.

DISEASES OF THE STOMACH AND UPPER ALIMENTARY TRACT. By ANTHONY BASSLER. Published by F. A. Davis Company, Philadelphia. 881 pages.

THE ADOLESCENT PERIOD. By LOUIS STARR. Published by P. Blakiston's Son & Company, 1012 Walnut St., Philadelphia. 211 pages. Price, $1.00 net.

FIRST AID IN EMERGENCIES. By ELDRIDGE L. ELIASON, M.D. Published by J. B. Lippincott Company, Philadelphia and London. 204 pages.

THE PRACTICAL MEDICINE SERIES. Vol. X. Nervous and Mental Diseases. Edited by HUGH T. PATRICK, and PETER BASSOE, M.D. Published by The Year Book Publishers, 327 S. La Salle Street, Chicago; 240 pages. Price, $1.35. Price of the series of ten volumes, $10.00.

THE PRACTICAL MEDICINE SERIES. Vol. IX. Skin and Venereal Diseases. Edited by OLIVER S. ORMSBY and JAMES HERBERT MITCHELL. Published by The Year Book Publishers, 327 S. La Salle St., Chicago; 240 pages. Price $1.35. Price of the series of ten volumes, $10.00.

BELLEVUE AND ALLIED HOSPITALS. City of New York. Thirteenth Annual Report. January 1, 1914 to December 31, 1914; 107 pages.

Therapeutic Hints.

Pediculicide.—Fluid extract stavesacre ℥ii, dilute acetic acid, ℥vi; for external use; apply three or four times a day until the nits have all been hatched.

Bronchopneumonia in Children.—The following non-depressing expectorant is recommended by Marfan:

℞ Ergotin, gr. xv.
Strychnine sulphate, gr. 1/12.
Mucilage, ℥ij.
Distilled water, ℥iv.

M. Dose for infants under six months of age, a teaspoonful twice a day; between six months and a year, three teaspoonfuls a day; from 1 to 2 years, four teaspoonfuls a day; and above 2 years, five teaspoonfuls a day. If there is any diarrhea the following mixture is to be preferred:

℞ Solution of acetate of ammonia, ℥iij.
Tincture of cinnamon, ♏ xv.
Infusion of coffee, ℥j.
Syrup of cinchona, ℥ij.

M. Sig.: Four or five teaspoonfuls in the 24 hours.—*Medical Press and Circular.*

Use of Resorcin in Seborrhea.—W. K. Sibley says that for alopecia due to this condition resorcinol will generally be found most efficacious in a 2 per cent. solution. It is freely soluble in water, and should be rubbed into the whole scalp once a day. Even in a 2 per cent. solution, especially if it has been made some time, it will have a slight staining effect on fair or white hair. Care must always be taken that no alkaline preparations, such as alkaline soaps, are applied to the scalp, or a considerable dyeing of the hair will ensue; if therefore it is desirable to add an oil to the preparation used, some tincture of soap bark (tinct. quillaiæ) and not an ordinary soap should be used, such as:

℞ Resorcin, gr. x.
Ol. ricini, m. xxx.
Tinct. quillaiæ, m. xv.
Aquam rosam, ad ℥i.

—*The Practitioner.*

Iodine for Typhoid Carriers.—Kalberlah says that iodine in combination with charcoal will free the stools from typhoid bacilli very promptly. He gives from 8 to 15 minims of tincture of iodine in a glass of water from three to five times a day, wood charcoal in teaspoonful doses being given at the same intervals. In five cases in which this method was tried the bacilli promptly disappeared from the stools and did not return during a period of four months, examinations of the stools being made at five-day intervals. Discharge of bacilli in the urine may continue for a considerable period, but this can be speedily arrested by the administration of hexamethylenamine.—*Medizinische Klinik.*

Seborrheic Alopecia.—When the scalp is red and inflammatory, the following are useful applications:

℞ Liq. carbonis deterg., m. xx.
Acid. hydrocyan. dil., m v.
Glycerini, m. x.
Aquam rosam, ad ℥i.

or

℞ Liq. plumbi subacet. fort., m. x.
Liq. carb. deterg., m xv.
Glycerini, m. xxx.
Aquam rosam, ad ℥i.

W. K. Sibley in *The Practitioner.*

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Original Articles.

PERSISTENT DEVELOPMENTAL ANOMALIES OF POSITION OF THE LARGE INTESTINE WITH ESPECIAL REFERENCE TO THE ASCENDING COLON AND CECUM.

BY ROYALE H. FOWLER, M.D.,

BROOKLYN, NEW YORK.

ASSOCIATE SURGEON, GREENPOINT HOSPITAL.

INSTANCES of intraabdominal congenital malformations are not apparent as harelip and clubfoot and consequently have not been as frequently observed. The latter usually have come under the surgeon's care early in childhood, the former have been recorded in the course of post-mortem examinations, operations upon the living, and in cadaver dissections made for the purpose. With the increasing number of surgical operations and routine radiographic examinations of the chronic abdomen, these conditions will be found to be more common than statistics have heretofore indicated.

Some of these conditions directly or indirectly give rise to indefinite symptoms, others give rise to no symptoms, and it has occurred that, when the abdomen has been carefully explored in the course of an operation directed toward the relief of a neighboring diseased organ, certain of these anomalies have been brought to light.

In dealing with the large intestine, we note that there may be complete transposition, through failure to rotate during the developmental period. In case of incomplete rotation, the cecum may assume a position at any point between the right iliac fossa and the left side of the pelvis. It may be under the liver or to the left of the umbilicus. Because of malformations other than failure to rotate, as for example, congenital openings in the diaphragm, the colon may be contained in the sac of a hernia and situated in the pleural cavity. The writer has reported such a case.

Under title of "Non-descent of the Cecum and Absence of the Ascending Colon," congenital anomalies of the large bowel have not been frequently discussed in surgical literature. Thus Borden, in 1912, stated that in a careful search of the literature in the library of the Surgeon-General in Washington, he found the writers upon the subject included only Robinson, Treves, Fahrenholdt, Hartmann, Debert, and Lockwood.

Borden has, however, overlooked a few contributions pertaining to malposition of the cecum, notably those by Klose, Lardennois, Maxson, Morozoff, Smith, and Turschmid. Still other reports are revealed in a search under various titles, "Left Sided Appendicitis," "Failure of Colon to Rotate," etc. More recent contributions are by Vosburgh and Delatour. Lejars, of Paris, has also contributed a valuable article upon "High Displacement of the Cecum and Appendix, Its Clinical and Operative Significance."

To cover the field completely, other contributions such as Transportation of the Viscera, and Anomalies in general should be consulted. Thus one paper by Armstrong relative to the subject is published under title of "Abnormal Position of the Duodenum," another by Malcolm, "Two Rare Anomalies Observed in the Course of Operation."

The writer desires to record the following cases:

CASE I.—R. R., male, age 32, station agent in employ of Long Island Railroad was seen in a consultation with Dr. N. S. Wadhams, July 31, 1912, at Westhampton Beach, New York. He had been ill for two days.

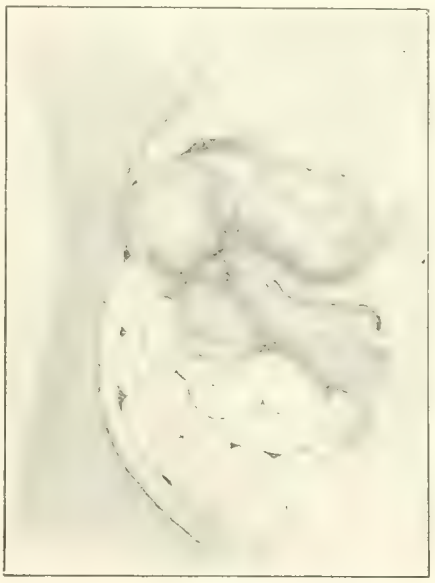

FIG. 1.—Author's case. Complete non-descent of the cecum.

His chief complaints were peri-umbilical cramps and vomiting. The temperature was 101.4° F.; pulse 110, respiration 26. There were rigidity and tenderness in the right upper quadrant, somewhat low for gall-bladder infection and high for appendicecal. High appendicitis was diagnosed. The patient was removed at once to the Southampton Hospital and subjected to operation. After opening the abdomen a rather protracted search revealed the condition which is illustrated in Fig. 1. The appendix was adherent through its entire length to the posterior cecal wall. It is to be noted that the cecum in addition to preserving the embryonic position, showed the persistence of the conical type. The appendix was bulbous at the end, constrited at its middle. It was excised unruptured, the base tied off and the wound closed around a small drain, inserted into the bed which the appendix had occupied. Upon splitting the appendix it was found to be distended with pus. Following a superficial infection, the wound healed. When the patient was last seen in October, 1912, he was in vigorous, robust health carrying on his duties, perfectly cured, without bulging at the site of the incision, and with no symptoms

referable to the absence of the ascending colon and failure of cecum to descend.

Through the courtesy of Drs. Walter Sherwood, C. H. Goodrich and George I. Miller the writer is enabled to record cases which have come under their observation.

CASE II.—R. R., married woman, 31 years of age, was admitted to the Jewish Hospital Dec. 10, 1913, with the following history. The chief complaint was pain in the right hypochondrium. Present history: Onset five days before admission. Patient complained of cold, fever and sore throat. Two days later was seized with general cramp-like pain in the abdomen associated with chills and fever. No vomiting. The pain became localized in the right side of the abdomen but was more marked in the gall-bladder region. Bowels constipated for three days. Family history: Irrelevant. Past history: The patient is of regular habits; has good appetite, sleeps well. Constipated. No other previous illness. Last year had two attacks of cramp-like, sharp shooting pain in the right side of the abdomen. No vomiting, chills or fever. No icterus or pruritus. No clay colored stools. Menstruation began at 13 years of age, always regular, flow lasts four days, no pain. Married 13 years ago, has borne four children. The last child was born 17 months ago. Normal deliveries. No abortions or miscarriages. Patient is well developed and well nourished. Appears acutely ill. No icterus. Tongue coated. Head and neck, lungs and heart normal. Abdomen symmetrical. No masses or rigidity. Moderate resistance in right iliac fossa. Tenderness present over McBurney's point, but most marked over the gall-bladder region. No costovertebral tenderness. Liver: Dullness about 2 inches below ribs. Spleen and kidneys not palpable. Extremities negative. Temp. 104.6° F. Pulse 128, Resp. 32. Blood examination showed 20,000 leucocytes, 87 per cent. polynuclears, 13 per cent. lymphocytes. Urine Sp. Gr. 1034 acid, trace of albumin present. Sugar negative. Some hyaline, and granular casts, epithelial cells present.

Operation Dec. 10, 1913. Incision, four inches long through the outer border of the right rectus muscle. Peritoneum opened. Several loops of small intestine appeared in the wound. No ascending colon present. The cecum was distended and fixed by adhesions embracing the appendix which was situated beneath the liver. The appendix was adherent from base to apex and attached to the under surface of liver. The base of the appendix was first ligated and stump inverted. The appendix shelled out of its covering and the two edges of mesentery sutured with catgut. There was a well marked pericolic membrane over the cecum. No Lane kink. Uterus and adnexæ normal. Several adhesions which united the transverse colon and cecum to the gall-bladder were separated. The gall-bladder was normal. Sigmoid and descending colon were in the normal position. Abdomen closed. The patient made an uneventful recovery and left the hospital cured three weeks after operation.

CASE III.—Gertrude S., age 15, bookkeeper. Admitted Aug. 14, 1914, to the Methodist Episcopal Hospital, service of Dr. Walter Sherwood, complaining of pain in the right lower abdominal quadrant. One week previously (Aug. 7) the pain commenced suddenly in the epigastrium. There was no vomiting. Pain gradually shifted to right iliac fossa. It has remained continuous. Patient thinks she had no fever, bowels regular. Family and past history irrelevant. On examination, the patient was seen to be a well developed young girl who appeared acutely ill. Tongue coated, heart and lungs normal. Abdomen not distended, marked tenderness, slight rigidity in right lower quadrant. Liver and spleen not palpable. Extremities negative. On admission. Temp. 100° F., pulse 100, resp. 24. Urine negative.

Operation by Dr. Frank E. Brown. Right rectus incision. On opening the peritoneum, small intestines presented, no omentum. There were several adhesions on the right side which were broken up in an effort to locate the cecum and appendix. These structures were not found in the usual situation. Upon exploration of the left side about the level of the umbilicus, adhesions were encountered, and the cecum was located to which was attached a gangrenous appendix. The adhesions were broken up and the appendix ligated, removed and the stump inverted. There was a small amount of thin flakey fluid in this region. No drainage. Wound closed in usual manner.

CASE IV.—J. S., male, 39 years of age, driver, was brought to the Methodist Episcopal Hospital, service of Dr. Chas. H. Goodrich, July 26, 1914, complaining of pain across the middle of the abdomen. Family history, irrelevant. Past history, irrelevant. Present complaint: Three days before admission, the patient was suddenly seized with severe cramp-like pains, worse on walking, located in the umbilical region. A few hours after onset, the patient vomited a small amount of undigested food. He had never experienced a similar attack. The bowels have been slightly constipated. The patient is a well nourished adult male, appears ill, face apathetic, lies with the knees drawn up, seems to be in pain. Mouth contains carious teeth. Cardiac and repiratory systems negative. The abdomen shows marked rigidity and tenderness over the upper right Rectus muscle and epigastrium. Right iliac region slightly rigid. Point of maximum tenderness two inches to the right and one inch below the navel. Pulse, 120; temperature, 103° F.; respirations, 28. The blood count showed 25,000 leucocytes, 89 per cent. polynuclear cells. A diagnosis of appendicitis was made, with a possibility of a gall-bladder condition.

Operation by Dr. C. A. Anderson. A three inch right Rectus incision, center opposite the level of the umbilicus. Upon opening the peritoneum a large amount of seropurulent material gushed forth. The right iliac fossa was explored and no cecum was found. The pelvis was filled with seropurulent material. The hand was next passed upward and a mass encountered which proved to be the tip of the appendix surrounded with omentum. The incision was lengthened to the lower border of the ribs. The appendix was traced upward to a point just beneath the gall bladder, then downward toward the median line. Its base lay about one inch above and one and one-half inches to the right of the umbilicus. The appendix was ligated and base cauterized. The organ was gangrenous and the tip was perforated. A cigarette drain was introduced down to the base of the appendix, emerging from the upper angle of the wound and a rubber tube with gauze strip was introduced into the pelvis emerging from the lower angle.

The patient had a stormy convalescence for the first few days. The temperature and pulse reached normal on the ninth day and remained there with slight fluctuations. The wound discharged a very large amount of purulent material. The cigarette drain was removed on the fifth day and replaced by a small rubber tube. The upper tube was taken out on the fourteenth day and the lower tube on the twenty-second day. The wound healed slowly, but at the end of the forty-second day he was discharged from the hospital.

The patient was examined Dec. 10, 1914. He stated that he never felt better. He looked robust. There was a ventral hernia at the site of drainage.

The *x*-ray plate taken Dec. 5, 1914, by Dr. W. H. Wallace shows a partial non-descent of the cecum.

As regards the frequency of complete non-descent of the cecum with total absence of the ascending colon, the post-mortem examinations of Treves undertaken for abdominal research indicate its presence in about 2 per cent. of cases. Partial non-descent with an ascending colon less than 6 inches long was observed in about 7 per cent. The abnormality is twice as common in males as in females. In case of complete non-descent the ileum usually enters the cecum on its under aspect and somewhat posteriorly. The appendix lies under the liver to the right of the gall-bladder.

Both of Treves' cases were in men, aged 41 and 74. In both the cecum was immediately beneath the liver to the right of the gall-bladder. It was horizontal and continued the axis of the transverse colon. The appendix came off the posterior aspect of the cecum. The remaining viscera were normal.

Fahrenholdt found the cecum of a cadaver in the right hypochondrium in close proximity to the gall-bladder. The appendix was normal and pointed downward.

Hartman has described a specimen in a male, age 50, in which the cecum was situated beneath the liver to the right of the gall-bladder. The small in-

testine occupied the right flank. The ascending colon entered the cecum perpendicularly.

Debert has reported a rudimentary cecum continuous with the transverse colon without trace of an appendix.

Lockwood has described two specimens of nondescent in which the cecum was in right hypochondrium directly under the liver.

Robinson reports twelve cases encountered in 130 autopsies. Two were complete, ten showed various degrees of partial descent. The average length of the ascending colon was 6 inches.

Border has reported a case similar to the writers, in the person of M. H., male, age 26, butcher, operated upon for acute appendicitis. The cecum was very short, extended to the right and but little beyond the ileocecal junction. The ascending colon was absent. The cecum which merged into the transverse colon was in apposition with the liver. The ileum entered the large intestines at a right angle and somewhat posteriorly. The appendix was post-peritoneal, gangrenous, and lay coiled up behind

A rotation of the mesentery occurs because of the more rapid growth of the small intestine. The colon lies entirely to the left of the mid-line, and rotates about its mesenteric axis. The cecum enlarges and crossing the descending duodenum passes to the subhepatic position (fourth month) and later descends to the right iliac fossa.

This knowledge of the various phases of the developmental period clears up conditions which may exist at operation, and explains the failure to find the appendix in the usual location. Failure of the colon to rotate may be looked upon as probable when the small intestines occupy the right iliac fossa and when no colon is on the right side. Positive evidence of failure to rotate is indicated by a movable duodenum which has a mesentery and merges directly into the jejunum uncovered by the transverse colon or its mesentery. Failure of the colon to rotate must be considered in determining the diagnosis of obscure abdominal lesions as being a possible cause for mid-pelvic or left-sided inflammatory conditions. Particular attention should be

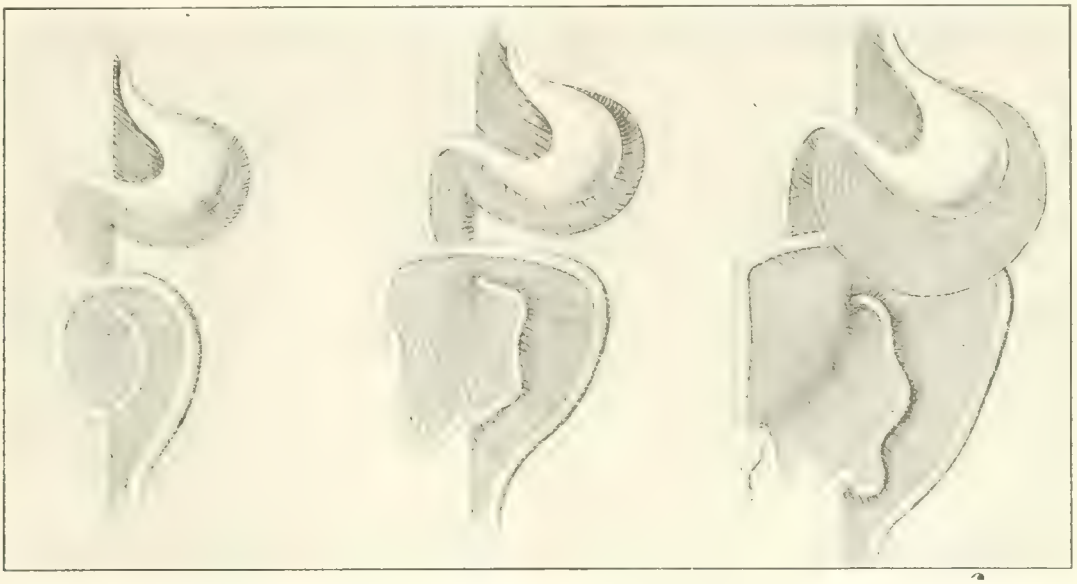

FIG. 2.—Three successive stages of the digestive tube and the mesenteries in the human fetus: 1. Stomach; 2, duodenum; 3, small intestine; 4, colon; 5, vitteline duct; 6, cecum; 7, great omentum; B, mesoduodenum; 9, mesentery; 10, mesocolon (modified from Tourneux).

the cecum in the fossa to the right of the duodenum and over the kidney.

George R. Fowler observed three instances with corresponding malposition of the appendix in a series of 140 operative cases reported in 1893. Two occurred in males.

As regards the embryology of this condition (see Fig. 2) the primitive gastrointestinal canal is represented by a tube, connected to the spine by peritoneum. The stomach bud first appears in the proximal portion as a bulbous dilatation. The distal portion of the tube later becomes the descending colon, the sigmoid and the left part of the transverse colon. The inferior mesenteric artery supplies this portion. From a portion of the primitive tube between the proximal and distal parts, another small bud appears at about its middle which represents the developing cecum. The distal colonic section enlarges and grows slowly as compared with the proximal section. The small intestine also has its origin from the proximal portion of the primitive tube. The mid-section of the primitive tube has a common mesentery and derives its blood supply from the superior mesenteric artery.

accorded to the possibility of aberrant positions of the appendix in atypical cases of appendicitis. The condition should be differentiated especially from diverticalitis and malignancy.

Bearing these points in mind the preoperative diagnosis will be made more frequently. During 1910-12 the Mayos have observed five cases in which the colon had failed to rotate. In one only was the diagnosis made before operation. A larger percentage of accurate diagnoses should be made, in chronic cases. These should be subjected to gastrointestinal radiography.

Points which aid in determining the exact preoperative lesion are: 1. Signs and symptoms of pelvic, left-sided, subhepatic or retrocecal appendicitis. 2. Difference in the colonic percussion note. 3. Gastrointestinal radiography when time and opportunity permit.

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280 JEFFERSON AVENUE.

THE FAIR FACE OF NATURE.

BY WILLIAM P. CUNNINGHAM, A.M., M.D.,

NEW YORK.

EVEN the homeliest human countenance, irradiated with the reflection of a virtuous mind, is a wonderfully attractive picture. It is rare indeed that nature does not mitigate the repellant elements of her occasionally defective handiwork by the conspicuous commingling of a brilliant exception. Lustrous eyes redeem a monstrous nose. The sheen of a perfect skin effectually covers a number of anatomical sins. It is borne in upon us that nature even in her most whimsical aberrations is striving for an impressive symmetry and will compensate in one direction for the error made in another. Hence it is a matter of common report that certain men of unattractive visage are extraordinarily winsome. They are frequently gifted with the most soothing qualities of voice and expression, rendering their presence welcome to the sick and troubled. They are sometimes orators of a strongly magnetic type completely effacing (witticism unintentional) all disagreeable impressions of structural defect by the compelling attributes of natural eloquence. It is a notable fact that homely women find favor in the eyes of many men, for many such women are married. We are all aware of the welcome accorded certain "plain" girls at social gatherings because of their engaging manners. The term "engaging" is frequently applicable in its literal sense for they are apt to contract matrimonial alliances more expeditiously than their better favored but less agreeable sisters. The fair face of nature is marvelously alluring even in its apparent vagaries. The sun shining upon the craggy heights is sublime and inspiring. The same sun shining on the peaceful and trim-cut valley is equally entrancing. Aside from the purely esthetic consideration of the face let us remember its wonderful efficiency as a piece of mechanical engineering. No stone crusher ever devised possesses relatively one tithe the force of the human jaws. No nicely adjusted mechanical contrivance ever approached the precision and delicacy of the human eye.

All in all there is so much to extort admiration in the contemplation of the most ordinary face that it transcends understanding why any rational being will be guilty of the folly of deliberately marring it. And this marring is done on the imbecile impulse of improving it. "To gild refined gold, to paint the lily, to throw a perfume on the violet. . . . is wasteful and ridiculous excess." And the bard of Avon might have added, "To dull the mirror of the soul with daubs of garish paint is hideous desecration." Conceive the hardihood of seeking to supplant the natural hue of health with that compounded by the bungling hand of man! Conceive the consummate conceit of attempting such an outrage! And yet this foolish, impudent, and abortive practice is so prevalent among the females of every community that it might be styled almost universal. I have made a very sweeping assertion, but it is easy of corroboration on every side. Not only are the completed results in evidence in ballroom, parlor, church, and public conveyance, but even the method of application is brazenly displayed by certain shameless habitués in utter disregard of the comment of the onlookers. You and I have seen a woman powder her nose in a street car. We have seen her rouge her cheeks as boldly. As to the finished works of art that flaunt their pink and white enamel in haughty defiance of adverse opinion they are so numerous as to arouse only a languid repulsion.

It is a curious commentary on the whole wretched business that as men emerge from savagery they cease to adorn themselves with paint and women begin to resort to it! Whether this has anything to do with the mental development of the sexes or with an altered perspective of sexual attraction is a problem with which we are not immediately concerned. But we are immediately concerned with the damaging results to the skin of this survival of barbarism. It is a self-evident proposition that if nature intended the epidermis to be smeared with cosmetics, it would have provided the means of elaborating them in the cutaneous follicles. The sebaceous glands are there to provide a lubricant, coursing through the corium are the pink tinting capillaries, and spangling the rete are the pigment granules that give to the varied races their distinctive hue. But never a trace is there of a paint-producing plant. No provision is there for coloring the cheeks but the flash of a healthy circulation. Every artificial expedient to counterfeit the beauty of nature's touch is liable to arouse a rebuking reaction more disfiguring than the trivial defect that it was designed to hide. A chronic dermatitis is inevitable from the continual closure of the sweat and sebaceous glands. Retained secretion accumulates and the frustrated efforts at expulsion arouse a low-grade inflammation characterized by thickening and roughening of the skin and the development of acne. Besides the purely obstructive effects of such applications they possess in most instances an irritating quality of their own that aggravates the evil. If they are composed (as many are) of mineral dyes the danger of systemic poisoning from prolonged absorption is to be gravely reckoned with. The skin of the habitual user of cosmetics, when it is possible to get a glimpse of it at all, is dry, harsh, and coarse. Its natural lines are deepened by the precipitation into them of the solid constituents of the preparation employed. Its pores are visible and usually conspicuous. From prolonged abuse of its delicate fabric it takes on the repulsive aspect of precocious degeneration, so that at thirty when a

woman's comeliness should be in full luxuriance, the bloom and rondure of health give place to the seamed and haggard mask of menacing senility. As in every other interference with the normal operations of nature, absolute dependence must soon be placed upon the artificial substitute. Those who will not undergo the inconvenience of rational dieting and adequate exercise will be forced to depend on medicinally induced defecation. Those whose nervous systems have been long habituated to alcoholic stimulation. may not forego their deleterious indulgence without cataclysmic developments. The smoker deprived of his narcotic becomes a restless, reckless wreck oblivious of every consideration but the gratification of his desire. So the skin, that has been put to unnatural uses, that has been made a mere parchment backing for the decorator's brush, that has been long deprived of its privilege of basking in the sunlight and feeling the reviving influence of the heaven-born breezes, that has been loaded with cloying, clogging, clammy messes until the vitality has been squeezed out of it, presents all the evidences of fettered function and can no longer be made presentable save by continual recourse to the abuse that has been its ruin. The possessor has become and must continue to be a living sham, subject to all the misconstructions that irresponsible tongues may idly or viciously put upon her weakness. For there is no question that many virtuous women paint, under the absurd delusion that they are improving on God's handiwork and magnifying their natural attractiveness. Neither is there any question to what class the casual observer mentally assigns these misguided meddlers. Phryne and Phyllis meet upon the common ground of ruthless, useless vandalism, and cannot hope for charitable distinctions.

It is a suggestive fact that a large preponderance of the cases of acne occur in women. Other skin diseases are distributed with some attempt at impartiality, but acne is by long odds a female affliction. There must be a reason for this. The economic equality of the sexes in the industrial world makes the disproportion more glaring, for it cannot be pretended that difference of occupation is responsible. Men and women do the same sort of office work and the same sort of factory work, and live under the same conditions, and yet the one sex is relatively free from what is virtually an obsession with the other. There must be some factor or factors determining this discrimination. What are the two things that women do and men eschew? Both have practically the same vices of eating and drinking, and both subsist in the same unhygienic environment, but only women paint their faces and distort their forms with corsets. Herein lies the crux of the whole divergence. It is objected that the wearing of corsets is not confined to women, but we are not interested in the foppish similacra of men who ape the ways of women. We are speaking of clean-cut and unimpeachable illustrations of the two grand divisions of the race. Hybrids and degenerates cannot be put in either category, exhibiting as they do the evil propensities of both. The corset produces enteroptosis and this produces intestinal stasis, whence arises constipation with its mischievous action on the skin. To this proposition there is no dissent. That is to say, there is no dissent among men. Those who are guided by inordinate vanity to torture their forms into what they foolishly consider more alluring outlines, vehemently (to a woman) deny the injurious consequences of the wretched practice. And yet it is an open secret that after eating a reasonably hearty meal they seek the first opportunity to loosen the tormenting harness and give their viscera a chance to functionate. In a flash comes the retort (for women are particularly jealous of the privilege of deforming themselves) that men are also the victims of enteroptosis. Conceded, but to a very much less extent. It is not contended that the corset is the *only* cause of this abnormality. Obesity, gluttony, sloth, and structural defects are contributory in both sexes; but in the one sex the universal surrender to the seductions of vanity adds a factor directly and especially pernicious. This is not written with the delusion of inducing women to abandon the corset. Mighty men have thundered against it with the fervid eloquence of the inspired crusader, only to be met with the contemptuous indifference of the complacent offender who "would sooner be dead than out of the fashion." Love has been styled the "sublime folly of woman." I think that the corset deserves that distinction. There are some women who do not love foolishly. There are some who love very wisely and very craftily. In that particular regard they frequently display a depth of resource and resolution inconceivable to the average male understanding. But in the matter of the beloved corset they are of one mind. It is significant that the pulpit does not take a hand in the argument. One or two enthusiastic divines have attempted, within the memory of man, to shake the adamantine will of woman on the grounds that the corset injured her health, distorted God's handiwork, and by emphasizing her natural physical peculiarities tended to the aggravation of male concupiscence. Those misguided men are dead and their graves are unknown. Their followers in the ministry to-day realize that if they wish to keep the women in the church they must admit the corset also. While every one of the objections cited is just as cogent as it ever was, they are dissipated like a puff of wind before the unbroken front of fashion's cohorts who would give up their church before their corset. So while constrained to state the case against this engine of destruction, it is only to complete the record and round out the etiology. The futility of treatment by removal of the cause is freely conceded. The cause is irremovable. A famous corset house in its advertisement says, "The average woman cares more for her figure than for her health." Cosmetics and constipation, devils twain in the disfigurement of the female countenance, are to be exorcised by different methods of attack. As we have seen, the prevalence of constipation among females is due to the throttling of the struggling viscera by the form-moulding corset. Forced by an insuperable resistance to concede the corset we are driven to expedients for the mitigation of its evil consequences that are wretchedly ineffective, and in the very nature of things interminable. We are at a tremendous disadvantage in this, for vanity is working against us. We must be content with whatever half success we may achieve.

But with regard to cosmetics, a vigorous presentation of their injurious action on the skin may arouse vanity in support of our position. Let us persuade the face painters that instead of enhancing their beauty they are rapidly destroying it and the very pertinacity that will hold a woman on a dangerous course because it is attractive from the esthetic side, will hold her from it if that opinion can be altered. It is possible, therefore, to enlist in

our service the very quality that it is impossible to subdue. The *a priori* reasoning that cosmetics are deleterious to the skin because they are foreign bodies interfering with its necessary activities, is sustained by the lessons of experience. Those who paint to improve their appearance soon paint to preserve it. What was a weak surrender to a yearning for admiration, becomes a stern necessity to hide augmenting ugliness. The wan and haggard hue of the unpainted actress is in startling contrast to that of the tinted Venus flaunting her manufactured charms in the glare of the spot light. We wonder at her marvelous pulchritude, forgetting in the fascination of the moment the sordid manner of its production. We do not see her in the abandon of her home, where, with her deceptive adjuvants laid aside, she comes perilously near to the fulfillment of Hamlet's prophecy when in apostrophizing the skull of Yorick he exclaims: "Now get you to my lady's chamber and tell her, let her paint an inch thick, to this favor she must come." Yet sometimes this actress has a keener appreciation of the fitness of things than her "lay" sister and confines her facial decoration strictly to the demands of business, thereby limiting the damage to her integument in a very material degree. And still the damage to her integument is manifest in the unwholesome aspect of the steady user of make-up. The same unwholesome aspect would be discernible in the unprofessional users of make-up if it were possible to catch them in a moment of unpreparedness. But the necessity born of their vanity keeps them ever on the alert and opportunities to see beneath the surface are rarely afforded. Such opportunities, however, are occasionally vouchsafed the physician who may be called in the stress of acute illness, or may be consulted for the disfigurement resulting from the persistent abuse of the skin. As noted in passing, one of the most annoying and conspicuous varieties of this unfavorable cutaneous reaction, is acne. Every physician is familiar with the preternatural perversity of this reproach of dermatology. Once established its obstinacy might very soberly be termed malignant. The puerile inefficacy of the best esteemed plans of treatment is notorious. Attention to the bowels and diet and prodigal profusion in the use of lotioalba, may be maintained for months and even years without mastering the exasperating pest. Some of this ill success is due no doubt to the unsteadiness of the patient who will not be true to herself and will violate the rules laid down for her guidance. She will eat sweets and and sweetly deny it. Why patients will palter with their own interests and strain against the regulations made to help them is a problem of which we have no solution. The late Edward G. Janeway was heard to remark "Never believe anything a patient says unless he can prove it." This was drawing it rather strong, but it undoubtedly was an intentional overstatement, for the sake of emphasis, of the unreliability of the average clinical history. But we cannot hope to make people over and must deal with them as they are, not as we would wish them to be. From this viewpoint acne is a therapeutic fiasco. Here again startling exceptions may arise to discredit our prognostics; but taken fore and bye the proposition holds. So it is prudent for the woman who is tempted "to paint the lily" to pause and weigh the consequences. If she excites a revolt in her sebaceous glands she will pay an enormous price for her audacity. She will be confronted by conditions that paint will not hide. She may tint the little hillocks any shade she will, but they will persist in their unlovely contour still. She will be inevitaby convicted of "having pimples." And this will come about irrespective of the composition of the favorite powder, paste, or cream of the seeker of the beautiful. Some of them exercise a peculiar malinfluence of their own, but all of them, even the most highly commended and "harmless skin foods" obstruct the excretory function of the normal integument and thereby tend to the production of various dermatoses.

It is asserted in defense of the practice of "making up" that many of the preparations employed are of the same character as those recommended by eminent dermatologists and therefore cannot be detrimental to the skin. This is a vicious and insidious half truth which is often more misleading than a downright lie. The truth is that dermatologists do prescribe zinc, and bismuth, and calamine, and lanoline, and the stearates, and the glycerites, and sundry other ingredients appropriated by the exploiters of cosmetics. But the falsehood consists in insinuating that dermatologists prescribe these things for a *normal* skin. Dermatologists do not treat the normal skin. They have to do with abnormal conditions only, where the problem is to get rid of a pathological process and not paint a picture. It is clear that applications may be justified to remove disease which would be highly improper if no disease existed. Therefore this plea of the "beauty doctors" to the indictment drawn by the physician is disingenuous and incompetent. The public should be warned against its specious sophistry. The prescriptions of eminent practitioners may be quoted to demonstrate the innocuousness of certain advertised formulas, but they will not be accompanied by a description of the "diseased" conditions for which they were compounded. The array of "skin foods" enamels, bleaches, powders, rouges, and other decorative expedients, designed for the transformation of homely countenances, has no place in the armamentarium of the ethical physician. His purpose is to restore damaged tissues to the normal, not to damage normal tissues for the gratification of a perverse pride. The development of acne as we have ascertained is much more frequent in women than in men because of the twin evils—cosmetics and constipation. The rôle of cosmetics in this relation is a general one, acting mechanically to clog the orifices of the sebaceous glands and prevent the regular extrusion of their contents. Some of them add an element of active irritation, and induce a complicating dermatitis. This may take the acute form under certain circumstances and spread far beyond the actual area selected for embellishment. The chest, back, and arms of the fashionable beauty in evening attire are as palpably artificial as any sculptured bust or plaster of Paris imitation. Perhaps this is a woman's instinctive concession to modesty in actually concealing what she is pretending to display. Such a broad expanse of enamel will yield a corresponding expanse of dermatitis, if it is plastered on a susceptible subject. But even when confined to the face its radius of reaction may be wide, the irritant being carried by the fingers to remote localities or reaching them through the medium of the circulation.

This latter possibility furnishes food for serious consideration, since it removes the objectionable applications from the narrow and comparatively unimportant sphere of local operation to the broader

and graver one of systemic poisoning. When we reflect that arsenic, antimony, mercury, and lead enter into the composition of many of the cosmetics, and that under the influence of heat the fatty secretion of the skin converts them into readily absorbable compounds, we are no longer confronted with the triviality of a ruined complexion but with the threat of a chronic intoxication. The results of the latter vary with the identity of the mineral involved. It will not be derogatory to the intelligence of the physician to remind him of the destructive action of lead on the nervous system. The colicky pains and peripheral neuritis with wrist and toe drop, the crippling arthralgia, and the obstinate constipation all point unerringly in the one direction. Associated with these is an anemia of the profoundest type. The kidneys take on the cirrhotic changes peculiar to arteriosclerosis. There may be involvement of the central nervous system with hebetude, amnesia, or even coma and convulsions.

There is no means of predicting who will reveal the unfortunate susceptibility that will speedily bring on this train of consequences. Any woman who blindly daubs her skin with a cosmetic of unknown composition runs the risk of a long period of ill health and torture; perhaps of permanent disability or death. There is no conjecture about this. The melancholy fate of many painters and plumbers and other manipulators of lead is a matter of record. A celebrated clinician has related the history of a man who was accustomed to take a glass of ale early in the morning at a certain saloon of which he was the first customer. After a while he began to show signs of plumbism and the manner of invasion was for a long time undiscoverable. Finally by a minute investigation of all his actions during the day this matutinal drink of his was brought to light. Cross examination elicited the suggestive circumstance that the barkeeper did not throw away the first beer drawn but handed his unsuspicious patron the fluid that had been in the lead pipes over night. The carbonic acid had made a carbonate with the surrounding lead, and this decoction had been swallowed by the patient morning after morning, and had gradually poisoned him. To be sure, the amount of lead in each glass was very small, but that emphasizes the point we are seeking to make with regard to cosmetics, namely that the continuous absorption of minute quantities eventually overcomes the eliminative powers of the victim and induces a chronic toxemia. Some subjects are so readily affected by this particular agent that the penetration of the skin is not essential. The inhalation of the infinitesimal amount possible from an application to the face is competent to exert a destructive action on the blood and nervous system if sufficiently prolonged.

Arsenical combinations are particularly injurious to the skin, for arsenic is a decided irritant and tends to excite in any proportions a corresponding degree of dermatitis. The fearful fulness of its power is seen in the reaction to Marsden's paste applied for epithelioma. It induces a deep slough in an extensive area of violent inflammation. In lesser concentration arsenic will be attended by less stormy results. But in any proportion it is by its very nature a cutaneous irritant. The usual interference with circulation and excretion, caused by the menstruum in which it is incorporated, intensifies its destructive action. The tendency of living tissue to resist attack is checked by the pressure of the incommoding paste or paint. Bartholow says: "Weak applications of arsenic may excite dangerous symptoms by diffusion into the blood. Numerous instances have occurred in which wall papers colored with arsenical pigments have poisoned the occupants of an apartment. Garments covered with aniline dyes, fixed by arsenical mordants, have induced local ulcerations, and systemic symptoms from absorption of arsenic. Applications to a large portion of even the unbroken integument, have, in numerous instances, excited dangerous symptoms and have produced fatal results." It naturally follows from the foregoing that the persistent coating of the integument, sometimes over quite extensive areas, with a concoction of arsenic is liable to entail a very serious penalty. Nausea, vomiting, diarrhea, gastralgia, palpitation of the heart, dyspnea, albuminuria, and edema are among the general disturbances frequently observed. Puffiness of the eyelids is quite characteristic of arsenical overdosing and indicates concomitant involvement of the kidney.

The distinctive cutaneous developments following the absorption of arsenic are a yellowish brown or mahogany pigmentation and a keratosis of the palms and soles. The hair follicles escape at first and stand out in sharp contrast to the surrounding discoloration. This produces a delicate lace-tracery effect that is quite fetching both in an esthetic and a diagnostic sense. The pigmentation gradually obliterates this design and becomes general over the affected surface. It is apt to be very widespread and persistent. It may be induced by trivial doses in those predisposed. In fact it is astonishing to find that a few drops of Fowler's solution have been thus prodigal of mischief. The color may endure for months and even years after the cause is abandoned. The keratosis of the palms and soles may become of the most aggravated type, persisting long after the drug is withdrawn. It has not infrequently been the starting point of epithelioma. This deplorable sequel is now regarded as more or less imminent in any such case over forty. It is reasonably certain that some cases of herpes zoster are attributable to the administration of arsenic or its absorption through the skin. This is a fair assumption when we consider the competency of the drug to produce peripheral neuritis. There is no incongruity between an attack from the same cause on the terminal nerve filaments and an attack on a posterior nerve root.

Other dermatoses, of lesser obduracy but nevertheless distressing and disfiguring, have been observed in the course of arsenical medication. They may be erythematous, papular, vesicular, bullous, scarlatiniform, morbiliform, petechial, desquamatory, or even gangrenous. Like other drug eruptions, these various manifestations represent intensity of intoxication or individual susceptibility.

Even the laity is possessed of some information regarding the dangers of mercurial poisoning. "Salivation" is a term quite well understood outside medical circles. The liberal dispersion of syphilis has contributed largely to this educational acquisition. Not only the patients but their friends and confidants are acquainted with the untoward effects of injudicious freedom in pushing mercury, for, strange as it may seem, the luetic subject labors under no sense of humiliation, and frequently assumes a swaggering attitude toward his less distinguished associates. He will discourse of his symptoms and the action of remedies to his awe-struck not to say envious listeners. Another factor

in the dissemination of this sort of knowledge is the tradition that has carried down to us the methods of the practitioner of fifty years ago in the face of most of his pathological problems. He gave calomel with a liberal hand and for the mose diverse conditions. It seemed to be looked upon as a species of talisman, working wonders in an utterly inexplicable way. Naturally the public soon experienced the undesirable consequences of this reckless indiscrimination. Fireside lore outweighs the enlightened tale of history, and, despite the practical abandonment of the freehanded administration of this treacherous drug, the memory of its past exploits is indelibly fixed on the common mind. So it has come to be a popular belief that mercury is a dangerous drug and that its peculiar propensities are to loosen the teeth and lodge in the marrow of the bones, where it makes painful barometric responses to changes in the weather. The loosening of the teeth is an established fact. The retention in the bones is a bit of fable founded on the necrosis that follows chronic poisoning extending over a long time. Marked anemia is a constant consequence of excessive medication or continual absorption.

It is well within the bounds of moderation to assert that the constant employment without medical supervision of topical applications containing such a powerful poison is decidedly imprudent. On diseased surfaces it is possible to use preparations of a strength utterly inadmissible on the normal skin. Note the freedom with which ammoniated mercury ointment is rubbed into patches of psoriasis and also note the rapidity of its systemic action when syphilis is treated by inunction. Constant contact with the least penetrating salts of mercury will sooner or later break down the epidermal barrier and permit of the invasion of the circulation. The dermatitis that is aroused by the bichloride is not only distressing and unsightly but leaves breaches for the entrance of this least readily absorbed of the aforementioned salts. It is never possible to forecast an idiosyncrasy. Until the damage is done we can only administer the general caution, "be careful." We know that some of the users of the mineral dyes, bleaches, or varnishes are going to get a disagreeable surprise. In the absence of signs for the detection of the susceptible, it is sound sense and good strategy for all to avoid the risk.

The salts of antimony are cutaneous irritants like the others and, being taken up by the lymphatics, under favoring conditions induce the gastrointestinal irritation and marked enfeeblement characteristic of this poison.

The devotée of fashion with alabaster arms and bust and delicately tinted visage, need well maintain an alimentary canal of unvarying sweetness, else the eructation or other evasion of sulphureted hydrogen may work a marvelous and confounding transformation. It is said that the odor of onions is equally perilous, but this contingency will hardly arise, as onions are not in favor among such refined and gentle natures, especially before a public function.

The toxicity of wood alcohol has been firmly impressed upon the popular comprehension by the newspaper accounts of the disasters that have followed its employment in the manufacture of cheap "whiskey." The term "manufacture" is used advisedly, because instead of being the result of distillation this concoction is made by hand by the mixing of various ingredients designed to give the taste and appearance of the real liquor. Of this danger from wood alcohol the public has been sufficiently warned. But there is another phase of the subject that has not been duly emphasized. That is the possibility of absorption through a damaged integument in amount adequate for the production of toxemia in those unfortunately predisposed and the probability of the excitation of a distressing dermatitis in any integument exposed to its influence. We see those who use it in the trades, such as painters and wood polishers, frequently attacked by a disabling inflammatory reaction. Those who use it in the "art" of makeup as a menstruum for their enamels are liable to the same disagreeable experience. And it is certain that the tradesmen engaged in the manufacture of such objectionable products are not above the unconscionable substitution of the cheap and dangerous variety of alcohol for that distilled from grain. Here is a situation that is big with peril for the vain or vicious victim of a yearning for unmerited admiration. A dermatitis once provoked may prove extremely intractable, and may leave the skin more vulnerable to the attacks of other irritants. Not only that, but the skin may never regain its former tone, some degree of harshness and aridity persisting as a consequence of the violence to which it has been subjected.

Realizing the utter futility of the appeal to reason in the matter of the corset, we are not fatuous enough to expect any fuller response in the matter of cosmetics. Our gravest warnings against the poisonous effects of many of these would be flat and impotent, were it not for the fortunate circumstance that injury to the health is accompanied by injury to the complexion. The dread of this direful possibility should give the painter pause. For here is no trivial question of the maintenance of the normal function of the vital viscera and the prolongation of vigorous existence, but the transcendent consideration of the preservation of female seductiveness. Fashion inculcates a calm contempt for every argument based on physical well-being; its only goal is physical well-seeming. It is the art of allurement. Every opposing contention, no matter how serious and well sustained, is airily waved aside as wholly inconsequential. We are not pettishly scolding about something we cannot mend. We are stating a situation to which we have to yield, but which we hope to turn to the advantage of our sisters in spite of themselves. If we can succeed in convincing them that the use of cosmetics, instead of improving their appearance, rapidly and permanently spoils it; if we can succeed in aligning on our side the love of admiration that brooks no opposition, that rides roughshod over every plea of bodily health and religious duty, we shall have effectually disposed of one of the causes mercilessly marring the fair face of nature.

616 Madison Avenue.

Orange Peel as a Laxative.—Rosenthal recommends the following: Fresh orange peel is boiled for half an hour in water. This first very bitter infusion is thrown away or utilized for washing or for the teeth. The peel is then boiled a second time for 30 minutes in slightly sugared water and afterwards spread out to dry. It is then ready for use. The peel of a single orange forms a sufficient dose to excite the evacuation of the intestine, but this evacuation is not purely mechanical. It is accompanied by a flow of bile of variable amount, and this biliary activity continues for several hours.—*The Lancet.*

NEUROTIC MANIFESTATIONS IN CHILDREN.*

By ADOLPH STERN, A.B., M.D.,

NEW YORK.

In this paper I shall present some phases of the neuroses that occur in children, viewing them especially from the standpoint of etiology and therapy.

Since the symptoms of a neurosis are manifestations of psychic (as a rule, unconscious) processes, it is only by tracing these psychic processes to their source that we can arrive at a rational form of therapy. Psychic phenomena should receive psychic treatment, though at times drugs may be given and other physical agencies used to tide over an acute period. All forms of treatment other than psychic, are purely adjuvants, and useful to meet immediate symptoms only. Through them alone we cannot expect the best of results, for they do not remove the etiological factors present. The well-informed medical man is no longer satisfied to meet surgical conditions with symptomatic therapy only. The various digestive disturbances of a chronic appendicitis are only permanently cured by the removal of the cause, remote though it apparently be.

We analysts attempt the same procedure. Every symptom prompts the question: Why? We attempt to answer this question not by attributing to the causation of the symptoms a general etiology, but by seeking, as the tendency now is in psychiatry and in the neuroses of adults, an individual psychological etiology and removing it. Unfortunately we are not always successful, so very many and at times diverse factors entering into consideration. Nor can the surgeon invariably claim success with every patient suffering from appendicitis on whom he operates. We do not, however, on that account decry the operation of appendectomy.

In the treatment of the neuroses of children we are enabled to make "short cuts," being, as we shall see from the patients' histories, enabled to get at the source of the trouble quite readily. The psychic processes of these little ones are not very involved. Nor is there present the vast amount of repressed emotional material to uncover that exists in the case of adults; moreover, I believe that children are less inclined than adults to disguise their desires or impulses. All these factors warrant us in expecting more rapid results in the treatment of the neuroses of children than of adults.

I shall detail the histories of three patients, illustrating as many aspects of neurotic manifestations. In the first patient described I have analyzed the psychic processes and am reporting them sufficiently in detail to show the etiological factors concerned in the formation of the neurosis. In the other two patients no analysis was attempted, the therapeutic measures being instituted, so to speak, empirically, basing the treatment on the knowledge gained from the analysis of adult neurotics.

Let us now go into the history of these little patients and see to what extent they bear out my prefacing remarks.

Case I.—The first case is that of Elsie S. She is the fourth of a family of five children, and the favorite daughter of a markedly neurotic mother. She is of a retiring, bashful, reticent disposition, given to day dreams. She is a bright child, of Russian parentage, only three years in this country, but in no way behind in her studies on that account.

This little patient was referred to us in February, 1915, with the diagnosis of epilepsy. When first seen by me, she had been suffering for two months with nocturnal attacks of pain and "drawing" sensations in the left side of the face, followed, after these had lasted for a varying length of time, by unconsciousness of ten to thirty minutes' duration. The pain and spasm ("drawing") always occurred in the left cheek; at no time were convulsions or loss of sphincteric control present. During the unconscious state the patient could hear but apparently not understand what was said; could see but not recognize people, and was unable to talk.

The first attack consisted of pain and a drawing sensation in the left cheek. The second attack, two weeks later, consisted of pain and spasm, followed by unconsciousness. During the third attack of pain, an older sister, with whom our patient slept, pressed her cheek to that of the child. The attack (pain, drawing, and unconsciousness) was thereby diminished both in duration and intensity. The succeeding attacks were ameliorated in the same way, until early one morning, when the patient had a "spell," and finding that her sister had already risen, she jumped out of her bed and ran to that of her mother, threw herself over the body of the latter, and then fell to the floor in a faint. The unconsciousness this time lasted about half an hour. All the following attacks were similar to the one just described. Up to the time I saw the patient there had occurred eight attacks.

One can picture to himself the anxiety in the immediate family such "spells" produced, especially in the markedly neurotic mother. During the unconscious state the patient received the solicitude and tender care of her relatives, being rubbed with cold water and alcohol, etc., and exhorted and entreated to speak, and "wake up." After "coming to," she was placed tenderly in bed.

To the psychoanalyst (and I feel sure ere long others would be likewise impressed) the outbreak of a neurosis represents an unsuccessful solution of a problem with which the patient has come face to face. He solves it to the best of his ability, being unable to forego that which he desires, and at the same time maintain his emotional equilibrium. The difficulty is overcome, but at the cost of a neurosis. This is true of adults, as proven by analysis, and the same holds true of children.

A thorough local and general physical examination proving negative, and diagnosing the case as a functional neurosis (hysteria), I directed my efforts to the emotional sphere in an attempt to find the cause of the disturbance. On close inquiry I learned from the patient that for some months before she came under my care she had realized that her sister, with whom she slept, had a suitor. The fiancé of her sister was no favorite with our little patient, nor was the husband of the oldest sister, on the occasion of whose marriage the patient felt that she had "lost" a sister. The brother-in-law was strongly disliked for taking the sister away. These same emotions (jealousy, hate, depression) were again aroused in Elsie when she learned that her sister was in love; these same emotions were intensified when, about one week before the onset of the neurosis, the engagement was announced. The patient felt very keenly that she was "losing" her sister. To the former it appeared that the sister was going away, was leaving the patient, who did not realize that a sister is a sister, whether married or single. If, however, we place ourselves in the position of our patient in her attitude toward her sister, we see very readily that to Elsie the older one stood in the light of a sister plus something more, and it was this "something more" that our little patient was losing, and not her sister. What is the added factor which looms so large in the eyes of our patient? To my mind, the added factor spells love, or lover, to the loss of which the patient could not adjust herself. Naturally this lover-like attitude carried with it a feeling of enmity toward her future brother-in-law, who deprived the patient of that which she herself so much desired. Our patient did not (nor does any neurotic) consciously realize that her attitude to her sister was that of a lover, nor were her symptoms consciously brought about. Yet to the one who seeks, she betrayed by means of her symptoms that which she attempted to hide.[1]

Since then Elsie felt that her sister was "leaving" her, an attempt on her part to prevent that separation

*The cases here reported are patients from the Neurological Clinic of Dr. B. Rosenbluth, Mt. Sinai Hospital Dispensary. I hereby express my appreciation for his courtesy in permitting their publication.

is only a natural impulse.[2] Or if a separation be inevitable, an attempt on the part of the patient to make the most of the time that still existed before the separation actually took place naturally follows. The child sought to accomplish this by becoming sick; if she could not stop the marriage, at least she could get, through sickness, some attention from her sister that she could not if she were well; and when, during an attack, the loved object was absent, the mother or the rest of the family[3] was chosen to make up in part at least (by means of attention and solicitude) that which she sought, but could not at the moment obtain, from her sister. This brought about the second phase of the illness—the jumping from her bed and fainting on the floor.

I have attempted to show, step by step, the mechanism of the neurotic manifestations, connecting them with their causes. Naturally steps for curing them are instituted with the etiological factors in view.

The sister being responsible for the first phase of Elsie's illness, we readily remove this cause by having the patient sleep in a separate room. The second phase (jumping out of bed and fainting) is a more difficult problem. Any one who has attempted to urge a fond, morbidly anxious, neurotic mother to pay no heed whatsoever to her child when in a faint can very easily understand the difficulties I had to overcome. Patient persistence will, however, achieve results, as it did in this case. I urged the mother, and incidentally the rest of the family, to pay no attention to the child when in this condition—apparently to neglect it.

To the patient, a very intelligent child, I explained that her sister, whether single or married, was still her sister, and that the marriage of the latter in no way changed the relationship that previously existed between them.

No direct medication to control the "attacks" was administered. As a placebo, small quantities of a rhubarb and soda mixture were given.

During the first month that I saw Elsie she had three attacks; in the next month only one, one in the third month, and none since.

The second case is typical of a very common form of neurosis, usually misnamed and treated as chorea. I do not refer to tics, or habit spasms, for these are very easily distinguished from Sydenham's chorea. The differentiation (from chorea) of the neurosis I have in mind lies in the picture as a whole rather than in any particular symptom. Some of the important differences are as follows: In the neurosis no temperature is present and no endocarditis develops; those children suffering from the neurosis are often sick for months or even years with remissions or exacerbations of the malady rather than true new attacks or intermissions. Sydenham's chorea comes on usually in the spring, and its duration is from six weeks to three months. In the description of chorea most authors lay stress on the neurotic element present both in the patient and in the family. This is a very important etiological factor, not in true chorea, but in the neurosis, and to my mind aid us greatly in distinguishing Sydenham's chorea from the neurosis. We frequently hear that overstudy, nervous strain, or the presence of other cases of "chorea" among the children precipitates an attack. This is very true, and a very frequent cause, not of Sydenham's chorea, but of the neurosis; for as I have shown in the preceding case (and it is true also of the present case) an outbreak of a neurosis serves the patient a definite purpose.

Case II.—The patient, R. S., 10 years of age, came under my observation in the out-patient department of the Neurological Clinic of the Mount Sinai Hospital in June, 1914. He is the only child of an elderly father and a young, markedly neurotic mother. The boy had gone through the ordinary diseases of childhood without any sequelæ. Emotionally, even early in life, he showed deviations from the average child. He was self-willed, obstinate, throwing himself on the floor in outbursts of violent temper if denied a wish. To prevent a too frequent repetition of these incidents, the indulgent mother often acceded to the child's wishes. The patient suffered from nocturnal enuresis between the ages of 6 and 8 years; and also from rectal incontinence, even up to the time he came to me for treatment. This occurred regularly (and also on other occasions) when seeing in the "movies" scenes of violence (fighting, or cowboys riding on horseback). The child had always been "mothered" too much, being at times dressed, and up to the time I first saw him always bathed by his mother. He had always slept in the same room as his parents, and frequently, especially if restless in his sleep, was taken into his parents' bed. This had occurred with increasing frequency in the past three months.

The present history is that for the past two months the child had been more restless at night than usual, could feed and dress himself only with difficulty; that his gait was so clumsy that he frequently tripped, and that his speech was indistinct. A physical examination revealed a well-developed, well-nourished boy (despite the mother's statement that his appetite was poor), with no organic defect. "Choreiform" movements of the limbs and face were present. His gait was awkward. With the child lying prone and his attention distracted, all movements ceased for the time being.

In view of the present condition and the personal and family history, I diagnosed the condition as a neurosis, and not a chorea; and therefore directed the treatment accordingly. A separate sleeping room was ordered, and the parents were not to visit the child at night, even if the child called out or was restless. Moreover, the patient should attend to his own immediate wants,[4] should dress and bathe himself. The medication consisted of small quantities of rhubarb and soda mixture. I did not see the patient again for six weeks. The mother then brought him back, but slightly improved. On inquiry I learned that the child had been sent by another physician into Mt. Sinai Hospital, kept there for four weeks, and then discharged cured. However, immediately on his return home the same symptoms had gradually reappeared, and now, two weeks after his discharge, the child was in the same condition as on admission to the hospital. The mother had brought her child again to the dispensary, that we should send him to the hospital, a procedure involving a minimum of effort on her part.

While the hospital would (and did) bring about an apparent cure, due in my opinion only to the fact that the child was completely isolated from the exciting cause of his neurosis—the home environment—yet contact once more with those surroundings brought about a relapse. The permanence of the cure depends on bringing about in the home of the patient a condition akin to that which obtains in a hospital, where children's whims and fancies are not acceded to, and where no morbid anxiety is manifested over the patient's condition.

The only way this can be accomplished in the home is by obtaining the full cooperation of the mother, for she is the exciting cause in this instance. It took weeks of patient but firm endeavor, always refusing to send the boy to the hospital, before the mother carried out my instructions to the letter. During this time the child's condition remained stationary. It took but one week of "isolation," with only a placebo during all this time, to effect a cure that is permanent to this day.

Surely in this instance we have accomplished more than a cure of the child's symptoms. We have attempted and succeeded in some degree in bringing about a more nearly normal relationship between child and parent, insuring to that child a better prospect for self-reliance than he would otherwise have had, and making the mother realize, perhaps unconsciously, that her boy was growing up and should be treated as a developing being, and not as a perpetual infant.

The next case presents a very important and at the same time a very difficult problem, differing from the two preceding cases in the important respect that this patient is a congenitally mental defective.

Case III.—The child, V. P., 9 years of age, is the only offspring of neurotic parentage. The mother is a kindly, intelligent, morbidly anxious woman. The father is erratic and overbearing, rather harsh with the

boy. The patient was backward from infancy, acquiring the power to sit, stand, walk, and talk more slowly, and at a later period than normal children.

The mother brought her boy to me because he was, since three to four years of age, in a constant state of apprehension or fear, reacting violently to the least noise or to a raised voice, trembling in his entire body at a cross word or a stern look from his parents or strangers. The child did not go anywhere except when accompanied by the mother, and then literally tied to her, holding her hand or some part of her garment; at home he spends most of his time in her presence. Like the preceding patient, at the time when brought to me, he was bathed, dressed and sometimes fed by his mother. He sleeps quietly (alone in room) and his appetite is good.

An examination reveals a congenitally mental defective child, well nourished. A marked constant lateral nystagmus is present. The patient is restless, not sitting quietly in any one place for any length of time; he is in a constant state of unrest and apprehension,[5] is good-natured and kindly disposed.

As in the previous case, the treatment was instituted, so to speak, on empiric grounds. No analysis was attempted, the history itself giving me an insight into the etiology of the neurosis—namely, a pathologically strong attachment of the child to the mother and his dependence on her for many things which he should have done at this age for himself. Owing to the mental defect present, developing in this child the ability to look out for himself is, if anything, what is to be sought for. Handicapped emotionally and in mentality, there is little in sight for the boy except a life of absolute dependence either at home or in an institution. The child is far from being uneducable, in a bigger sense than that of merely gaining knowledge. True, the mental defect limits his power of acquiring an education, in the limited sense of the word. But his apprehensive state, the necessity so to speak, to be constantly on the defensive, fearing an attack from some direction, gives him so much to do with himself that it withdraws just that much energy or attention from other fields. This is well illustrated by the following incident:

About one month after I had seen the patient for the first time, the mother told me that, among other things, the boy's memory had improved. She had sent him on an errand and he had fulfilled it. Previously he regularly returned before completing the errand, saying that he had forgotten what had been expected of him. The boy's memory, however, had in reality not improved. I explain the above incident in this way. The child was by this time in a much less apprehensive state, had begun at my direction to do things for himself, to play with other boys, and was attending school in a special class for defectives. He had to some extent, so to speak, forgotten himself, and was adjusting himself to his environment.[6] There being less need of keeping on the alert to ward off an (imaginary) attack, the child was enabled to look after matters that did not pertain to his apprehensive state, and for that reason "his memory had improved." In the course of three months the child had made great strides toward a normal emotional state and self-dependence. Though one might say that the mother was at fault in bringing about, and especially in maintaining this pathological dependence, one can hardly blame her for her solicitude and too tender care in such an instance. Her ready cooperation, however, following my explanation, showed her instinctive realization of the cause of her child's condition, and to that (cooperation) was due the rapid improvement in the patient.

Summary.—In all the patients we see that the cause of the neurosis is an inability on the part of the individual to adjust himself to his surroundings and at the same time maintain a state of emotional equilibrium. By analytical treatment we attempt to achieve a twofold object. First, a removal of the cause of the symptoms; second, we seek such a change in the individual (and where possible in the environment) that he is enabled to fit into his environment more smoothly than before. This latter phase is by far the more important, for as applied to these children, it places them in a proper attitude toward the members of their family, and as a matter of course toward their environment in general. For all of us have, in so many instances unfortunately, indelibly stamped on our psyche the impression gained in the family life in our very early youth, and these impressions guide us, for good or ill, in our relations with our fellow-men in later life.

NOTES.

[1] If we assume any conscious intent or malingering on the part of our patients, we do them a gross injustice, and thereby fail to obtain a correct conception of what actually goes on in the individual's unconsciousness. The patient did not consciously realize that her attitude toward her sister was an abnormal one, yet her saying that the marriage of that sister meant her loss, betrayed that some attitude other than a purely sisterly one existed between the two sisters as far as our patient is concerned. I have elsewhere pointed out ("The identity of Peculiar Traits and Neurosis," *N. Y. Med. Journal*, Oct. 16, 1915) that to the normal, the marriage of a brother or a sister means an increase in the number of relatives, rather than the loss of one.

[2] One of my patients very early in his neurosis said to himself that his sister (who had become engaged just prior to his illness) would surely postpone her marriage till his recovery. The patient did not realize the full significance of this fancy (wish). He did not realize that his saying this to himself would unconsciously prolong his illness so as to put off the marriage indefinitely.

[3] This process represents very nicely what regularly takes place in the treatment of neurotics, and illustrates in a way what we call "transference." In this instance the mother or the rest of the family acts as a substitute for the sister. During the treatment the physician acts in the same rôle. We all know the attachment to, or interest, that so many neurotics show in the physician in the early stage of the treatment, and that this interest very often soon changes to indifference or even hostility. The analyst recognizes the cause for these phenomena, realizing that the patients center their emotions (interest, trust, confidence) in him, and that it is a necessary, though unconscious, process on the part of the patient toward recovery. If circumstances permit, these steps are explained in due time to the patient. In all instances, an attempt is made to have the patient take up outside interests, in this manner effecting as far as possible a separation from the exciting causes of the neurotic attack, enabling the patient, instead of repressing his emotions, to convert them into normal interests. For, to my mind, emotions are manifestations of energy convertible, like heat, light, etc., into other forms of energy.

[4] For the past four years this child was taken by the mother to the toilet every night, because he was afraid to go alone. Knowing this patient's pathological desire to be with his mother, it is interesting to see how the child unconsciously achieves its object by this procedure. He does not primarily desire to have his mother with him because he is afraid; in reality, he develops the fear primarily so that he can request his mother to accompany him. The desire is to have the mother with him, and as a means to attain that, his fear takes form.

[5] Fear is, biologically, an instinctive impulse for defense or self-protection. The shrinking, watchful, anxious attitude of our patient, looking with pleading yet distrustful eyes at the examiner, was clearly expressive of an expected attack against which the patient guarded himself. This attitude was constantly present. His only means of protection, however, was by clinging to his mother (dependence).

[6] His mental effort, which is necessary for all the possible though in his case limited intellectual attainment, is interfered with by his overactive emotional processes—preeminently suspicion and fear, and hence the need for the removal of these impediments to his progress.

120 West Eighty-sixth Street

Race Degeneracy.—In Boston recently 600 men presented themselves for examination for admittance to the United States Navy, and thirty were accepted, the remainder being rejected as physically below normal or mentally or morally unfitted. From these facts, Rear Admiral Albert Ross, U. S. N., draws the conclusion that we must make men of our rapidly degenerating citizens before we can make sailors or soldiers.—*Journal of the Military Service Institution.*

HOW CAN THE PHYSICIAN'S TOTAL INCOME BE INCREASED?*

By THOMAS F. REILLY, M.D.,

NEW YORK.

PROFESSOR OF APPLIED THERAPEUTICS, MEDICAL DEPARTMENT, FORDHAM UNIVERSITY, NEW YORK CITY.

I BELIEVE it will be accepted as a fact that a medical society discussion of the economic side of the practice of medicine generally fails to interest the general practitioner and as a consequence he remains at home. This may be attributed to the fact that the usual speaker is an altruistic highbrow, well situated in life from a financial standpoint, or at least putting up such a front—to use a slang but expressive quotation—that one instinctively thinks of society functions, grand opera, etc., when he addresses his fellow practitioners. He discourses on scholastic ideals, and talks platitudes as to the duties of the dear public to the profession, etc., as though the consideration of money was beyond him; after which lecturing he sits back and does nothing, and is perhaps decorated with a society chairmanship or some similar honor.

The public—bless their souls—smile a dry smile and say: "What delightful people doctors are in general, and Doctor X. in particular. Money never enters into a doctor's mind." And the doctors, the real everyday doctors—well, they go home to hard work, long hours, unpaid bills, and duns.

On the other hand, the mercenary extremist constantly aims to make the practice of medicine a purely money-making venture. Midway between these two extremes the bulk of the profession will be found, but the shouters at both ends have obscured the main issue by the clouds of nonsense on the one hand and by greed on the other, so that very little is accomplished for the genuine financial uplift of the profession. As a matter of fact, every physician does give considerable thought and discussion to money matters; only hypocrites and dreamers think that they do not. Practically every one of us discusses these questions when he meets a friend to whom he can confide his financial problems. These are not discussed publicly because no one wants to appear mercenary and so lose practice, yet in this twentieth century there are few localities where the reputation of being a good financier will seriously lessen one's practice.

There will be found few people who will deny the Government reports that the cost of living has increased upward of 50 per cent within the past two decades. Irving Fisher in his recent work on "Why the dollar is shrinking," has shown this in an unassailable way; and he concludes that there can be no question that the actual cost of buying a given quantity of staple commodities is greater by 50 per cent. than it was eighteen years ago; or, in other words, that the purchasing power of the dollar has been cut in two—the dollar of eighteen years ago is worth 50 cents now. Fisher furthermore points out that the general trend for the next two decades will be upward for the whole world, and that this will be all the more certain and more marked because of the present war. This increased cost of material things is paralleled by the increased cost of labor in practically every walk in life. I have before me the report of the Department of Labor on the result of an inquiry into the union scale of wages and hours of work, as they have prevailed in the United States since 1840. There has been a steady increase all along the line. Between 1840 and the Civil War wages increased about 10 per cent.; during and after the Civil War they rose another 30 per cent up to 1870; then they remained about stationary until 1896, when they began to rise, and they are now 30 per cent higher than they were in 1896. The present report of the Department of Labor on 93 trades for 1914 as compared with 1913 discloses that in one year 78 trades showed a marked increase in wages over the preceding year, and 15 no change. The highest scale paid at that time, one and a half years ago, was for bricklayers, who received in several cities 87½ cents per hour. In some places painters received 75 cents an hour; freight handlers in New Orleans, 61 cents, and so on. In practically every trade over-time and Sunday work was paid at double rates. Since this report was made, these rates have materially increased. The Bureau of Labor announced recently that 500,000 employees in the State of New York received 4 per cent more wages in October last than in September, and 16 per cent more than a year ago.

Let us, however, take the rates and hours of work of one and a half years ago (as quoted above) of the bricklayer of San Francisco, Cal., or Dallas, Tex., allowing him double pay for over-time work, *i.e.* more than eight hours per day, and the same for Sunday work. Granting that he works twelve hours per day and seven days per week, he will receive $400 per month, or approximately $5,000 per year. I have used as a basis twelve hours a day and seven days a week, because that represents a fair working schedule for the average general practioner. Many work more than this, but this will afford a fair average. In the case of the bricklayer, we have a mechanic who is paid for his services while he is learning his trade, who does not pay anything for his education, and whose work requires no great skill; yet he receives a compensation far in excess of that of the average physician. From a canvass among men who are intimate with the rank and file of the profession, I have come to the conclusion that the average man's income is not more than $3,000. To compare the economic relations between the money invested in a medical career, the time and effort spent in study and preparation, and the lean years, with that of the bricklayer would seem at first sight to be a joke. Economically, the bricklayer is immensely better off. In addition, let us compare the cost of the physician's occupation, his clothing, and that of his wife and children, the cost of his office and of his equipment, his medicines, his societies, his vehicle—all these things amounting to at least $1,000 per year more than that of his bricklayer neighbor—and one finds the condition still more serious. To all this must be added the fact that whereas the bricklayer's price per hour must and will increase as the years go along—it has done so in the past twenty years, and his union will see that it so continues—the physician's rate of pay is but little better than it was thirty years ago. Here and there throughout the country it is better, particularly in the West, but in the main it has, on the other hand, depreciated in the sense that the dollar fee of twenty years ago has now a producing power of less than fifty cents.

I might compare the physician's with other occupations, and the same thing would be found, and this is even so in the other learned professions. Whereas a decade ago a young lawyer would gladly

*Read before the Philadelphia County Medical Society, January 12, 1916.

write a deed for $3, now he must have $5, and the same scale of advance applies with other work of the law.

Some time ago I saw an account-book of a physician practicing near Plainfield, N. J., during the Revolutionary War. He was a good book-keeper and he charged from thirty-six to fifty cents for each visit. This seems ridiculously small, but when one compares the purchasing power then and now, it amounts to between $2 and $3 of our money.

In the fee table as drafted in 1798—118 years ago—by the State Society of New York, we find the charge for an ordinary visit to be $1; if with a single dose of medicine, $1.25; if for a contagious disease, $5 for first visit and $3 for succeeding visits. A night visit was $5 and mileage charged at the rate of $1 per mile. When medicines were dispensed, the charge was 12 cents per powder or pill, and 12 cents per ounce when liquid mixtures were dispensed. Curing gonorrhea was $10 to $20, and syphilis, $25 to $100. A tonsillotomy was $25; an ordinary confinement, $15 to $25, and for a difficult case up to $40.

When one considers that these rates of 118 years ago might well stand in many communities to-day, and that withal the purchasing power of money has made the dollar of that day worth from 30 to 40 cents now, one can easily see that so far as professional fees are concerned we have stood still. The physician should according to that scale receive from $3 to $5 per visit.

Again, let us compare the services now rendered to the public by the average physician with those of a generation ago. The long and patient examination, the laboratory work, the office treatment, the rapid answering of calls—all of you know that in our boyhood when a physician was called, one was fortunate if the patient saw him before sundown. Now, your telephone and your auto make it a matter of minutes, yet compensation has not increased. Ours is the only profession that has not capitalized our increased services, and we must do so and do it now or suffer the consequences.

Now, if the cost of living has increased 50 per cent, and if the wages in practically all the other trades and branches of labor have risen while we are standing still, as a profession, we are fast running into bankruptcy. Individually, you will say that this is not so, and as far as the individual members of this audience is concerned it may not be true, because unfortunately the men who most need such advice are not society members, and yet it is for them that we must labor to bring into being a living wage. One says to himself: "I am better off than Dr. So-and-So, who was my preceptor thirty or forty years ago, and he was one whom I then thought to be a successful man; I have more luxuries; I have an auto, where he had an old horse," and so on. So far as his condition of that time was compared with the standard of the present you are doubtless right; but compared with the standard of his friends and equals of that day, most of you will agree that he was economically better off. And yet, compare for a moment the cost of his education with that of yours, and the other expenses, and you will be more forcefully struck by the disproportion between your condition and his from a financial viewpoint.

In discussing this subject, I am going to depart from the old idea that the physician is a poor business man. As I see the present generation, I should say that the genus has changed, that collections are made and books are more carefully kept, but that altruism is just as prevalent as of old, and this gives us the impression of being very poor business men. Of course, in the long run it is just the same from a financial standpoint. Methinks I hear the note raised, "the practice of medicine is not professed alone for the money one receives." This I grant, and I believe we all get pleasure and fun out of our work; that goes far in compensation, but so does any true laborer—we have no monopoly in this matter—yet we must live and live up to the standards of our time and place, and beyond that of other professions.

This all leads me to the question of the evening: How are we, each and all of us, going to increase our annual income, within the code of ethics? Whether or not the code of ethics will be the rule of morals of the next generation may be questioned by some, inasmuch as what is morally wrong in one generation may be morally right in the next; but I take it that so long as we fly under that flag only discussions in that line should be permitted. There are many ways to raise one's income without the code, but he who runs counter to the moral feelings of his peers in his generation will be ostracized in medicine as in every other walk in life.

In looking for a possible increase in the income of the practitioner our first thought is, How can the fees for our ordinary services be increased? Right here, I may say that the profession is indebted to Rochester, Minn., for many advances in surgical teaching and skill, though these might be evolved in a hundred other cities of the country, but there is one thing which Rochester has taught us more than anything else, and it might well be called the Rochester idea. It is the successful merging of business methods into professional practice. I venture to say that not one surgeon who goes there but comes away determined to place his surgical practice on a firm business foundation, and he generally does so, and medical men who go there try to do the same.

There are many ways by which the physician might considerably increase his total income, such as by better book-keeping, increasing his practice, etc., but these are individual for each physician and do not affect the profession as a whole. To raise the total income of the profession will necessitate the raising of fees along the whole fee table. Any discussion of raising the total income must take into consideration the method of charging as a basis of each service rendered. It is sometimes urged that physicians should charge by the case and not by each visit. This may occasionally work out in the instance of long illnesses, but inasmuch as most patients are seen only once or twice there is no possibility of any such method of charging in all cases, and the vast amount of work would not fit in such an arrangement. It has also been urged that the physician should charge for the time spent on a case, both during the examination and afterward, and that time expended be the basis of all charges. Lawyers do this successfully. The individual nature of the practice of medicine renders this difficult, yet in some instances it works out satisfactorily. Custom and the law have, however, settled on more or less fixed fees for ordinary office counsel and house visits in each community, varying somewhat, but much the same in each medical circle.

For purposes of discussion, we will use the rate of $1 for office counsel and $2 for a house visit, for

the ordinary general practitioner. In any case those fees may be increased only (1) by a general and concerted effort on the part of the profession in raising the fee table of the community at one time; or (2) by the individual physician raising his fees independent of his brethren, and thus setting a standard for the community.

The ideal method, of course, is to raise the fees as a whole, so as to approximate a living wage, just as the trades unions do, the living wage to be determined as the result of collective investigation. In certain parts of this country this method of general increase of the fee table has been done successfully. I know of a Pennsylvania city where it was done a few years ago, and no one would want to go back to the old conditions. A few patients were lost by those who banded together to get a living wage, and here and there a doctor backslid, but every physician in that town was much better off financially at the end of the year. All of the practitioners did not join in the movement, but all benefited by it. The result was attained by the formation of a medical union of the practitioners in the neighborhood. The fee table was published in all the local papers and the advertisement was paid for. There was no adverse criticism in the press, because the advertisement was paid for, and seldom is an honest customer scored by the press if he pays well for his advertising. At any rate, the advertisement contained a statement that owing to the high cost of living, the prices of medical services must be raised. After the nine days' wonder, there was no complaint. A special benefit of such a move is that once done a further rise as necessity demands can be much more easily accomplished.

From an extensive experience with medical economic societies, leagues, unions, etc., I have come to the conclusion that in a large city the only mechanism that can successfully bring into being a fee table is the County Society. Other societies of mushroom growth do have much more evanescent energy when they are started, and look promising, but almost invariably they fade away after a year or two. In a small community, conditions are different, and such organizations do persist; but in large cities permanent medical organization is not an easy thing to bring about, and attempts to bring *all* of the members of the profession into one body, even though the aim be for the common good, are but empty dreams. Most of the profession would rather be sacrificed than to find their names bracketed with crooked sticks and doubtful moralists. The impersonal character of the County Society is sufficient guarantee that no individual or group of individuals will thereby feather their own nests or lift themselves into the limelight. In a large city like this, such a plan is not so easily carried out, yet if such an organization as this would deputize a committee to insert articles on this subject in the daily press, paying full advertising rates for the same, and then insert the fee table, even though it cover but a few services, much good would be accomplished. Some will fall by the wayside, but at the end of the year every one will find a material increase in his income.

When this phase of the subject, *i.e.* the comparative high cost of living, is presented to the patient there is very little complaint, as the average layman does not stop to think of this disproportionate increase in the cost of medical life. The subject must be agitated and reagitated in the press, otherwise increased remuneration will be difficult; when such a thing is done impersonally, there can be no hard feeling. However, until there is some change in the organization of our present societies, the individual practitioner must content himself with raising his fees to a living wage, independently of his brothers. At present some accomplish this by having a sign in the office advising all of the clientele of the new rates. This is done particularly when the practitioner moves into a more exclusive neighborhood or into a new town, or on return from a course of study. In conversation with those who have done this, I have been told that it was successful in their practice. Occasionally a practitioner sends out such a notice to all his clientele. The average man will not do this. The commonest method employed is to provide for a gradual increase in fees, beginning with office service and extending to other services. The office fee may be raised by raising the fee for the first consultation, and allowing later consultations at the old figures. If the former office fee has been $1.00, then $2.00 is charged for the first consultation and $1.00 for each succeeding visit for that particular illness. This may be done for a short period and then gradually all of the office work may be charged at $2.00 per visit. As every one knows, the vast majority of office patients visit the office only once for one ailment, it soon becomes an easy matter to make the fee uniformly $2.00. To do this, however, one must give more service to the patient than has hitherto been generally done.

Firstly, a complete examination of each patient should be made at the initial visit. It is rare for any one to complain at the extra charge when he has seen time spent and work done. This is the chief explanation of the existence of the osteopath. A complete examination will pay in another way that is not always recognized, viz., the finding of other defects than are complained of and the treatment of such abnormalities. There is scarcely an adult who is not suffering from some defect which he considers to be of minor importance, and in many instances such diseased conditions can be remedied. If one will always keep this likelihood in mind in making an examination, the sum total of one's revenue at the end of the year will be materially increased.

At subsequent visits either a partial examination with instruments of precision, such as the sphygomanometer, stethoscope, etc., or some special treatment must be instituted. Simply to tell a patient to keep right on doing as he had been doing will not be willingly paid for at the increased price. He must feel that he is getting the worth of his money, even though he does not pay cash at each visit.

As to special treatment, it means the use of some form of mechanical apparatus, whether it be in the shape of sprays for the nose, throat, bronchi, inhalation, electricity, high frequency *x*-ray, etc. There is scarcely a disease or complaint that may not be treated by such means, and whatever may be said of their ultimate value they do make the patient feel better at the time, and for this he rarely objects to paying a larger fee than he would for the receipt of the prescription and the advice, the latter part of which may be really the most important to him. Furthermore, it often brings him back to the office, which is not the case when only a slip of paper is handed out to him.

In this matter of increasing our service to the patient our first and foremost aim should be the

increasing of our armamentarium for the relief of symptoms in our office that the patient could not possibly have at his own home. The day when a physician could hope of himself to raise his office fees while his office consists of a chair, a table, and a prescription pad will never come. The investment in such equipment can be made to pay good returns, both as to pleased patients and full purse. Many argue that physicians could not afford to spend the time. Well, if such is the case, that five or ten minutes extra service cannot be rendered to each patient, then these men are happy and prosperous, and need no advice, and will have no trouble in raising their fees whenever they wish to do so.

Many neglect to charge for the minor activities in medicine such as writing certificates. Telephone advice and explanation as to treatment should be charged for at office rates. Charging for such service never causes a loss of patients.

The raising of the fee for house visits is more difficult. However, increased service and the charging for every patient seen in such visits will add materially to the sum total. I mention this because many men neglect to charge for each and every patient seen at a house visit. The increased charge at first may be made for distance, say half a mile from the office and then nearer; or increasing the charge for the initial visit, and so on. For special services the fee can be more easily raised than for general work.

What I have said of the general practitioner applies, but to a lesser degree, to the specialist and the surgeon. The same general principles apply, and both specialists and surgeons must also raise their fees if they wish to progress in their line of work. It has become a custom to criticize surgeons' fees. This is sheer folly. It is like cutting off one's nose to spite one's face. The surgeon must live on a higher plane than the general practitioner; he must have more and longer preparation, do more work for nothing, and be longer and more uncertainly idle. His general fees at present are scarcely sufficient, and the practitioner belittles the value of his own services when he utters such criticism.

Another way of making the patient feel that he is getting more for his money is the habit of dispensing. This is, I understand, a thorn in the minds of some, and I will not discuss it, but I am quite sure that in some communities at least it enables the physician to increase his fees without lessening his clientele. Office practice is cultivated by this means in places where the fee at the office and at the house are the same. The patient feels that it is worth the extra trouble to go to the office by saving the cost of at least some of the medicines. In these days of war this has come to be a very important factor. Nowadays the average prescription costs as much as the office fee. While I do not advocate general dispensing, still the use of a few staples in conjunction with a prescription will undoubtedly add to the ease of securing the extra fee in the office.

The problem of raising the fee table in a neighborhood where the wages have risen recently offers little trouble as a rule. The same holds true in the case where the physician's practice has advanced in financial caste, *i.e.* where his patients are of a wealthier type than he formerly had. With the poor and with those who have stood still, a more troublesome question arises. One may, however, establish the standard, even in such cases, by charging the advanced fee for one examination and nothing the next; or if the old rate be allowed to them the patients are informed that they are being treated at a special rate. This will make it easier to secure the larger fee from any one who may be referred by those of poorer financial status.

In general, the practitioner hesitates to raise the fee for one of two reasons. Either he fears that the patient will not continue to consult him and that he will in the future go to a brother practitioner who is anxious to work at a lower rate; or because of altruism, *i.e.* because he feels that it would be a hardship to the patient if he takes the extra money.

The first reason will always be a stumbling block unless there be united or nearly united action; yet if one sees at the new rate only one-half the number of patients seen at the rate of the year before, the financial recompense will be the same and much better work will be done, and much better advertisers will be made in the shape of pleased patients, and the way will be prepared for a future remunerative practice. The caste recommended by such practice will grow equally, and will probably be greater than that recommended by those who deserted.

As to the second reason, altruism, we are all apt to think that the patient should make no sacrifice when he comes to consult the physician. We sympathize with him, we pity him on hearing his tale of suffering or his financial or domestic loss—and every patient who comes has one or more of these burdens. We want to lessen all, or at least as many as possible, of his sorrows, and we begin by cutting our own fees, as though we were the almoners of the world. This is an injustice to our families and to ourselves.

The annual budget of every one should contain provision for sickness, to form about five per cent. of his annual income, and this should be considered just as necessary as that for the butcher or baker. If the patient has squandered this on pleasure, luxuries, etc., then there is no reason why we should lose at the end of the rope. When illness comes to a household, no one ever heard of the grocer or butcher cutting his bills in half or lessening them in any manner; the pharmacist makes no change in his rates, nor does the undertaker. Why should we be official sharers in the misery of all mankind? And yet we all do it, have done it, and will do it again. Our ideas and words are just as much our goods for sale as the tea or sugar of the grocer.

If the patient can even at a considerable sacrifice pay the full fee, he should be so charged. Medical or surgical service that is worth while is worth much sacrifice on the part of the patient. Recovery from a severe illness or operation is worth a considerable sacrifice for at least a year thereafter. In the salvage of a ship at sea, forty per cent. of its full value is not considered too much for saving the ship; yet who will pay 40 per cent. of his entire property for saving his life? Ten per cent. of the annual salary is a fair fee for a capital operation, but as yet there is no such basis for medical services. Yet constantly by harping on this question by the profession we will gradually educate the public to pay a more commensurate fee. Some of us have found that the placing of a slip on the office desk, containing the words "Remember Thy Home" has been a good investment when such questions obtrude themselves.

There is not one of us who fails to recognize

genuine distress and treat it cheerfully without recompense, but the dubious cases are too often given the benefit of the doubt. It is in such cases that a nurse or female attendant will sense the financial situation better and more justly than we can. Those practitioners who have the financial part of their practice handled by the office nurse find that there is a material increase in their annual income. The physician living in the dreamland of the past does not want to make the giving of medical advice a business transaction. The patient of to-day, however, is essentially different from the patient of the last century. He views the going to the doctor as a business transaction in practically every instance. He has thought it out in that way, but of course he does not state it in words.

I think that any impartial observer will agree that every one of these discussions does have results; that each one goes away from these meetings determined to improve his business qualifications, just as we go away determined to do better work after listening to a scientific programme where new ideas are evolved or where the old thoughts are dressed in a new gown. Constantly having this matter drummed in one's ears, or having it before the eyes continually begets the backbone to charge a fair fee for one's services and secure a living wage. I am quite sure that books are better kept, bills sent more regularly, and many other matters of office routine better taken care of by the average doctor now than obtained a decade ago. This phase of economic study must in the very nature of things increase yearly, and societies all over the country must do as you are doing here—setting aside one or more nights annually for its study.

220 W. 139TH STREET.

THE BACTERIOLOGY OF THE RECENT GRIP EPIDEMIC.*

BY CHARLES HALPIN NAMMACK, M.D.,
NEW YORK.
ADJUNCT ASSISTANT VISITING PHYSICIAN, BELLEVUE HOSPITAL.
(From the Research Laboratory, Department of Health, City of New York.)

WE are indebted to the French for the term "La Grippe," which is derived from the verb "gripper," meaning to seize, clutch, or nab, and certainly it is a name that is thoroughly appreciated as apt by one of its victims. There has arisen much confusion in the use of the two terms grip and influenza for the most part synonymously. Many insist that influenza is applicable only to the infection that is caused by the organism of Pfeiffer, the influenza bacillus. As a matter of fact, the attacks may be accompanied by one or the combination of several organisms, among which the bacillus of Pfeiffer is frequently found, but in many epidemics in by no means the majority of the cases. Other organisms which may commonly be found are the pneumococcus, the streptococcus, and *Micrococcus catarrhalis*, of which I shall speak in more detail later.

The present epidemic, which I am happy to say seems to be somewhat on the wane, has depended upon three main factors. First, the tremendous variation in climatic conditions which has occurred in the past two months; second, the crowding together of great masses of people in badly ventilated cars, subways, and moving picture and other halls; and, third, the contamination of the air which we have been obliged to breathe by the coughing, sneezing, and spitting of those already suffering from some form of respiratory infection, usually of the common cold type. The abrupt transitions which occur in going from crowded overheated indoors to the chill outside air result in an alternating hyperemia and congestion of the mucous membranes of the respiratory passages with a subsequent constriction of the blood vessels which produces a condition of affairs that is very favorable for the reception and subsequent vigorous growth of the infecting organisms, and which may result in the development of the characteristic clinical picture and symptoms of grip.

The campaign which the Department of Health has undertaken under the direction of Dr. Haven Emerson, the Commissioner of Health, and Dr. Bolduan, Director of the Bureau of Public Health Education, has been in the main one of popular education in the prophylaxis of respiratory infections. This has been carried out chiefly through the medium of the lay press and has consisted in instruction in the meaning of "common colds," especially in regard to their infectivity, the dangers of contact with those suffering with colds, and the avoidance on the part of those already victims of all coughing, sneezing, and spitting, except under proper circumstances. This last and most important portion of the work was pushed most vigorously by the distribution of leaflets and posters in the subways and elsewhere, urging people to use the proper precautions in so doing and by the activities of the Police Department in summoning before the city magistrates all persons detected expectorating in public places. This last measure resulted in one week in more than 1,600 arrests and 1,400 or more convictions and fines.

Our work at the Research Laboratories under the direction of Dr. Anna W. Williams has been the determination in a tentative way of the organisms present in the secretions of persons suffering from common colds. Before going into a description of our methods, I should like to say a few words about the influenza bacillus and the work which has been done bacteriologically in the past on the respiratory infections. Searched for repeatedly in epidemics of grip, which had been recognized as a clinical entity for almost a hundred years, it was not until 1892 that R. Pfeiffer discovered the small bacilli in large numbers in the sputum of patients suffering from the tracheitis and bronchitis which frequently occur in its course. Since that time the most voluminous amount of work has been done upon this problem and has resulted in the finding of a great many different organisms in connection with these conditions.

This variation in the finding does not seem to be due to technical errors, but rather to the two facts (1) that people are differently susceptible at different times, and (2) that in different epidemics, various organisms seem to be more virulent and prevalent than certain others.

To illustrate this point: In 1908 Allen reported the bacteriology of an epidemic of colds in London as follows: *B. influenzæ* in only 2.4 per cent.; Friedlander's bacillus in 19 per cent. *B. coryzæ segmentosus* in 26.6 per cent, and *Micrococcus catarrhalis* in 28.6 per cent. In 1911, Niles and Hastings of Cornell reported a series of cases in which their findings were as follows: *Micrococcus catarrhalis*, 15; streptococcus, 7; pneumococcus, 7.

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B. influenzæ, 7; and *Micrococcus tetragenus*, 6 per cent. A preliminary report by Dr. George Mather of the present Chicago epidemic is that the predominant organisms have been the hemolyzing streptococcus and pneumococci. These will serve as a basis of comparison with our results and illustrate the tremendous variation in the types of organisms present in which the clinical picture is the same.

The sources of our cultures have been three, laboratory workers, private patients of doctors connected with the department, and nurses, doctors, patients, and employees of the various hospitals, but in particular in Bellevue Hospital. Before taking a case as suitable for study a careful inquiry was made into the history and symptoms, and whenever possible, a physical examination was made. Of the cases accepted for study, that is, those that were clinically grip, the facts noted were occupation, date of onset, character of first symptoms, present symptoms and condition, and in general, the degree of severity, prostration, fever, and complications; also, the history of exposure and of contact with other cases of respiratory diseases. We consider this last as being the most important of all because it furnishes us with authentic information as to transmission by contact which we regard as the essential etiological factor in the present epidemic.

In collecting our material we used two methods of procedure. Method I is used in cases whose local symptoms are chiefly nasopharyngeal with little or no cough or expectoration. A sterile cotton swab on a stick is passed well back into the posterior nares from the front and revolved several times. It is then withdrawn and a direct smear is made upon a glass slide. Another swab is then introduced and the material so collected is ground thoroughly into a tube containing 1 c.c. of beef bouillon to which a little blood has been added. Method II is employed in cases which present cough and expectoration. The patient is instructed to expectorate into a sterile glass bottle a portion of sputum which he gets up only with a deep cough. These sputum specimens should be as clean as possible and desirable specimens are not difficult to obtain from patients of intelligence when their purpose has been explained. Washing the mouth out with saline or a mild antiseptic according to the method of Kitasato lessens the possibility of contaminations from the mouth, but we have not found it essential to the obtaining of satisfactory specimens.

The specimens must reach the laboratory within 24 hours of their being obtained. Here, the further procedure with the blood bouillon culture and the sputum is the same. The direct smears are stained by the Gram method and are examined to determine the morphologic types and the comparative predominance of the organisms present. As the presence of hemoglobin is necessary to the life growth of *B. influenzæ*, the specimens are plated upon veal-agar plates by the blood drop method. A drop of horse blood and a drop of the material are placed upon the plate, gently mixed, making four dilutions, and then streaked across its surface. The swab is also streaked across the plate.

The influenza bacillus is easily recognized upon the plates by the delicate, discrete, whitish areas in the mass of blood and is further identified by fishing, smears, and staining. It has not been deemed necessary in this work to prove its hemoglobinophilic property further.

The balance of the material is employed in Part II of our process of identification, to wit, the isolation of the pneumococci and streptococci, if any be present. As you no doubt know, the work of Cole, Avery, Dochez, and others at the Rockefeller Institute has shown that there are certain forms of pneumococci that are virulent for human beings which are also very virulent for white mice.

One c.c. of the material is injected into the peritoneum of such a mouse. Six hours later, if pneumococci are present the mouse is dead. Autopsy reveals a suppurative peritonitis. The suppurative fluid is washed out of the abdominal cavity with sterile saline solution and if the culture be uncontaminated we now have a saline suspension of pneumococci ready for further identification. In addition, the peritoneal fluid and the heart's blood of the dead mouse are plated out, as is sometimes necessary to obtain a pure culture.

I shall not attempt to discuss the division of the pneumococci into groups as it would bring up too many points of purely technical interest. Suffice it to say that Groups I and II are agglutinated by the experimental sera derived from immunized horses. Group III, which is the *Pneumococcus mucosus capsulatus*, is recognized by its peculiar slimy growth, and Group IV is an atypical group of all the pneumococci that kill mice, but do not agglutinate or grow in the characteristis manner of Group III. It is of interest to us only that pneumococci were found in a great many of the cases that we studied and that with but three exceptions they belong to Group IV, the miscellaneous group, which in cases of frank pneumonia gives a mortality of only 10 per cent. as compared to the 30 per cent. mortality of Groups I and II and the mortality of Group III, which has been given as 40 per cent.

The number of cases we have studied of this epidemic has been about fifty, and nineteen have shown influenza-like bacilli, but sometimes in so small numbers as not to be considered of etiological importance. The influenza bacillus was found alone in six cases and associated with some other organism in thirteen cases. The pneumococcus was isolated in eighteen cases. Other organisms found were the hemolytic streptococcus six, Friedlander's bacillus three, staphylococcus in three, and *Micrococcus catarrhalis* in only one.

I want to emphasize especially the fact that even after the severe symptoms have subsided, the patient who has suffered from an attack of grippe may remain to the community a source of danger, not as serious perhaps as a typhoid carrier, but none the less requiring such local treatment as will result in the destruction of the residual infection. To illustrate this I shall cite two cases.

CASE I.—Dr. D., interne at Bellevue Hospital; exposed in the course of his duties to both grippes and pneumonias. He was taken ill rather abruptly with the characteristic symptoms. His temperature at the onset rose to 103°. The course of his illness was one of moderate severity and prostration, lasting about two weeks and subsiding with moderate bronchitis and expectoration. Sputum culture taken at the height of the infection yielded a pure culture of *Pneumococcus mucosus capsulatus*. One month after his attack, he developed the symptoms of a sub-acute double frontal sinusitis. A swab and blood bouillon culture taken in the manner already described yielded a *Pneumococcus capsulatus*.

CASE II.—Dr. A., laboratory worker; no history of exposure or contact. Usual grippal attack beginning with rhinitis and running a fairly brief course of moderate severity. Following subsidence of attack which

occurred around Christmas and ever since nasopharyngeal cultures have been taken and always proved to be *Bacillus influenzæ* in pure culture.

Both of these cases were undoubtedly a source of danger to those with whom they came in contact and from a clinical standpoint the nasal cultures proved of distinct advantage in directing treatment to be employed locally for the protection of others as well as aimed to prevent the development of subacute or chronic infection or complications.

To summarize: (1) Grippe and influenza should not be used synonomously, but the latter term should be restricted to cases in which the influenza bacillus is present. (2) The aim of the Health Department of New York in combating the present epidemic has been to instruct the people in the dangers of colds and how to avoid them. (3) The organisms present in the secretions of patients suffering from grip have been determined by means of sputum and nasal cultures. (4) Most of the cases were seen when fully developed or declining and the presence of the organisms found is strong presumptive evidence that they are etiological agents, but we have not absolutely proven this relationship. (5) The influenza bacillus was seldom found alone, but was found frequently in association with other organisms. Pneumococci and streptococci were present in many cases. (6) The epidemic is spread by contact and many persons are undoubtedly carriers of organisms that may cause grip.

12 East Twenty-ninth Street

HEALTH INSURANCE AND THE PREVENTION OF TUBERCULOSIS.

By JOHN B ANDREWS, PH.D.,

NEW YORK

SECRETARY, AMERICAN ASSOCIATION FOR LABOR LEGISLATION.

To Dr. Frederick L. Hoffman we owe a special debt of gratitude, for he has been one of the men most active in this country in pointing out the occupational aspects of tuberculosis. Largely through his researches the interested public now knows that the incidence of tuberculosis varies among the dusty trades according to the nature of the dust and the degree to which the workers are exposed. On this account tuberculosis may be classified as an *industrial* disease.

Hardly less energetic has Dr. Hoffman been in pointing out that tuberculosis is a *preventable* disease. In 1908 he estimated that it would be wholly possible to reduce the then existing death rate from tuberculosis among wage-earners by 37 per cent. This he calculated would result in an annual saving of 29,000 lives in this country. He concluded this earlier address by saying: "With such results clearly within the reach of practical attainment, nothing within reason should be left undone, as a national, State, and individual, or social duty to prevent that needless, but now enormous, loss of human life from consumption in American industry."

To-day we are presenting a wholly practicable and reasonable method of prevention, one that is new and as yet untried in this country, although it has been tested and found effective by European nations. This new method is compulsory health insurance for all wage-earners, insurance to which employers, workmen, and the State contribute. Although this may at first seem radical, such a measure is justified, for tuberculosis is too often an industrial disease for which the employer is largely responsible—responsible to such a degree that compensation has already been paid in Massachusetts. Progressive employers have already begun to meet their responsibility by installing sickness insurance systems for the benefit of their own employees. The community is also responsible for diseases primarily due to defective housing and sanitation, and does its utmost to prevent such diseases. The workman is often responsible for his own illness, and sometimes unites with his shop mates to provide treatment, but is frequently unable to afford the necessary expensive medical care. The proposed distribution of the contributions thus recognizes the responsibility of all, and, by dividing the cost, helps the community, the employer, and the workman each to bear a proper share of the burden.

One of the most important fields of activity of the American Association for Labor Legislation has been social insurance. Through active campaigns it has aided the progress of workmen's compensation for accidents until now thirty-three of the States and territories have this legislation. This association also took the leading part in stimulating investigation of the strictly occupational diseases which are also now compensated in a few States, but it is recognized that for the whole problem of sickness among workingmen such provision is insufficient. In December, 1912, this Association, therefore, provided for a national committee to concentrate on insurance against sickness. As the result of three years' work a bill is now drafted according to standards adopted and distributed for criticism and suggestions more than one year earlier.

The plan combines the best points of the British and the German systems. Under this plan employers and workers would pay into a fund, while the workman is well, equal contributions, the joint sum of which the State would increase by one-quarter. The contributions, we think, should be graded according to the wages of the workman, and the total contribution of employer and workman should be higher in those industries or in those particular plants in which the sickness is greater than the average. In return for the combined contributions the worker would receive medical care, including medicines and nursing, a cash benefit for a maximum of twenty-six weeks in a year, and there would be funeral benefit at his death. The American employer would benefit by the increased efficiency of the workmen, just as the German employers admit they have gained. It is desirable that the insurance should be conducted through self-governing associations organized along trade or local lines so that the amount of sickness in a trade or in a particular locality may be brought to the attention of employers and workmen. This organization would lend itself very readily to an effective health campaign. As a result the community as a whole would gain by the increased healthiness and by the diminution of poverty manufactured by sickness. Moreover, State supervision of the associations is desirable in order to insure solvency and to guarantee that contributions are not unnecessarily high and benefits not unduly low.

The preventive aspects of such a measure are not difficult to discern. Under the impetus of

workmen's compensation there has been a growing movement for "safety first" and for physical examination of employees. The object of the first is to reduce *accidents*. That of the second is to improve the workman's health, thereby increasing his efficiency and diminishing the likelihood of prolonged and expensive convalescence following an injury. A comparable movement under health insurance to reduce *sickness* and its cost, may confidently be expected. The associations of employers and employees which pay out benefits would have a financial inducement to prevent sickness, in as much as prevention would result in a saving of expense. Therefore it is quite within the bounds of probability that the associations would find it to their financial advantage to urge early treatment, and even to provide the necessary hospitals and convalescent homes in order to expedite recovery. Not only the health of the workmen, but the sanitation of the factory —heating, ventilation, lighting, noise, and even the mode of cleaning—would all receive attention, since an improvement in these disease-provoking factors would avert much illness and thus reduce the premium payment.

Moreover, improved facility for medical care would be a preventive measure in itself. Many workmen who at present are unable to afford a doctor's care until it becomes imperative, would then be able to consult a physician as soon as it was clear that something was wrong. This should result in the detection of disease while it is in its incipient stage and more amenable to treatment. Thus after three years' experience with compulsory health insurance, the British physicians confess that only since the passage of the insurance act have they been able to treat anemia among the working classes.

These preventive measures are not Utopian dreams, but have been actually realized in foreign systems of health insurance. Although these preventive aspects are not confined to tuberculosis, the actual work done in promoting an effective fight against tuberculosis and in diminishing its ravages stand out, perhaps, more clearly than in the case of almost any other disease. Thus in Great Britain the provision under the national insurance act of 1911 for treatment for insured workers has stimulated a powerful national crusade against the disease. The committee which was appointed to consider the hospital accommodations necessary to provide insured tuberculous workers with treatment in sanatoria or otherwise came to the conclusion that the campaign would be more effective if the treatment might be extended to the entire tuberculous population. Later the government announced that it would meet half the expense incurred by local authorities in treating tuberculosis among the non-insured population. Within two years after the act came into operation 115 county and county borough councils in England had submitted plans for the treatment of the entire population, while only eleven had failed to make such a plan.

This really national campaign in Great Britain derived its impetus from the provisions for the insured under the insurance act, and the uninsured too have, of course, benefited. The first effect has been to increase the availability of hospital beds already in existence but previously inaccessible to workingmen; the second has been to increase the actual accommodations. Within two years after the initiation of the act in England there were 3,000 beds in process of construction, 150 tuberculosis officers had been appointed, 150 new tuberculosis dispensaries had been opened, and nearly 1,000 shelters for out-of-door sleeping had become available. During the initial eighteen months, 19,400 insured tuberculous persons were treated at home, 8,800 through dispensaries, and 19,900 in institutions, making a total of 48,000 insured tuberculous persons who received treatment. Unfortunately, the figures for the non-insured are not available. Although in time this increased provision will result in improved health and lowered death rate, the act has, of course, been in operation too short a time for any statistical effect to be manifest.

In Germany, however, where similar measures have been in operation twenty-five to thirty years, marked results have been achieved. There the invalidity funds which afford benefit in case of prolonged disability are empowered to prevent the impending invalidity of an insured person by requiring the member to undergo treatment. In addition the funds may promote general measures for the prevention of invalidity or for the improvement of the general health conditions of the population subject to insurance. Under the provisions of the law, generous accommodations have been provided, so that, in 1910, 47,000 insured persons were cared for in sanatoria for an average of seventy-three days. In addition to the actual care of disease undertaken by the funds, they have been active in a campaign of prevention, in part through health lectures and in part through the promotion of improved housing. Because of the causal relation between housing and sickness, the invalidity funds have invested large sums in improved housing schemes, until they have become the most important organization in the German Empire for furnishing cheap capital for better homes for the workingmen. The place of insurance in the struggle against tuberculosis is illustrated by the fact that during the years 1897-1910, inclusive, out of a total of 733,000 persons receiving systematic courses of treatment under the invalidity insurance funds, nearly 322,000, or about 44 per cent., were treated for pulmonary tuberculosis.

The explanation of this active campaign against tuberculosis is a financial one. According to investigations carried on between 1896 and 1899 tuberculosis holds third place as the primary cause of invalidity among adult German males. In this sense invalidity means a definite reduction in earning capacity. In 1909 the expenditure of the funds upon tuberculosis was 67 per cent. of the total amount spent upon the care and treatment of all diseases. Under such an insurance scheme it is evidently a "paying proposition" to reduce tuberculosis.

The result of these preventive and curative methods has been a marked increase in the number of cures. In 1897, 68 per cent. were so far cured at the end of their treatment that no danger was felt of their becoming unable to earn their livelihood; this percentage steadily increased until in 1909 it had reached 83. The tuberculosis death rate has decreased from 34.4 per 10,000 in 1880 to 16.6 per 10,000 in 1909, and to 13.65 per 10,000 in 1913.

These figures are sufficient to show that the campaign has been efficient. In the opinion of

leading German authorities this amount of prevention would have been impossible without the industrial insurance laws. Privy Councillor Bielefeldt, Director of the Pension Board for the Hansa cities, says, "The conviction may be expressed, after the experience of several years, that an effective battle against consumption among the working classes would have been all but impossible without the workmen's insurance of the German Empire. . . . Professor Kayserling and Professor Frankel, who rank among the highest German authorities upon the subject, frankly attribute the progress which has been made in the crusade against tuberculosis *more* to the Industrial Insurance Laws than to any other cause, owing to the fact that these laws have placed within the reach of the working classes resources of healing never dreamt of before."

If increased interest in tuberculosis can be aroused by a measure for health insurance, if through this agency Germany has waged one of the most effective battles against tuberculosis which the world has ever seen, is it not time to try what such a measure will do in this country? Evidence is accumulating to show that representative and intelligent interest in such a plan is rapidly developing in America. Dr. Arthur Bevan as chairman of the Council on Medical Education of the American Medical Association said to that leading organization of medical men: "We are every day coming nearer the time when in this country we shall see laws enacted to provide, by some State insurance scheme, medical care for the poor as has been done for some years in Germany and as has recently been done in England. If the profession in this country is far-sighted it will recognize these coming events and direct them wisely."

An active committee for this purpose has more recently been appointed by the American Medical Association. Mr. F. C. Schwedtman, while chairman of the Committee for Accident Prevention and Workmen's Compensation of the National Association of Manufacturers, in a report to the President and the Board of Directors of that conservative body in 1914 declared: "I give it as my opinion that sickness insurance of some kind, with compulsory contribution on the part of the employers, will be enacted into law by many States of the Union within the next five years and that now is the time to go into this subject thoroughly." The *Union Labor Bulletin* makes this editorial observation: "Judging from the success attending its efforts in securing enactment of accident compensation laws in various States, the American Association for Labor Legislation is the proper body to propose and carry on to fruition plans for sickness insurance. . . . Labor representatives and organizations will lend every aid to such a campaign, understanding best of all, because of individual and collective experience, the economic loss to the nation because of sickness."

In the belief that sickness insurance is the most potent means for preventing illness, and especially tuberculosis, the American Association for Labor Legislation invites thoughtful study and active support of the bill for health insurance which it has framed after consultation with representative employers and workmen and members of the medical profession.

131 East Twenty-third Street

Medicolegal Notes.

Malpractice—Wrong Diagnosis.—Action was brought against a physician for malpractice in wrongfully diagnosing the plaintiff's trouble as cystic tumors, instead of pregnancy. The jury rendered a verdict for the plaintiff for $500. The judgment of the lower court was affirmed on appeal. "In the present case," the court said, "appellant and another physician positively determined that the patient was afflicted with tumors. Another physician had previously positively determined that she was pregnant, of which diagnosis appellant was informed, according to respondents' case. After appellant's diagnosis, the first physician and another physician consulting with him again examined the patient and determined that she was pregnant, and that she had no tumors, of which diagnosis, according to respondent's case, appellant was also informed. His response to this was that 'the other doctors were crazy.' It may well be conceded that the statements made by the patient to appellant were deceptive, and calculated to deceive. She did not believe at the time of any of her examinations by any of the doctors that she was pregnant. Her first 'suspicion,' according to her own statement, that she was pregnant, occurred three weeks after the operation, when she first felt motion of a quick fetus. Prior to the operation she had menstruation, of which she no doubt informed the doctors who examined her. The expert testimony of both parties at the trial showed that the bimanual test may give indicative results during the fourth, fifth, and sixth months; the same sensation may possibly result to the palpation of the physician's hands from tumors; the same symmetrical development of the uterus may appear from the existence of a tumor; the mother feels quickening before an examiner can feel ballottement or rebound; there is often ballottement upon one examination during the fourth, fifth, or sixth month, and none at other examinations about the same time. So that it is manifest that there might be utterly different, though thoroughly honest, opinions reached by physicians as to the patient's condition at or about the time of the examinations by these various doctors. Appellant's diagnosis proved to be wrong, and those of other physicians correct.

"But did appellant exercise the proper care and diligence in advising, immediately upon his diagnosis, an operation for tumors? There is no complaint made of the operation itself, as to the manner of its being performed. The matter of the ethics and propriety of appellant's conduct in proceeding with the operation without notifying the patient's former attending physician is immaterial. But the matter of appellant's notice that other competent and reputable physicians had positively declared that the woman was pregnant is serious. Surely it put upon appellant a greater degree of diligence and care to be as certain as circumstances and conditions surrounding the case would admit of. Notwithstanding what she may have stated to the examining physicians, pregnancy is not an impossible or improbable condition to the ordinary married woman of the age of 37 years. Appellant urges, however, that the incision made was in the nature of an exploratory operation, to determine the true condition of his patient. As to this, though no point was made of it, he had not the consent of the patient and her husband to make an exploratory operation. Their consent to operate was upon a positive assurance that tumors existed and that an immediate operation was necessary to remove tumors. The appellant having notice of a directly different diagnosis from his, the patient being a married woman of 37 years, living with her husband, not being past her climacteric period, it would seem he should not have hastily flouted the opinion of other reputable physicians that she was pregnant, but might have waited for a time, watching developments, making other examinations, and proceeding with considerable deliberation, unless the presence of tumors becoming more symptomatic, or injurious, rendered the operation therefor more imperative. At all events, it would seem that whether appellant did, under the circumstances and conditions shown to exist, proceed with due and ordinary care in treating the patient, was a question of fact for the jury. The further questions of the damages for any unnecessary pain and suffering produced, as well as financial loss to both respondents, were also questions for the jury. We cannot say that the award of $500 was excessive."—Just v. Littlefield, Washington Supreme Court, 151 Pac. 780.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE EMETINE TREATMENT OF DYSENTERY.

THE rôle of intestinal amebas in the causation of tropical dysentery has long been recognized. Sir Ronald Ross, writing in the *Lancet*, Jan. 1, 1916, states that it was chiefly the work of Kartulis in Alexandria which first definitely incriminated intestinal amebas as pathogenic organism, but he appears to have overlooked the result of the investigations of Lambl and Lösch. In the article on dysentery, in the "Twentieth Century Practice of Medicine," Azevedo Sodré states that Lambl was the first to draw attention to the presence of amebas in the contents of the intestine; he observed them in 1859, in Prague, in the stools of a child affected with dysentery. Other observers had also detected amebas in the intestine, but the nature of the parasite and the rôle it plays as an etiological factor of dysentery were not determined until 1875, when Lösch of St. Petersburg verified its presence in the dejections of a young peasant affected with chronic dysentery. The observations and investigations of Lösch were carefully made, and his description of the parasite, to which he gave the name *Ameba coli*, was so good that very little has been added to it since. The work of Kartulis was not commenced until about 1880 and was already progressing when Koch visited Alexandria in 1883. The previous studies of Lewis and Cunningham had led these workers to think that these organisms were merely pseudoparasites in man. As the result of Ross' own studies, both on amebas and on the intestinal flagellates, he felt almost convinced that all these organisms are, or at least may be, injurious to the host. It appears to him to be a very rash statement to make that any parasite is quite innocuous.

Col. Patrick Hehir and Ross certainly recognized both amebas and flagellates in India in cases of dysentery and diarrhea in 1896; so that Sir Leonard Rogers is scarcely justified in claiming that he first discovered amebic dysentery in 1901, although Rogers can well afford to lose this small distinction in comparison with the immense distinction he has deservedly attained for the elaboration of the treatment of dysentery by emetine. Of course ipecacuanha has been successfully employed in the treatment of dysentery for longer than 200 years, but emetine was not separated from ipecacuanha until 1817, and according to Ross was first recommended for dysentery by Bardsley of Manchester in 1829, while Tull Walsh gave it by the mouth in 1891. But it was the careful studies of Rogers which first established the use of hydrochloride of emetine in 1912. Ross believes that while it is not essentially superior to ipecacuanha powder, the hypodermic injection of it is much less troublesome to the patient. He believes that the hypodermic use brings the drug more directly into contact with the amebas at the bottom of the ulcers, while ipecacuanha attacks the organisms on the surface of the mucous membrane and in the lumen of the intestines; he is therefore inclined to favor the use of both at the proper stages in the treatment.

As for bacillary dysentery, according to many authorities ipecacuanha and emetine are useless in its treatment, and Ross favorably refers to the employment of the sulphates of magnesium and sodium, apparently originated for dysentery by the French physicians in the middle of the last century. Consequently it is held by many that we possess specifics against both forms of the disease.

Referring to the treatment with emetine of amebic dysentery which occurred among the British troops in the Mediterranean and the near East, the writer says that as a general rule daily doses of one grain of the hydrochloride were given either in one subcutaneous injection or in two doses per os, morning and evening. As to the continued employment of emetine, as is done frequently in India, opinions of physicians treating the British troops were divided. Some deaths occurred, and suspicion was aroused that these might have been due to the cumulative action of emetine. Indian officers were not inclined to admit that emetine is at all cumulative or mischievous in its effects, but nevertheless practice gradually crystallized into the formula that, unless there was very strong reason for continuing emetine, it should be remitted, at least for a time, after about ten days, especially if it had ceased to do good. And, on the whole, Ross thinks that this is the best practice in acute dysentery. H. B. Dale, writing in the *British Medical Journal*, Dec. 18, 1915, corroborates these views, but he adds that experiments made by him would seem to prove that emetine can produce cumulative poisoning of serious importance.

TREATMENT OF SEPTIC WOUNDS IN WAR.

THE treatment of septic wounds in war is, of course, a question of supreme importance and has been a matter of somewhat heated debate ever since the present struggle began. While it has been demonstrated plainly that aseptic surgery cannot cope with the conditions presented by war under its most modern aspects, it has been also shown that antiseptics in the treatment of wounds in war have their distinct limitations. Opinions, however, differ widely as to the value of antiseptics in wound treatment. When two so distinguished authorities as Alexis Carrel and Sir Almroth Wright diametrically differ on this point, it is difficult to express decided views. It should, however, he borne in mind that Lister taught that the antiseptic treatment of wounds was of more prophylactic than therapeutic value. Strong antiseptics, while they

may destroy the infective organisms, at the same time destroy healthy tissue. Moreover, their germicidal action is greatly reduced in the presence of blood serum. E. A. Morison and W. I. Tulloch in the *British Journal of Surgery*, October, 1915, lay stress on the fact that the use of antiseptics is limited to recent cases, in which infection has not spread into the surrounding tissues; and the application of powerful chemicals that will destroy infective organisms has proved to be efficacious in these circumstances. On the other hand, those wounds which are badly infected before they come into the surgeon's hands are not amenable to treatment by antiseptics, indeed antiseptics do more harm than good. Owing to this limitation of the field of antiseptic treatment of wounds, other plans have been introduced and Wright has come forward as the high priest of the osmotic method.

Morison, before the war, in cases of accidents in civil life, had been employing with much advantage a saturated solution of magnesium sulphate. He has employed the same mode of treatment in English and French war hospitals and the results therefrom, he says, have exceeded his most sanguine expectations. From the bacteriological standpoint Tulloch confirms Morison's findings.

The conclusions reached clinically and bacteriologically by these observers are as follows: (1) Magnesium sulphate by virtue of its being absorbed with difficulty has certain advantages over other salts used for cleaning wounds by osmosis. (2) It also appears to have the desirable property of interfering with the digestive activities of pus. (3) It inhibits to some extent the growth of certain bacteria commonly found infecting wounds.

Asepsis cannot be carried out properly at the front for obvious reasons. Antiseptic measures are not applicable to all cases of wounds, as they have their limitations, although possibly these limitations are not so narrow as many seem inclined to insist. For example, in the treatment of certain superficial wounds it has been shown in the present war that a solution of peroxide of hydrogen is generally efficacious. It clears the wound of pus, is an antiseptic, but does not harm healthy tissues. However, when employing a solution of peroxide of hydrogen a pure and stable solution should be procured. In particular, its stability is of the utmost consequence, for it stands to reason that a solution which will not keep is absolutely of no use. Various other antiseptics, especially Dakin's solution, according to many authorities have proved their worth in the treatment of wounds so that it is not quite reasonable to pooh-pooh the efficacy of antiseptics entirely. The osmotic method has its adherents and the antiseptic method has as many, if not more adherents, and until the question is definitely settled, as it may be ere the war is over, it would be foolish to make dogmatic assertions regarding the relative utility of any one method.

Ten Commandments in Military Surgery of the Eye.

These commandments, or counsels, as promulgated by von Grosz in a recent number (November 16) of the *Muenchener medizinische Wochenschrift* comprise the protective first aid dressing of the injured eye, to be changed within 24 to 48 hours; the cleansing of the eyelids with 3 per cent. boric acid solution; the application of atropine to dilate the pupil (save when intraocular tension is increased in which case 2 per cent. pilocarpine solution should be substituted); the use of the *x*-ray and sideroscope when there are symptoms of a foreign body (small entrance-wound, intraocular hemorrhage, traumatic cataract); removal of iron fragments promptly with a magnet, and fragments of other kinds by operation; removal of all remnants of eyes without light perception in the interest of the other eye, and the same course in traumatic iridocyclitis without light perception; preservation, in all extirpations, of the conjunctiva and eye-muscles as indispensable in the successful use of an artificial eye; removal of all fragments of projectile in the orbit; repair as soon as possible of all lid defects and ectropions; protection of the other eye in purulent conjunctivitis, which is always infectious.

Cure of Primary Syphilis by Excision of Chancre.

In former times radical cures of syphilis were often claimed as a result of prompt excision of the primary lesion. The most famous teachers, however, while not denying that an occasional cure might occur, strongly condemned the operation as a routine measure. At the present time excision is doubtless regarded as indicated when practicable and when salvarsan is refused, because the chancre is to be regarded as a focus of infection. At a recent session of the K. K. Gesellschaft für Aerzte, Vienna (*Muenchener medizinische Wochenschrift*, December 21), Scherber reports the case of a man who, in 1904, contracted syphilis and his chancre was promptly excised at Finger's clinic. No secondary symptoms had ever developed. The spirochete had been found in the excised chancre. In 1909, 1911, and 1913 the blood was tested and the Wassermann reaction was found negative. At the time the case was reported the patient had a new sclerosis on the prepuce near the scar of the old one. It contained spirochetes, and the Wassermann reaction was not yet positive. The case was certainly one of reinfection following cure. The author had excised chancres in about twenty cases but could never obtain more than a retardation of the secondary stage. He doubted whether early intensive treatment could produce such a good result as mere excision accomplished in this particular case.

Sepsis from Angina.

It has long been apparent to pathologists that much of the angina which was regarded as a prodrome or early symptom of acute infectious diseases must have represented an initial lesion, with the fauces as the port of entry of the virus—whether bacterium or toxin, or both. In the simplest scarlet fever the angina is a true exanthem, but the streptococcus sore throat, nominally a secondary manifestation, really represents a primary lesion, and is followed by a septic state and metastases, differing in no wise from one which develops *de novo*. We know that many an apparently trivial tonsillitis may be followed by rheumatism, or at least a rheumatoid state, with

metastases to the heart, kidneys, appendix, joints, etc. The angina which often ushers in cerebrospinal meningitis may be an exanthem or a primary lesion. The conservative medical man, however, will continue to believe that the vast majority of anginas in acute infectious diseases are not primary states until evidence begins to multiply to the contrary. Last summer, at the Basle Medical Society, Fahm reported five cases of sepsis of anginous origin (*Deutsche medizinische Wochenschrift*, September 30). Two patients developed fatal peritonitis, two others suffered chiefly from metastatic arthritis, and the fifth case was one of metastatic multiple abscesses.

News of the Week.

City Death Rate.—The Department of Health announces that during the week ending February 12 the number of deaths in New York City was 1,626, giving a death rate of 15.18 per 1,000, as compared with 1,546 deaths and a rate of 14.79 per 1,000 for the corresponding week of last year. The deaths from influenza and pneumonia during the week numbered 346, as compared with 360 during the week ending February 5, and 424 during that ending January 29. The deaths from heart disease and nephritis showed a slight decrease as compared with the previous week, but a very marked decrease as compared with the last week of January. The deaths from infectious diseases during the week were 51, exactly the same number as were reported from these causes during the corresponding week last year. During the first seven weeks of 1916 the death rate was 16.28, as compared with 14.78 for the corresponding period of last year.

Procedure in Diphtheria.—Certain studies recently made by the Department of Health of New York City having shown that in a number of instances patients convalescent from diphtheria who have been released from quarantine after two consecutive negative cultures have, as a result of still later cultures, shown the persistence of diphtheria bacilli in their throats, the department has decided to establish a definite period of quarantine, and announces the following rules:

1. On and after February 28, 1916, no culture will be examined for release from quarantine which is made earlier than twelve days from the date of report of the disease.

2. Two consecutive negative cultures, made twenty-four hours apart, preferably from both nose and throat, will be required as at present.

Fire in the Office of the "Medical Record."—A fire, resulting probably from crossed wires, occurred on Monday night in the publishing house of William Wood & Company. The principal damage was from water.

United States Census.—The Census Bureau reports that it is estimated that the population of the United States on January 1 reached a total of 101,208,315, and that by July 1, 1916, it will amount to 102,017,312. According to the 1910 census, the population of the United tSates was 91,972,266. The estimated population of New York State, according to the bureau, on July 1, 1915, was 10,086,568; on January 1, 1916, was 10,179,971, and on July 1, 1916, will be 12,273,375. The population of the State, according to the 1910 census, was 9,113,614.

Harvey Lecture.—The seventh lecture of the present series will be given at the New York Academy of Medicine on Saturday evening, February 26, by Prof. Warfield T. Longcope of Columbia University. The subject will be, "The Susceptibility of Man to Foreign Proteins."

Federation of State Medical Boards.—At the annual meeting of the Federation of State Medical Boards held in Chicago this month, the following officers were elected: *President*, Dr. David A. Strickler, secretary of the Colorado State Board of Medical Examiners; *Vice-President*, Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine; *Secretary-Treasurer*, Dr. Walter L. Bierring, president of the Iowa State Board of Health and Medical Examiners.

Census of the Sick.—The New York City Department of Health on February 19, sent two hundred of its nurses into the East Side to take a mid-winter sickness census. The district covered was the square mile bounded by Pike, Division, Clinton, and South Streets, and the nurses were instructed to note the age, occupation, and sex of each person found ill, the economic conditions under which each lived, and other facts, such as the number of persons living in the room, the type of dwelling, etc. Although a sufficient force to extend the census over the entire city is not available, it is planned to make further investigations of the amount of sickness in other typical districts.

Base Hospitals in New York.—The American Red Cross, with the co-operation of Bellevue, the New York Hospital, and the Presbyterian Hospital, will shortly establish three base hospitals in New York City. A unit, consisting of the doctor in charge, nineteen other physicians, forty-six nurses, and about a hundred lay helpers, will be formed in each hospital and equipped as rapidly as funds became available. Each unit will then hold itself in readiness to leave for any point in the world at the order of Colonel Kean, director-general of medical relief in the American Red Cross. A gift from Mrs. E. H. Harriman of $24,000 has made possible the immediate equipment of one unit, and a campaign will be at once begun by the New York Red Cross to obtain the $48,000 necessary for the equipment of the other two units.

French Hospital Train.—The gift to the French Government by two Americans, of a hospital train capable of transporting two hundred and twenty-five wounded soldiers, was recently announced, and on February 14 the ceremony of presentation was held at La Chapelle Station, Paris. For the present the train, which will be under the charge of two surgeons from the American Ambulance, Paris, will be used to carry wounded soldiers from the front to the South of France.

Hospital Ward Dedicated.—Dedication exercises of the Emily Blackwell ward in the New York Infirmary for Women and Children were held on February 19, and at the same time presentation was made of the Emily Blackwell memorial tablet. Dr. Josephine Walter presided at the exercises, and addresses were made by Dr. Stephen Smith and Dr. Elizabeth Cushier. Dr. Smith, who was a classmate of Dr. Elizabeth Blackwell, sister of Emily Blackwell, and is ninety-three years of age, regaled the audience with anecdotes of his early career.

Charitable Bequests.—By the will of the late Louisa W. Anshutz of Philadelphia, bequests of $5,000 each are made to the Pennsylvania Hospital for the endowment of a free bed, and to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases for the surgical ward.

Industrial Hygiene.—A meeting called to discuss the question of industrial hygiene was held at Cooper Union, New York, last week, and was attended by a large number of persons. The work of the recently created Division of Industrial Hygiene of the Department of Labor was explained by Dr. Louis T. Harris, the chief, and among the other speakers were Dr. S. S. Goldwater, formerly Health Commissioner of New York City, and Mr. Roy Meeker, Commissioner of the Bureau of Labor Statistics, who favored the system of compulsory health insurance.

Personals.—Dr. JOHN T. BLACK, who, because of his appointment as secretary of the Connecticut State Board of Health, has resigned as a member of the staff of the Memorial Hospital, New London, was given a dinner by his associates on the staff, on February 8, and was presented with a gold watch.

Dr. EDWIN C. CHIPMAN has been appointed health officer of New London, Conn., at a salary of $2,000 a year.

Dr. LOUIS M. GOMPERTZ has been elected president of the Board of Health of New Haven, Conn., succeeding Dr. Charles J. Bartlett, who had refused to serve for another term.

National Leper Colony.—A hearing on the bill providing for the establishment of a Federal asylum for lepers was held by the Senate Committee on Public Health on February 15. The supporters of the bill testified that there are at least one thousand patients suffering from leprosy in the United States, only half of the cases being under control; that the disease is spreading rapidly; that there is real danger of an epidemic, and that segregation is the only means of controlling the disease. Isolation was condemned as unnecessary.

Insane Hospitals.—The serious overcrowding in the fourteen State hospitals for the insane in New York is again pointed out in the report of the State Charities Aid Association to the State Hospital Commission, the situation being characterized as "almost intolerable." A recent census of the hospitals showed the following:

Hospital	Census	Certified Capacity	Overcrowded
Utica	1,691	1,321	370
Willard	2,455	2,015	440
Hudson River	3,361	2,773	588
Middletown	2,167	1,865	302
Buffalo	2,142	1,704	438
Binghamton	2,409	2,110	299
St. Lawrence	2,132	1,776	356
Rochester	1,573	1,282	291
Gowanda	1,222	978	244
Mohansic	64	58	6
Kings Park	4,445	3,397	1,048
Long Island	820	637	183
Manhattan	4,951	3,596	1,355
Central Islip	4,876	4,017	859
	34,308	27,529	6,779

The overcrowding ranges from 9 to 37 per cent. The report recommends the enlarging of the Middletown State Hospital and the Hudson River State Hospital at Poughkeepsie.

Protest Against Tuberculosis Clinic.—Three hundred residents in the neighborhood of Pleasant Avenue and 118th Street, New York, have protested to the Health Commissioner against the establishment there of a tuberculosis clinic in a building formerly occupied as a clinic for children suffering from diseases of the nose, throat, and eyes. The clinic is declared to be a "menace" to the neighborhood.

Obituary Notes.—Dr. JABEZ DEAN HAMMOND of Chicago, Ill., a graduate of Rush Medical College, Chicago, in 1885, and a member of the American Medical Association, the Illinois State Medical Society, and the Chicago Medical Society, died at his home on February 15, aged 56 years.

Dr. JAMES LLOYD WELLINGTON of Swansea, Mass., a graduate of Harvard University Medical School, in 1842, and a member of the Massachusetts Medical Society and the Bristol District Medical Society, died at his home on February 11, aged 99 years. Dr. Wellington was the oldest living graduate of Harvard University.

Dr. GEORGE DWIGHT KAHLO, medical director of the White Sulphur Springs, W. Va., a graduate of the Bellevue Hospital Medical College, New York, in 1891, formerly dean and clinical professor of medicine of the Indianapolis School of Medicine, president of the Indiana State Medical Association, and medical director at the French Lick Springs, Indiana, and a member of the American Medical Association and the West Virginia State Medical Association, died suddenly from heart disease at the Hotel Chamberlain, Old Point Comfort, on February 12, aged 51 years.

Dr. W. D. WRIGHT of Powder Springs, Ga., a graduate of the Atlanta Medical College in 1884, died suddenly from apoplexy at his home near Lost Mountain, on February 4, aged 67 years.

Dr. T. H. MURRAY of Greenfield, Iowa, a graduate of the St. Louis College of Physicians and Surgeons in 1898, died suddenly at his home, on February 8, aged 55 years.

Obituary.

HENRY L. ELSNER, M.D.,

SYRACUSE, N. Y.

Dr. HENRY LEOPOLD ELSNER, professor of medicine at Syracuse University, died very suddenly, of heart failure, in Washington, D. C., on February 17. Dr. Elsner was born at Syracuse, N. Y., on August 15, 1855, and after taking his medical degree at the College of Physicians and Surgeons, New York, in 1877, did postgraduate work in Vienna. Returning to his native city in 1880, he became lecturer on clinical medicine in the Medical Department of Syracuse University in 1881, eventually becoming professor of medicine. He was physician to the St. Joseph's Hospital and director of its dispensary medical clinic, also consulting physician to the Women's and Children's Hospital, the newly established University Hospital, and similar institutions of his city; also an ex-president of the Medical Society of the State of New York, the Syracuse Academy of Medicine, and the Onondaga Medical Society, a member of the New York Academy of Medicine, and of many other medical societies. Dr. Elsner was one of the best known clinical teachers in this country and the most prominent physician in northern New York. He was a man of extremely refined, genial, and lovable disposition, charitable to a fault, and denying himself to no patient, however humble, at whatever hour. His exertions in this regard eventually told upon his health, as did the arduous labors upon his massive treatise on Medical Prognosis, which was prepared for the press by him in the Surgeon-General's Library in 1915. His death will bring a void in the lives of hundreds of patients, to whom he was in the truest sense the beloved physician. His many pupils, whom he regarded as a father his sons, will lose a sincere, loyal, and helpful friend.

F. H. GARRISON, M.D.

Correspondence.

OUR LONDON LETTER.

(From Our Special Correspondent.)

MEDICAL WAR COMMITTEE—R. S. M., SOLDIER'S HEART—R. A. M. C. YEARLY CONTRACTS—CENTRAL AND PROVINCIAL COMMITTEES—DISABILITY FOR ARMY SERVICE—WOUND INFECTION—AYLMER MAY FOR WAR OFFICE—OTHER APPOINTMENTS—OBITUARY.

LONDON, January 29, 1916.

THE Central Medical War Committee has addressed a letter to every practitioner of military age who has not accepted a commission in the R. A. M. C., as well as to the secretaries of all local medical war committees, with the object of enrolling all fit for active service when needed in the army or the navy. It is clear that with the increasing number of soldiers more medical officers will be required and the committee hopes to enroll all of military age, so that further calls of the Director-General of the Army Medical Service may be met with promptitude, regard being had to the needs of the civil population and the circumstances of individual practitioners. Of course the enrolment of all of military age does not imply that all will be called upon to take a commission. The number actually called upon will depend on the demands of the services. The calls will be made in consultation with the local committees and regard given to the system of classification of the central medical committee, the circumstances of individual practitioners, and the opinion of the local medical war committees as to who can be most easily spared. The local committee will advise and cooperate to safeguard the interests of the absent as far as possible. The central committee considers its experience in dealing with the subject during the last few months has made it fully conversant as well as deeply sympathetic with the difficulties most practitioners have in leaving their work, but as thousands have made the sacrifice others may be asked to follow their example. The committee believes further that those who cannot do so will place their services at the disposal of the committee for making arrangements to preserve the practices of those who do enroll.

Among other discussions connected with the time of war, we have had one at the Royal Society of Medicine on the "Soldier's Heart." It was opened in the Therapeutic Section by Sir James Mackenzie, who, after a reference to the experience of your Civil War, said soldiers invalided in our present contest had been consulting him. He had undertaken the inquiry into cardiac disorders for the Medical History of the War, and jointly with Dr. R. M. Wilson examined 400 cases. In 90 per cent. of cases certified as such they were found not to be heart cases primarily and their treatment differed accordingly. So did their appearance and symptoms. Usually they were spare with drawn faces and showed great vasomotor instability. The hands and fingers would be pale but at times red and perhaps florid red; nose red or blue when cold. After rest and feeding they were cold, pasty-faced, and breathless on exertion, easily tired with perhaps pain in the cardiac region, increased rapidity of the beat which may be considerable, say up to 110 or 120, but in other cases there may be no perceptible increase. Some hypertrophy may be met with and some edema. Undue rapidity will be set up by exercise, hence the term "irritable heart." General irritability and restlessness are also common; in other cases depression, in others again a history of previous illness or exposure to hardship or infection. Sir James looked upon the condition as one of general exhaustion, of which the disturbance of the circulation is only part of the manifestation. Such cases differ from those produced by an organism, though in some it seemed doubtful whether there might not be infection of the heart itself. If the temperature persisted for weeks and no source of infection could be found this was more probable. Persistent pain over the heart when the patient was kept at rest suggested toxic infection. But soldier's heart was due to other systems than the cardiac—say *e.g.* the nervous. The heart itself was benefited by judicious exercise, which should be directed toward helping the body as a whole but not continued after fatigue was perceived.

Dr. R. M. Wilson, who had assisted Sir James Mackenzie in this inquiry, fully agreed with his conclusions. Dr. F. J. Poynton did not think a heart which had broken down in training would ever be strong enough to support military service. At the present time, he thought infection was a most important factor. In some cases it appeared as if the heart had scarcely kept pace in development with the rest of the body; it could not be quite dissociated from the nervous system and it was important to safeguard tall, strong youths from early strain. Dr. E. W. Mitchell endorsed what had been said as to toxemia as also did Dr. Philip Hamill, who related cases and said the psychical factor must first be treated. But many of these hearts were permanently damaged and cases must be carefully followed up so that the next generation may have materials from which to deduce a decision as to the precise nature of the condition. Dr. Florence Stoney said "irritable heart" was only a symptom of Graves' disease. She had for years treated it by *x*-rays to the thyroid gland. Exophthalmic goiter was at the root of the malady. Drs. Bezly Thorne, Alexander Morison, and T. R. Bradshaw added some remarks and Sir J. Mackenzie replied.

A medical man can enter the R. A. M. C. on a contract for one year's service, but others must join for the duration of the war, but this privilege will not be granted to those who fail to enroll with the present committee, which is in close communication with the War Office. This as well as the Local Government Board and the National Health Insurance Commissioners are fully alive to the needs of the civilian population and are doing all they can to adjust the requirements of the military and civilian medical services to the existing conditions.

As a result of conferences with the Director-General of Recruiting, the Central Medical War Committee, which has local representatives in all parts of the country, has been able to procure and to coordinate offers of service in the R. A. M. C. Applications for commissions in this service are decided upon by the War Office after reference to this committee respecting the needs of the civil population in the area concerned in every case, and after consultation with the Insurance Commission, and when necessary with the Local Government Board, and the Board of Education. Arrangements of the same kind exist in Scotland.

Questions in Parliament as to recruits found to be physically unfit elicited that some had been rejected as unfit for any form of military service; others would not be called upon so long as their disability remained. It was hoped that a distinc-

tive badge might shortly be given to men discharged from the army as physically unfit.

Asked as to cases of hammer toes, whether surgical boots would not enable them to serve, the reply was that the medical advisers did not recommend their use and, moreover, if lost or worn out on service they could not be replaced at once. As to men discharged for diseases alleged to have been contracted before enlistment, it was said that each case was considered on its merits by the army medical staff and the commissioners of Chelsea Hospital. The military authorities did not accept responsibility for illness not contracted in the service of the State. It would be for the military officers to say if a breakdown was caused by the service.

Dr. Aylmer May, P. M. O., Northern Rhodesia, has been selected by the War Office to undertake research work on the Western front respecting wound infection. Dr. May, who is now returning from South Africa, has done valuable bacterological work in Rhodesia and elsewhere.

John Howard, the Brighton philanthropist, has been knighted. Sir John's charities were boundless. A recent one was £30,000 to establish cottage homes for nurses incapacitated by age or illness for their employment. They are intended as a memorial to Nurse Cavell. The Howard Convalescent Home, which has been built and endowed at a cost of £40,000, and the Howard Charity, which gives pensions to deserving persons, are further samples of his charity. The home has been occupied by naval and military convalescents since its opening, Sir John having placed it free of charge at the disposal of Lord Kitchener.

Dr. T. J. Walker of Peterborough, J. P., F. R. C. S., was presented on the 22d ult. with his portrait in oils, painted by Mr. Fiddes Watt, A. R. S. A., with a book containing the names of the 750 subscribers with an inscription testifying their esteem and affection.

Mrs. Mozley of Cheltenham entered her 102d year on the 22d ult. in the full enjoyment of all her faculties. She is one of eleven children in a long-lived family; one died in childhood, but two lived to 97, one to 93, and one each 90, 81, and 77. There are four survivors aged respectively 101, 94, 86, and 84. The great grandmother was a centenarian.

Dr. Andrew Dunlop of Jersey, where he practised since 1868, died there on December 30 at the age of 73. He had been in rather delicate health for some time but able to fill his important duties at the dispensary and other institutions, including presidency of the Jersey Medical Society. He was a practical geologist and contributed articles on the subject to scientific periodicals. He also wrote on medical subjects in the Edinburgh *Journal*.

Dr. Charles Henry Fox, who died on Christmas day in his 79th year at Edinburgh, where he had retired since 1894, was formerly proprietor and physician to an asylum for the insane. He was F. R. C. P., Edin., 1900; M. D. St., And., 1861.

Lactic Acid Gargle in Diphtheria. — Buttermilk was recommended by Moffitt as a gargle to nine diphtheritic patients whose throats still contained Klebs Loeffler bacilli after all other clinical symptoms had disappeared. The gargle was used freely, five or six times a day. On the third day after use, an almost pure culture of lactic acid bacilli was obtained from eight of these patients, while the ninth case produced a pure culture on the fifth day.—*Pennsylvania Medical Journal.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 10, 1916.

1. Address on Sir James Paget and Paget's Disease. Eliott C. Cutler.
2. A Sketch of the Organization for the Care of Transportation of the Sick and Wounded in the British Expeditionary Force in France. Roger I. Lee.
3. The Occurrence of the Wassermann Reaction among Hospital Patients. Albert A. Hornor.
4. Treatment of Central Nervous System Syphilis. I. Chandler Walker.
5. The Treatment of Syphilis. C. Morton Smith.

3. The Occurrence of the Wassermann Reaction Among Hospital Patients.—Albert A. Hornor gives the results of the application of the Wassermann reaction as a routine measure among 500 patients admitted to the Fourth Medical Service of the Boston City Hospital. Eighty-seven of the 500—that is to say, more than one in every six—had a positive test either with the old Wassermann reaction or the test modified by the use of cholesterinized antigen. In only eighteen of these cases was a probable diagnosis of syphilis made before the Wassermann report was received. This means that 13.8 per cent. of the cases not showing obvious signs of syphilis showed a positive test. In this series the rarity of a positive Wassermann reaction with alcoholism seems to bear out the statement of several later observers to the effect that alcohol will vitiate a positive reaction. There was a marked frequency of positive reactions among cardiac conditions of one sort or another. From this study the writer concludes that one may not tell in many of the cases admitted to the medical wards in general hospitals whether or not the patient's condition may be complicated by syphilis. Surely if one medical admission out of every six has a positive Wassermann reaction, the doing of this test as a routine is valuable.

4. Treatment of Central Nervous System Syphilis.—I. Chandler Walker gives a summary of the treatment and its results in the first forty cases of central nervous system syphilis at the Peter Bent Brigham Hospital. Cases of tabes, general paresis, cerebrospinal syphilis, and syphilitic meningitis are considered; cases of purely cerebral syphilis are excluded. In those cases treated with salvarsan, large doses were used; in those treated with serum intraspinally 20 to 25 c.c. of undiluted serum were used. Dr. Walker concludes that cases of syphilis of the central nervous system with only a positive blood react well to salvarsan; those with a positive blood and spinal fluid may react well to salvarsan alone, but they do much better when intraspinal serum is used in conjunction with salvarsan, and some that do not react well to salvarsan alone react well to the combined method. One may get improvement in general paresis from the combined treatment. Cases of syphilitic meningitis may clear up with salvarsan alone, but the combined treatment is quicker. Cases of central nervous system syphilis with a negative blood and a positive spinal fluid react readily to a salvarsanized serum intraspinally alone, even when salvarsan has failed. The spinal fluid of the cases treated with salvarsan has become negative in two cases, whereas the spinal fluid of seven cases treated with the serum alone has become negative. The writer feels that salvarsanized serum is a great asset in the treatment of syphilis of the central nervous system, and in the general run of cases he thinks the Swift-Ellis method is of great value and that this method in connection with mercury intramuscularly is the best treatment of syphilis of the central nervous system at this time.

5. The Treatment of Syphilis.—C. Morton Smith states that they have been able to demonstrate the *Spirochæta pallida*, with dark field, in 96 per cent. of

the smears made from the last ninety-seven primary sores examined at the Massachusetts General Hospital. He finds the India ink method inexact and unreliable. After reviewing salvarsan, mercury, and iodide therapeutics, he says that until recently a physician considered his whole duty was to his patient; but it is now a part of his follow up work to see that the patient continues treatment, and that the members of his family and friends who may have given or received infection, come for examination and treatment. The responsibility of bringing these suspects is placed on the patient if possible. At the present time there is no means whereby a patient with syphilis can receive aid from town or State without automatically becoming a pauper. The State should bear the expense of protecting the public from the infectious syphilitic. This being an age of preventive medicine it should be applied to the treatment of syphilis in three ways: (1) By training young people to lead clean, proper lives; personal optimism or overconfidence is responsible for a greater number of syphilitic infections than ignorance of the disease. (2) By prompt, intensive, intelligent treatment of every infected individual, begun during the primary stage, if possible, and continued until the patient is released by a clinical opinion supplemented by serologic findings. (3) By the enforcement of our present health laws.

New York Medical Journal.

February 12, 1916.

1. Recent Developments in the Treatment of Leprosy. Victor C. Heiser.
2. The Treatment of Grippe. Beverley Robinson.
3. So-Called Grippe. J. B. Rucker.
4. Common Abdominal Crises. Milton R. Bookman.
5. With the American Red Cross in Vienna. P. A. Smithe.
6. The Diagnosis of Brain Tumor. H. Climenko.
7. Tremor Tracings. Hansell Crenshaw.
8. Fracture of the Skull. Frederick R. Barnes and Morris A. Slocum.

1. Recent Developments in the Treatment of Leprosy.—Victor C. Heiser reports later results of the treatment for leprosy described in the MEDICAL RECORD of August 29, 1914. The treatment, as then noted, consists of injections of a mixture of chaulmoogra oil 60 c.c., camphorated oil 60 c.c., and resorcin 4 grams. This method is now being followed in the treatment of leprosy in the Straits Settlement, Federated Malay States, India, Hawaii, Ceylon, and in a number of institutions in the United States. The injections are usually made at weekly intervals in ascending doses, the initial dose being 1 c.c., and this is increased to the point of tolerance. Much difference exists among the cases as to the amount of the mixture the patients are able to take. Quicker results are apparently obtained when it is possible to inject the mixture into large leprous deposits, or to divide the dose by injecting it into a number of smaller infiltrations. Attention is drawn to the fact that no strychnine is used. In the United States Public Health Reports a total of five cases have been reported as having been cured and having remained cured for a period of over two years. Reports from Manila state that twenty-three more lepers have been discharged from the leper colony as cured. When Dr. Heiser left the Philippines in March, 1915, he says there were probably 200 other cases showing noticeable improvement. He does not claim that anything like a specific for leprosy has been found, but his experience shows that chaulmoogra oil gives more consistently favorable results than any other treatment that has come to their attention, and holds out the hope that further improvement may be brought about. The treatment is apparently equally efficacious in all forms of the disease. In order that further observations may be made in all parts of the world, the International Health Commission is taking steps to circulate details of the chaulmoogra oil treatment in all countries in which leprosy occurs.

2. Treatment of Grippe.—Beverley Robinson offers the following prescription as a really efficient and harmless remedy for grippe:

℞ Ammonii salicylatis .....grs. iij
Caffeinæ. .....gr. ¼

M. Fiat capsula No. 1.

M. Sig.: Two of these capsules should be taken by an adult, every two hours, for four or five doses, and then every three or four hours.

If the capsules cause slight nausea, which is rare, this may be relieved by drinking a little vichy with each dose. He is also inclined to think that these capsules may be used as a preventive measure against grippe.

3. So-Called Grippe.—J. B. Rucker has investigated, since the middle of December last, 20 cases of acute catarrhal disease so simulating grippe that it has been commonly spoken of as such and has found the influenza bacillus only twice, and in those only in stained smears made directly from the swabbings, but has not in a single instance been able to isolate it. In eight instances he found a pneumococcus, typical at least in morphology; in six, atypical pneumococcus or *Streptococcus mucosus;* in all 20 cases he found a small Gram positive biscuit shaped diplococcus. He says that if it were not for the fact that 75 per cent. of normal throats contain either typical or atypical forms of the pneumococcus, and in all or nearly all normal throats the small Gram positive diplococcus is found he should be inclined to think that this little diplococcus was the probable cause of the trouble in these 20 cases. In only two of the 20 cases did these small Gram positive diplococci show pathogenicity in animals, and in only one animal did symptoms simulating grippe in man appear. The writer expresses the opinion that it may be possible under some unknown conditions that the virulence of the ever-present Gram positive diplococci becomes enhanced, or the resistance of the human organism becomes lowered, or both, the natural combative forces of the tissues are overcome, and the diplococci gain entrance to the lymph channels and blood stream and a general bacteriemia results, causing the symptom complex of the disease commonly known as grippe. Complement fixation methods, using the diplococcus as antigen, seem to be the most promising to determine the question as to the etiological relation of this organism to grippe, inasmuch as the inoculation of laboratory animals is unsatisfactory.

6. The Diagnosis of Brain Tumor.—H. Climenko reports a number of cases which serve to bring out certain facts with reference to the diagnosis of brain tumor among which are the following: If convulsions begin first at or after middle-age, the diagnosis of epilepsy should not be made. Every such case which the writer has had the opportunity of observing carefully, sooner or later revealed its organic origin. The diagnosis of brain tumor may be clear and yet at operation no tumor may be found and no evidence of increased intracranial pressure, yet on the other hand, by judicious and careful study one may be able to diagnose tumor, localize it, remove it, and render the patient's condition comfortable indefinitely. It is the clinical developments of the case and the proper interpretation of symptoms that are of the greatest importance. The writer urges that every case of brain tumor be carefully observed and reported, since it is the clinical and not the experimental study of these cases that must add to our knowledge of diagnosis in these cases.

8. Fracture of the Skull.—Frederick R. Barnes

and Morris A. Slocum present a series of fractures of the skull which show the value of their treatment by withdrawal of spinal fluid by lumbar puncture. From 1910 to 1913, at the German Hospital, Philadelphia, lumbar puncture was not done and all but one case ended fatally. During the next three years, in a series of 27 cases, the majority of which were tapped, the mortality was 40 per cent. From their results the writer thinks the following conclusions are tenable: 1. Lumbar puncture should be done in every case of severe head injury, both for diagnosis and treatment. One tap does not suffice; daily puncture until recovery is best. 2. Trephining should be reserved until the last. Definite indications only should warrant opening the skull. 3. Patients often get well if let alone. Too much surgical interference is a mistake. 4. The intraspinal injection of hexamethylenamine is harmless, but is of little value in our opinion.

Journal of the American Medical Association.

February 12, 1916.

1. The Purification of Water Supplies. Edwin O. Jordan.
2. Pellagra: Causation and a Method of Prevention: A Summary of Some of the Recent Studies of the United States Public Health Service. Joseph Goldberger.
3. Drug Addiction: Analysis of One Hundred and Forty-seven Cases at the Philadelphia General Hospital. Joseph McIver and George E. Price.
4. Goiter: An Analysis of One Hundred and Thirty-seven Cases. Charles N. Dowd.
5. Needless Surgical Operations from Failure to Recognize Tabes Dorsalis. John W. Nuzum.
6. The Therapeutic Value of the Hypophosphites. W. McKim Marriott.
7. Routine Wassermann Examinations of Four Thousand Hospital Patients. I. C. Walker and D. A. Haller.
8. Alliaceous Odor Produced by Iron Cacodylate. Douglass W. Montgomery.
9. Dermatitis Herpetiformis: Report of Some Cases Treated with Emetin. M. F. Engman and Robert Davis.
10. The Significance of Certain Roentgenographic Findings in the Gastrointestinal Tract. C. L. Palmer.
11. Genito-Urinary Symptoms Arising from Anal, Rectal and Colonic Diseases, and Vice Versa. Alfred J. Zobel.
12. Carcinomas of the Naso-Pharynx. Wesley Emmet Gatewood.
13. Tonsillectomy. Justus Matthews.
14. Trichinosis: Report of a Case with Trichina Larvæ in the Spinal Fluid. Arthur R. Elliott.

1. The Purification of Water Supplies.—Edwin O. Jordan states that the question of water purification is limited to the hygienic aspects of the subject. Clarification of a muddy water, removal of an excess of iron, softening of a hard water are all ends desirable in themselves, but they are not purification in the sense in which that term is here considered. Consideration of purification of water is restricted to the methods of rendering a contaminated or potentially dangerous supply safe for use. The present necessity for water purification in civilized countries is a consequence of two factors: first, a greatly increased demand for water under modern conditions of life; second, the increasing density of population on most parts of the earth's surface. Where surface waters are resorted to, the need of purifying them is so plain in some cases that there can be no question of its imperativeness, as with the Merrimac River, used by the city of Lawrence, Mass.; the Hudson River, used by the city of Albany, and the Schuylkill River, drawn on by Philadelphia. Water purification in these cities has been followed by a marked diminution in the amount of certain diseases. The modern methods of purification are (1) storage, by which a high degree of natural purification can be effected; (2) slow sand filters; (3) rapid sand filtration, and (4) germicidal treatment. When a polluted water that serves as a source of municipal supply is treated by slow sand filtration, the most conspicuous immediate change in the health of the community is a drop in the typhoid death rate. The results of rapid or mechanical filtration are essentially similar to those of slow sand filtration. Excellent results as regards bacterial efficiency and security from typhoid infection are achieved by bleaching powder and by liquid chlorin treatment. At the present rate of progress, water-borne diseases in the cities and larger towns of this country will be relatively rare within ten years.

2. Pellagra: Causation and a Method of Prevention.—Joseph Goldberger gives the following summary of some of the recent studies of the United States Public Health Service: 1. Diet is the common factor in the various methods of treatment recently advocated. The marked success claimed for each of these methods must logically be attributed to the factor (diet) which they have in common. 2. The value of diet in the prevention of pellagra has been tested at two orphanages and at an asylum for the insane, endemic foci of the disease. Marked increases in the fresh animal and leguminous protein elements of the institution diets were made. Of 209 cases of pellagra observed at the two orphanages during the spring and summer of 1914, not less than 172 completed at least the anniversary date of their attack under observation. In only one of these 172 pellagrins, following the change in diet, was there recognized evidence of a recurrence, although on the basis of experience elsewhere, from ninty-nine to 130 might reasonably have been expected. Nor was any new case observed among the nonpellagrin residents, 168 of whom completed not less than one year under observation. Of the group of pellagrins on the modified diet at the insane asylum, seventy-two remained continuously under observation up to Oct. 1, 1915, or at least until after the anniversary date of their attack of 1914. Not one of this group has presented recognizable evidence of a recurrence, although, of a group of thirty-two controls, fifteen have had recurrences. Pellagra may, therefore, be prevented by an appropriate diet without any alteration in the environment, hygienic or sanitary, including the water supply. 3. At an isolated convict camp, previously free from pellagra, with an average population of from seventy to eighty white males, eleven volunteers were segregated and, after a preliminary observation period of two and one-half months, placed on an abundant but one-sided, chiefly carbohydrate (wheat, corn, rice) diet, from which fresh animal proteins and legumes were excluded. At least six of these volunteers developed pellagra. This result would appear to have been brought about by the diet on which they subsisted. 4. A definite conclusion as to the intimate mechanism involved in bringing about or in preventing the disease by diet cannot be drawn from the available data. 5. For the practical purposes of preventive medicine, it would seem to be of fundamental importance to recognize that the pellagra-producing dietary "fault," whatever its intimate nature or however brought about, is capable of correction or prevention by including in the diet suitable proportions of the fresh animal and leguminous protein foods.

3. Drug Addiction.—Joseph McIver and George E. Price give an analysis of 147 cases at the Philadelphia General Hospital. These patients were treated by the original Lambert method, by the Lambert method without the Belladonna R, by the Lambert method without free purgation, by gradual withdrawal, and by gradual withdrawal with free purgation. They conclude that while the medical profession has had much to do with the formation of the morphine habit, and in former years with the development of the cocaine habit, it has had little or nothing to do with the remarkable development and spread of the cocaine, and especially the heroine, habit of the last few years. Farr has drawn a similar conclusion. Degeneracy, as

shown by actual signs of developmental arrest, is present in a large proportion of cases of drug addiction. The majority of narcotic drug habitués are not also addicted to the excessive use of alcohol. Heroine is not as deleterious in its effects as morphine, and can be much more readily withdrawn. The most valuable unit in the Lambert treatment is the method of free purgation. The Lambert treatment, while better than the old method of very slowly withdrawing the drug, is not as satisfactory as gradual withdrawal combined with free purgation and medication to meet the individual requirements. Any treatment which does not take into consideration the presence of the antitoxic substance in the body long after the drug has been withdrawn, and provides for the observation and care of the patient during this time, is almost certain to be void of permanent results. This is the era of preventive medicine, and the old axiom that "An ounce of prevention is worth a pound of cure" is certainly true in drug addictions. It is the duty of every physician heartily to cooperate with the federal authorities to restrict the use of opium derivatives and cocaine to their proper medical functions.

4. Goiter.—Charles N. Dowd makes an analysis of 137 cases, reviewing the results of the work which the surgical staff of Roosevelt Hospital has done on goiters for the five years ending Jan. 1, 1915, including the work he had done in other institutions. The study has been carried on in a search for the best method of dealing with goiters, and as a result the writer says the following deductions seem to be fair: 1. For nontoxic patients who suffer from pressure symptoms or from neck deformity, cyst enucleation or partial thyroidectomy are extremely satisfactory procedures. The symptoms are relieved, and the likelihood of later toxicity is almost abolished. 2. For mildly toxic patients, operation is also very satisfactory. When the toxic symptoms develop in connection with preexisting goiter, cure is almost certain. When they develop in the early stages of thyroid hyperplasia cure is usually obtained, but cannot be expected with the same confidence. The operation may be by partial thyroidectomy, cyst enucleation, artery ligation, or boiling water injection, according to the peculiarities of the case. 3. The patients with advanced exophthalmic goiter present the most difficult problems. For their successful treatment many elements must be considered, including the complex nature of the ductless glands, their interdependence on each other and on nervous and chemical influences from other parts of the body, and the various therapeutic measures which interrupt this vicious chain of disturbance. The hyperplastic thyroid gland seems to be the cause of many of the symptoms, and it is the organ most easily attacked in our effort to control these symptoms. The treatment consists largely in endeavor to control its overactivity. Rest is an important element in this treatment. The injection of boiling water (Porter) has an undoubted influence, and can be used for patients too ill for more radical measures. The ligation of the thyroid arteries is often very beneficial, and can be used in preparing patients for hemithyroidectomy or as a substitute for that procedure. The excision of a part of the thyroid gland has been followed by so many satisfactory results that it must be considered our most reliable therapeutic measure. The administration of drugs and animal extracts, and the use of the Roentgen ray may be beneficial. The choice of these procedures should depend on the condition of the patient. If that choice is judicious, nearly all of these patients can be brought to a condition of marked improvement.

5. Needless Surgical Operations from Failure to Recognize Tabes Dorsalis.—John W. Nuzum says that in the past five years (1910-1915) over 1,000 cases of tabes dorsalis have been carefully studied in the Cook County Hospital and the conclusions arrived at are as follows: 1. Of the 1,000 tabetics, 8.7 per cent. have been subjected to laparotomy under mistaken diagnosis one or more times. 2. The "crises" of tabes have largely influenced the surgeon in his decision to operate. This statement is supported by the fact that 65 per cent. of the 87 patients operated on presented visceral crises. In 17 per cent. of these the "crises" were the *initial symptoms* of their disease. 3. Mistaken diagnoses and resulting operations occur chiefly through failure to examine the nervous system. 4. Gastric ulcer, gallbladder disease, and appendicitis are the diagnoses most frequently made. 5. Tabetics subjected to severe successive laparotomies have, as a rule, been operated on by as many different surgeons. 6. A history of paroxysmal attacks of vomiting, rheumatism, paresthesias, bladder disturbances, or fractures without physical violence should excite interest to exclude tabes dorsalis. 7. The cytodiagnosis of the cerebrospinal fluid, together with the Wassermann reaction with the spinal fluid, are of inestimable value in doubtful cases.

7. Routine Wassermann Examinations.—I. C. Walker and D. A. Haller have tested 4,000 individual cases and offer the following conclusions: 1. Syphilis is even more prevalent than ordinarily supposed. 2. A routine Wassermann test is of the greatest value in a general hospital. 3. Neurological cases should always be tested, and particularly all cases of epilepsy. 4. Cases of unsuspected syphilis greatly outnumber those frankly syphilitic among patients applying for treatment in a general hospital. 5. The common infectious diseases—typhoid fever, pneumonia, tuberculosis, and scarlet fever—have no influence toward causing falsely positive reactions. 6. We find no argument in favor of a belief that chronic nephritis with or without hypertension is due to syphilis. 7. Diabetes in our series showed a fairly high percentage of positive reactions, and in one or two cases the coincidence of this disease and the onset of diabetic symptoms was suggestive but in no way conclusive. 8. The well-known affinity of the *Spirochæta pallida* for vascular and nervous tissues is most marked, and it is unfortunate that the early lesions of the disease are so slight as to be so often unnoticed and consequently untreated at this time, when later and more serious lesions could be prevented. 9. Syphilis of the liver presents a most difficult problem in differential diagnosis. The presence of icterus should make one wary of the interpretation of any but strongly positive tests.

10. The Significance of Certain Roentgenographic Findings in the Gastrointestinal Tract.—C. L. Palmer says that the observations recorded were made on a series of fifty gastrointestinal cases studied by all the usual clinical methods, including roentgenograms following a bismuth meal, and the result throws some new light on the significance of certain roentgenographic findings. He offers the following summary: Normally the stomach can change its position without the help of alteration in body posture. When this mobility of the stomach is lacking it is either due to restraining forces which prevent the movement, or else to lack of power to move. The former is the most frequent cause for lack of change of position of the stomach. Persistent supraposed stomach is due to a restraint and not to lack of power. This restraint is most frequently exercised by adhesions due

chiefly to cholecystitis, chronic appendicitis, traumatism (previous operation), or gastritis due to syphilis, cancer, or ulcer. Persistent infraposed stomach is not as frequent as supraposed stomach. It is caused by restraint or lack of power to move, most frequently lack of power, which is the case in chronic gastroenteroptosis with relaxation of the abdominal walls. Long retention of the gastric contents (twenty-four hours or longer) is chiefly due to one cause, namely, cancer of the stomach. The other chief cause is long standing chronic cholecystitis. Retention for shorter time (six to twenty-four hours) has for its most frequent causes cicatricial contraction of pylorus due to healed ulcers, chronic appendicitis, chronic cholecystitis, typhlitis, and syphilis. Pylorospasm does exist, but it is not always present when extragastric lesions are prevalent. It probably depends on the reflex excitability of the individual's nervous system. Diagnosis made by judging from the roentgenograms, together with the history of the case and other clinical evidence obtainable, was correct in nearly every case. This was demonstrated in the majority of the cases by subsequent operation or necropsy. In most of the others it was shown with a satisfying degree of probability by the subsequent course of the case. Roentgenograms have revealed certain facts which can be demonstrated by other means. The most prominent of these are the obstructive lesions which are as a rule located either in the pylorus of the stomach or in the region of the cecum and are usually due to definite conditions. By the use of the stomach tube in gastric analysis, fecal examinations, the charcoal test, Bastedo's test and careful analysis of clinical symptoms and physical signs, it is possible in a certain number of cases to make a very accurate diagnosis without the use of the ray. In all cases which are readily diagnosed without the ray, however, roentgenograms should be taken and carefully interpreted along with laboratory tests, clinical history, and physical findings, in order to obtain a clear diagnosis.

The Lancet.

January 29, 1916.

1. An Address on Gunshot Wounds of the Chest. John Rose Bradford.
2. The Surgical Treatment of Gunshot Wounds of the Chest. H. Morriston Davies.
3. The Rationale of Chemotherapy in Syphilis, with a Description of Some New Drugs Prepared with the Knowledge Gained Therefrom. J. E. R. McDonagh.
4. The Simpson Light in the Treatment of Venereal Lesions. E. G. French.
5. Influence of Febrile Conditions on Inoculation Agglutinins. H. L. Tidy.
6. A Fatal Case of Anthrax: Infection by a Shaving Brush. E. W. G. Masterman.

1. Gunshot Wounds of the Chest.—John Rose Bradford deals with this subject from the point of view of the physician and confines himself more particularly to a discussion of hemothorax and pneumothorax. He calls attention to the fact that hemothorax may result from a wound of some other region than the chest, especially the neck, the arms, or the upper abdomen; further hemothorax and even pneumothorax may be found on the side opposite to the wound of entry in the chest and without any obvious or marked lesion on the side of entry. While the physical signs of hemothorax are in many respects similar to those of pleural effusion, there are certain differences. The diaphragm on the affected side is extraordinarily high. It is exceptional in a case of hemothorax for the stomach resonance at the lower costal margin to be replaced by dullness, and it is not very unusual on percussion of the front of the chest for the stomach note to merge into the skodiac resonance of the upper part of the front of the chest. Owing to this a hemothorax may be overlooked or may be diagnosed as a pneumothorax. In hemothorax the skodiac phenomena are much more marked than in pleural effusion. Loud tubular breathing, increased bronchophony, and pectoriloquy are more marked and more often to be detected in hemothorax than in pleural effusion, and finally the heart's apex undergoes changes in position that are peculiar. Another peculiarity of hemothorax cases is the rapidity with which retraction of the affected side may develop when the effusion is not aspirated. The writer states that in the early months of the war many of these cases were treated by expectant methods, but they were liable to be in feeble health for a long time, and so they began treating cases by aspiration with oxygen replacement to avoid too sudden expansion of the lung. Two distinct benefits ensue from this method of treatment: the lung rapidly re-expands and the pyrexia which is often present rapidly subsides, so that the patient quickly regains his health. This treatment has been very successful, no untoward results having been observed and in a large series of cases not one of secondary hemorrhage has occurred. About 25 per cent. of their cases of hemothorax were infected and in cases of this class early recognition of the existence of infection and prompt drainage by resection of a portion of a rib greatly reduces the mortality. In the early months of the war pneumothorax was constantly being diagnosed, but with increased experience they now believe that pneumothorax in association with gunshot wounds of the chest is uncommon, only twelve instances having been found in a series of 500 cases. This complication produces great complications and difficulties in regard to treatment. In some of their cases good results were obtained by aspirating them for the purpose of withdrawing the air and getting a certain degree of expansion of the lung prior to resection of a rib. This procedure is accompanied by certain risks and hence should only be done with the guidance of pressure readings and by the sensations of the patient. In a case of pneumothorax with urgent dyspnea the intrapleural pressure may be that of the atmosphere and aspiration can therefore do no good, but on the other hand it may be found that the pressure is positive and that by drawing off the air a negative pressure may be produced and the lung gradually expanded.

2. The Surgical Treatment of Gunshot Wounds of the Chest.—H. Morriston Davies advocates early, and, if necessary, repeated exploratory punctures as essential to successful treatment of gunshot wounds of the chest, since without it it is not possible to differentiate, in the majority of cases, between a simple pleural effusion, a hemorrhagic effusion, a fluid hemothorax, a clotted hemothorax, or at times an infected hemothorax. When done in the proper way an exploratory puncture is accompanied by no danger, no distress to the patient, and practically no discomfort. In the treatment of fluid hemothorax the "oxygen replacement" method, first described by the writer in 1912, should be used and is without danger of edema of the lungs or recurrence of the hemorrhage. When clotted hemothorax is present an opening must be made through the chest wall and adequate room can be obtained only by the subperiosteal resection of some 5 cm. of rib. By such an operative procedure convalescence is more rapid and more complete than by the "wait and see" method. In hemothorax, in which there is infection, the operation of removing a segment of rib possesses advantages over other procedures and takes only a few moments longer. In discussing the treatment of pneumothorax the author recommends as an emergency measure, when intra-

pleural pressure is endangering the life of the patient, that a fine bore hollow needle (0.5 mm.) be thrust into the pleural cavity; the intrapleural air under pressure will escape slowly, giving the patient great relief. The beneficial effects of this trifling procedure may be permanent in the mildest cases. It is only in those cases which become serious because of a reaccumulation after some hours that any other line of treatment is indicated, as establishing a temporary fistula between the pleural cavity and the outer air. The necessity of having a manometer connected with the pleural cavity and of registering constantly the variations in intrapleural pressure and of having means of controlling the same during operative interference cannot be too strongly emphasized. With reference to the removal of foreign bodies from the lung the writer believes that this step should not be taken unless the foreign body is producing definite symptoms which are likely to be progressive, and that even then the operation should not be done until the initial reactionary inflammation has subsided.

3. The Rationale of Chemotherapy in Syphilis.—J. E. R. McDonagh reviews the line of argument by which, while he was working at the rationale of the Wassermann reaction, the thought had suggested itself to him that the action of salvarsan, which he considered as a peroxidase, might be enormously enhanced if a markedly absorbed sulphur compound could be prepared. He prepared two basic and two acidic compounds. The first acid compound was the acetyl derivative of diorthoaminothiobenzene and the second acid compound was the condensation product of the base with chloracetic acid. These two products were both extremely painful and their therapeutic action was practically nil. The two basic compounds were diparaaminothiobenzene and diorthoaminothiobenzone. The therapeutic action of the former of these was not as good as the latter, which has been called for short "intramine." This preparation is absolutely non-toxic and when compared with salvarsan the writer has found that in the primary and generalization stages of syphilis salvarsan is superior to intramine, but that in the recurrent stages the opposite was the case. He has treated over eighty cases with intramine and the results, provided the rules suggested are adhered to, are very much better than even the best of those obtained with salvarsan when it first came out. Several cases had healed at once with one injection, when they remained practically uninfluenced by an arsenic preparation and subsequent treatment with mercury and iodides.

5. Influence of Febrile Conditions on Inoculation Agglutinins.—H. L. Tidy finds that inoculation agglutinins are diminished or entirely removed by febrile conditions. It is possible that they are converted into agglutinoids. In certain cases they may return but usually they do not. A positive agglutination reaction to *B. typhosus* after the fifth day of pyrexia has the same value in an inoculated as in an unoculated person. Immunity conferred by inoculation may be affected at the same time as the inoculation agglutinins.

British Medical Journal.

January 29, 1916.

1. Observations on Treatment of Gunshot Wounds of the Knee Joint. A. L. Lockwood.
2. Epidemic Cerebrospinal Fever: the Place of the Meningococcus in Its Etiology. Edward C. Hort.
3. Studies in Antiseptics: On Chloramine; Its Preparation, Properties, and Use. H. D. Dakin, J. B. Cohen, and K. Kenyon.
4. Gassing Accidents from the Fumes of Explosives. Louis G. Irvine.
5. Note on Case of Phelebotmus Fever at an Island in the Eastern Mediterranean. J. T. D. S. Higgins.
6. The Temperature Necessary for the Destruction of Lice and Their Eggs. A. W. Bacot.

1. Gunshot Wounds of the Knee Joint.—A. L. Lockwood describes the method of procedure and operation employed at a base hospital in the treatment of wounds of the knee of various kinds, as tunneling wounds without fracture, open penetrating wounds, wounds with localized fracture of the bones forming the joint, with possibly a foreign body still embedded in the bone, and wounds in which a great part of the knee joint is laid open. The series coming under the observation of the writer consisted of sixty cases. In this series there was one death; there were three amputations, three cases of ankylosis, and four in which motion was limited, while in forty-nine free movement was obtained. The points which the author emphasizes are: 1. That all foreign bodies, whether metal or loose bone, should be removed from the knee-joint at the earliest possible moment. 2. Perfect immobilization is absolutely necessary. Do not start passive movements too early; wait at least three weeks after the inflammation has subsided. 3. Absolutely complete excision of all necrotic or even edematous tissue. 4. The capsule should be closed at the first operation if at all possible. 5. Antiseptics, other than the ones mentioned, should not be introduced into a joint. 6. Tubes should never traverse the joint surface as in Barnard's method. 7. Patients should not be moved till one is satisfied that infection has been successfully combated.

2. Epidemic Cerebrospinal Fever: the Place of the Meningococcus in Its Etiology.—Edward C. Hort discusses the theory that the meningococcus of Weichselbaum is in itself the primary infective agent in epidemic cerebrospinal fever and concludes that at present there is available no adequate evidence to show that this organism is itself the causal agent of the disease cerebrospinal fever. On the contrary, the experimental evidence which he presents distinctly suggests that it is not. He found that the fresh filtrate of cerebrospinal fluid in the two cases examined contained a virus which was highly infective to monkeys and states that the true bacterial content of the body fluids in this disease can only, as a routine procedure, be satisfactorily determined by using the fluids themselves as the optimum medium of growth, combined with injection into suitable animals in the fresh condition. Incubation of the body fluids infective to monkeys in the unincubated state, appears to destroy their infectivity, and in doing so, to throw some light on the ancestry of the meningococcus. These conclusions have a certain influence on the therapeutic and epidemiological control of the disease. Although the meningococcus appears itself to be incapable of producing the disease, it should be searched for as vigorously as heretofore, since its presence is a valuable danger signal that the true infective agent is, or has been, present. Attempts to prepare antiserums to the meningococcus do not appear likely to lead to effective control of the disease. Confirmation of the infectivity of fresh cerebrospinal fluid would justify the preparation and trial of effective antiserums thereto in the treatment of the disease. Attempts to destroy the meningococcus in the nasopharynx of contact carriers would appear to be of less value than an attempt to determine what the true infective agent of the disease really is. To this end attention should be particularly directed to filtrable organisms in the nasopharynx and the cerebrospinal fluid of acute cases.

4. Gassing Accidents from the Fumes of Explosives.—Louis G. Irvine outlines the typical sequence of symptoms in poisoning by nitrous fumes, consisting of initial symptoms of irritation, then a latent period of several hours duration, during which the patient

may and usually does feel quite well, and after this interval a sudden onset of acute symptoms, due to rapidly progressive and inflammatory edema of the lungs. He cites cases falling into two groups, namely, those due to exposure to the fumes of explosives immediately after blasting and those in which the exposure to the fumes occurs several hours after blasting. In the treatment of these patients emesis is produced as soon as possible in all cases by the hypodermical injection of apomorphine. This is followed by stimulants, ammonia, or preferably pituitrin. Atropine may prove useful in the latent stage. In the acute stage wet cupping of the chest, back, and front relieves the symptomatic distress. It should be followed by poulticing, or better, by jacket mustard water fomentation, applied very hot and changed every hour. Free bloodletting should next be performed and should not be delayed until the condition of the patient becomes grave. Venesection should be followed by saline infusion and the procedure repeated if necessary. Oxygen should be given intermittently to relieve and tide over the asphyxial condition. Injections of 1 c.c. pituitrin should be repeated every four hours. This line of treatment has been followed by marked success in a considerable number of cases, although when the condition of acute edema is well established probably a majority of the cases will die in spite of treatment.

Berliner klinische Wochenschrift.

January 3, 1916.

Infectiousness of the Cerebrospinal Fluid in Syphilis.—Frühwald and Zaloziecki mention the great importance of the study of this fluid in syphilitics. Ravant first showed an increase of cellular elements in this disease (pleocytosis). Next came the discovery of increased albumin and in turn the Wassermann reaction. Finally after prolonged search the spirochete was found and positive inoculation tests followed. The aim of the authors had been to learn more about the infectiousness of the fluid under various circumstances. But one of them (Zaloziecki) was called to the front, while the other found trouble in obtaining and feeding the rabbits necessary for prosecuting the work. In the meantime he (Frühwald) has gone ahead as best he could. The spirochete was found in the cerebrospinal fluid as far back as 1905 in a patient in the papular stage of syphilis. This find proved to be an exception, for other cases both of secondary and tertiary syphilis and tabes gave negative results. A year later a positive result was obtained by inoculating an ape with cerebrospinal fluid from a patient with papular syphilis. Several years later the spirochete was seen with the ultramicroscope in the centrifuged sediment of the fluid of a woman in the first year of syphilis. The patient had been stricken with total left hemiplegia. Curiously enough a parallel case was reported at about the same time. In 1913 Nichols and Hough reported a remarkable case in a man of twenty-five. Eight months after infection (he had received two salvarsan injections) he developed numerous evidences of cerebral syphilis with a psychical component. The cerebrospinal fluid was negative to the Wassermann reaction, which, however, was positive in the blood. However, the fluid was inoculated into a rabbit's testicle and a lesion slowly developed which contained the spirochete. Experiments, heretofore sparse and scattered, now began to be reported in large numbers. Many positive finds were reported for the secondary period. Results in metasyphilis were at first mostly negative, but positive finds in time became cumulative. In several cases paralytics showed the "four reactions." The authors now report such finds as they have obtained to date. Eight patients with primary syphilis, as might have been expected, gave negative results. In three patients with recent secondary syphilis a positive result was obtained in one. In seven patients in a more advanced secondary stage, two gave positive results. But one patient with tertiary syphilis was tested and with negative result. Finally in three miscellaneous cases classed as "nervous" only one, a case of paresis, gave positive finds. In general the positive find was the inoculation test made in the rabbit's scrotum. In four cases there were positive spirochete finds. In but one case was the Wassermann reaction positive. A collected series of spirochete finds made by all investigators to date shows the total positive to be fifteen. To this number should be added three positive finds in victims of inherited syphilis. In summing up the authors state that positive spirochete finds are very few (doubtless too few to be of use save in very obscure cases). The inoculation test is very slow and the lesions set up are sometimes so slight as to be overlooked. The Wassermann is often negative at the time of the test, even when nervous symptoms are present. Thus far no laws of infectiousness of the fluid can be postulated.

Münchener medizinische Wochenschrift.

January 4, 1916.

Blood Transfusion in Military Surgery.—Eloesser of Stanford University, now surgeon at a reserve hospital in Germany, mentioned the surprise one must feel to learn that such a life-saving measure as transfusion is seldom used on the battlefield. Even in home hospitals it is often in demand for secondary hemorrhage. At the front the man who is bled white by primary hemorrhage surely demands this resource. Of course the failure to apply it rests upon the complicated technique required and the inexperience of most of the surgical rank and file with surgery of the blood-vessels. At present more simple methods are being evolved, and recently one has been published by Sauerbruch in the interest of simplicity, but the author prefers one which he has modified from that of a San Francisco colleague, Pope. This involves uniting artery and vein with a rubber tube having at either end a glass cannula. The time required for local anesthesia, for dissecting out the radial artery of the donor and vein of the recipient, and for adjusting the apparatus is not stated. The transfusion lasts from fifteen to twenty minutes, and the author does not pretend to say how much blood passes from one subject to the other. No cases from the front have been reported in which the method has been tested, but the author has transfused ten patients with acute or chronic hemorrhages, the latter of septic origin. The management of the blood vessels does not appear to differ from the various American methods. The sharp V-shaped incision is used to admit the cannula, and the latter is modified from Brewer's all-glass cannula. Temporary ligatures and clamps are used upon the vessels. All parts which come in contact with flowing blood are wet with sodium citrate solution. All blood which escapes into the wound is quickly wiped away with pledgets wet with the same fluid. The outfit is very simple—in fact, no special apparatus outside of the cannula is required. For clamping a wire safety pin is used.

Atropine in Eclampsia Infantum.—Rascher states that there is hardly any literature on this subject which is accessible to him. In the country in which he practises there is often great need of some quickly acting resource for infantile convulsions. He describes a case in which atropine was used and hopes the remedy will be tested by colleagues. He was summoned to treat a three year old

girl for convulsions. Not long before he had heard that an atropine derivative had been used for similar purposes and he resolved to exhibit an ordinary atropine sulphate solution as carried in ampoules. The child had had a series of convulsions without apparent cause. Her temperature was high and the mother looked forward to an attack of some infectious disease. The paroxysms were now becoming serial and something had to be done. Laryngospasm coexisted. The author mixed the contents of an ampoule (one thousandth of a gram of atropine) with 9 c.c. boiled water and injected a syringeful (making, he says, about 1/650 of a grain). The symptoms improved almost immediately and no more crises occurred. In seeking a cause for the convulsions the most suspicious fact was her diet, she having been subsisting wholly on boiled milk. It was in 1907 that Bösl reported a similar result from the use of an atropine derivative made by Merck, which, however, seems to have dropped out of sight. The two results certainly warrant a test of the alkaloid in these cases.

Deutsche medizinische Wochenschrift.

December 30, 1915.

Experiences in the Treatment of Soldiers with Nerve Injuries and Nervous Affections.—Lewandowsky first mentions injuries of the peripheral nerves. The operations of neurotherapy and neurolysis may have been performed too late or not at all. There is an extremely conservative view, held only by a small minority, of delaying all intervention after nerve injuries for four or five months, on the principle that spontaneous repair may occur during this period. But even this modest rule is not followed. There are many whose injuries date back from six months or more who are either pronounced inoperable, or upon whom intervention is deferred, or who are promised recovery from paralysis without operation. The neurologist and the regular military surgeons are often at odds on such matters, especially because little is known of the operative prognosis. The author recommended operation in a series of forty cases, but in the great majority of cases nothing was done. Of seven in one battallion recommended for operation but one was subjected to intervention. Five refused operation and were released as incapable of service. Of those with injuries of the spinal cord, all were allowed to die. A permanent water-bath could have prevented decubitus at least in some of these cases. The dangers in cranial and cerebral injuries are bound up largely in the sudden or gradual evolution of abscesses, in both open and closed wounds. It is not sufficiently well known that the sudden appearance of headache, vomiting, and confusion indicate abscess formation, even in the absence of fever. In regard to functional neuroses—hysteria, neurasthenia, and traumatic neuroses—the diagnosis can be made with certainty in 95 per cent. of cases, *i.e.* in not more than 5 per cent. is there a difficulty in excluding organic disease, although an organic base of some kind may of course be imagined for many seemingly functional neuroses which develop in warfare. The psychogenic factors—fright and the unconscious wish to escape from military service—are sufficiently powerful to be regarded as determining the neuroses. A predisposition is also frequently in evidence in a neuropathic anlage. The same picture is seen in those who have not been under fire. These cases are all closely connected with the desire for compensation, just as is the case with victims of traumatic neuroses in peace times. It is curious at least that in Sweden and Denmark, in which there is no motive for "damage grafting," the damage grafter is as good as nonexistent. In the countries mentioned a compromise system after injury does away with him, and excludes the "unconscious wish" which leads to unconscious, or perhaps conscious, simulation of disease.

Maté. — Rammstedt in describing Paraguay tea gives a number of unconvincing reasons for writing it matte instead of maté, the latter, he says, being only the French equivalent of what he thinks is the native term matte. The active principle, known as mateine, is chemically related to caffeine and theine. Tea contains ordinary tannin, while coffee and maté contain so-called coffee-tannic acid. "Paraguay tea" demands a thorough investigation, which can be easily brought about because two German firms are at present dealing in the herb and can supply any quantity of material. It is not unlikely that after the war it will come to the fore as a new stimulant without the drawbacks of coffee. Maté has in fact been used freely throughout six-day races without any of the bad effects of coffee (tremor, palpitation). At present the leaves are mixed with twigs, dust, dirt, etc., so that it is only about one-third utilizable. The purest leaves contain 1.3 per cent. mateine (caffeine). By screening objectionable leaves, etc., to get rid of admixtures, products are obtained which yield from 0.49 per cent. to 0.96 per cent. of the alkaloid.

Medical Baronets. — The only instance of a medical man, *quâ* medical man, being raised to the British peerage was the late Lord Lister, but there have been a great many medical baronets. The presidency of either of the Royal Colleges is now considered to carry a baronetcy with it. In the case of the Royal College of Physicians (of London) the first baronet was Sir Hans Sloane, who was president in 1719. Since 1862, all the presidents have been baronets with two exceptions. There are now twenty medical baronets in the United Kingdom. Two medical men have inherited baronetcies, Sir Hugh Beevor, who is the fifth baronet, and Sir John Broadbent, who succeeded his father as second baronet in 1907.—*Medical Press.*

Arsenobenzol in Syphilis. — Tommaso Pontano presents the following advantages of employing arsenobenzol in lues: (*a*) Syphilitic fever yields to arsenobenzol as malarial fever yields to quinine. (*b*) In bone syphilis the pains cease in one or two days. (c) Neuropathic syphilitic cases, not of degenerative character, are profoundly and rapidly modified by the arsenobenzol treatment (headache, neuritis, radiculitis, gummata), functional integrity is often restored to the patients with the suppression of the pain; and a state of vertigo, which with a temporary amelioration resists mercurial treatment, may cease in a short time. (*d*) In febrile gummatous hepatitis, after a useless mercurial treatment, the arsenobenzol treatment may arrest the fever and decide the recovery of the patient. (*e*) In dyspnea and the pains of aortitis arsenobenzol rapidly causes the pain and dyspnea to disappear, whereas mercury acts slowly and sometimes fails in its object. (*f*) In syphilitics, moreover, with chronic well-compensated nephritis, the only therapeutic agent well tolerated is arsenobenzol. (*g*) Iritis and parenchymatous keratitis yield rapidly under the action of arsenobenzol.—*Universal Medical Record.*

Ichthyol in Erysipelas.—Dr. Helen Sexton reports the case of a soldier with a large suppurating wound on the inner side of the arm, in which erysipelas developed, the redness and swelling extending below the elbow. The arm was painted every twelve hours with ichthyol and glycerin equal parts, and covered with oil-silk, and a mixture containing large doses of bichloride of mercury was given. In forty-eight hours the temperature was normal, and all the local symptoms of erysipelas had disappeared; the wound was then dressed with ordinary hypertonic saline solution.—*British Medical Journal.*

Society Reports.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Wednesday, January 12, 1916.

THE PRESIDENT, DR. E. E. MONTGOMERY, IN THE CHAIR.

THE meeting was devoted to a discussion of the "Important Every-Day Economic and Ethical Problems of the Practitioner of Medicine."

The Problem of Increasing the Physician's Income: What Shall We Do to Be Saved?—Dr. THOMAS F. REILLY of New York read this paper. (See page 364).

Ethics of Fees and Fee-Splitting.—Dr. JOHN B. ROBERTS of Philadelphia referred to the fact that at the present time graduates in medicine have a choice between following a strictly scientific medical career, a sociological one, or a pedagogic service instead of the mere treating of disease. The last named was the only vocation formerly adopted by physicians. In the three forms of professional life first mentioned there was no question arising as to fees. The laboratory man, the municipal officer, and the college teacher received a definite salary. The ethical point raised in the mind of the therapeutic doctor was how much value should he place upon his services to a sick or injured patient. This, Dr. Roberts believed, must be determined by the quality and duration of attendance and the responsibility assumed by the doctor. The relation, he pointed out, was not a commercial one, but had a professional nature like that of a lawyer or priest. The physician, therefore, must be willing to reduce his charge from that normally asked if the patient were unable to pay the full amount. If the physician were unwilling to do this he should not, in Dr. Roberts' opinion, assume the relation of professional adviser to a man probably unable to pay the full fee. The term, fee-splitting, had been used to describe the giving of a commission by a specialist consulted in a case of disease or injury in the hands of another physician. The term was bad, because it did not include in the title the only point which made the division of fee responsible, namely, the secrecy of the cleavage; the patient's money might be divided among as many doctors as chosen, provided the patient knew who got his money.

Psychology of the Physician as a Wage Earner.—Dr. CHARLES W. BURR of Philadelphia announced that he had been somewhat astonished at being told that he was a wage earner. In the simplicity of his innocence he had believed that physicians did not get "wages," but "deigned to accept fees." He did not know that they were mere laborers, who, having been paid their wage, were settled with; but, rather, that they did daily things that could not be paid for, save in a coin with a different sound from the ring of gold or rustle of greenback. In the question given him by the program committee, the psychological difference between the physican as a wage earner and others, as in any psychological study, the factors compelling and controlling conduct were first to be considered. Chance, choice, and destiny, Dr. Burr declared, made men physicians. Excluding the small percentage of men entering medicine from purely altruistic motives, there were, in the author's opinion, five classes: (1) Those not wanting to work with their hands, imagining it to be much easier to work with the mind, and much more respectable; (2) those regarding medicine as a gentlemanly occupation which sometimes enabled one to marry a rich wife; (3) those believing it possible to make money by criminal practices without being caught; (4) those believing they could make money, notwithstanding the general opinion to the contrary; (5) those who, having a hunger for things intellectual, were drunk with scientific inquisitiveness and curious to learn the secrets of that strange machine, the living animal. When destiny agreed with choice there was the student who alone should be encouraged, and of this type Dr. Burr believed there was a sufficient number to meet the demand for physicians. In his opinion, the time was coming when the physician by destiny and choice alone would survive, and at that time there would be no need of discussions upon salvation from being poor. Dr. Burr did not find anything in the physician as a wage earner differentiating him from the rest of the world. He thought about as many physicians proportionately as business men made incomes of $10,000 a year, which, in the opinion of amateur sociologists, meant success. He did not find the physician more careless in business matters than other people. There was, however, a psychological answer to the wage question among physicians—that of permitting only those in whom choice and destiny met to study medicine. The few schools of the better class, it was stated, had already taken steps in this direction. When low class schools ceased to exist the wage question would care for itself. Trade-unionism, of which much was heard under other names as the cure-all for professional ills, Dr. Burr did not believe would help; but rather it would hurt, because it would increase the wages of the incompetent and decrease the wages and work of the best.

Safe and Sane Investments for Physicians.—Mr. THOMAS S. GATES, president of the Philadelphia Trust Company, made the statement that there was a science of investments just as there was a science of medicine. The medical profession, he said, would view with contempt patent medicine advertisements, yet many of the alluring invitations to invest money were quite as remote from the proper fields of investment as was the patent medicine bottle from the intelligent doctor. Stocks and bonds which were fundamentally most desirable, he said, did not appear in the newspaper. Persons not actively involved in the business of caring for money, he believed, would do well to regard that function as a specialized one, and enter it upon their own account with the same caution with which a banker, for instance, would attempt to give a prescription in medicine. A few cardinal principles, positive and negative, he said, governed the investment of money. Upon the negative side, the mere fact that one had money to invest was no argument for investing it at the moment; ruling prices should be considered. In the temptation to buy a stock rather than a bond there should be remembered the fact that in the buying of stock the purchaser became a partner in the business and consequently should know something of its management and of the industrial conditions surrounding it. Were the temptation that of a mining investment the important point to remember was that a mine was ever consuming itself. The salability of an investment also was not to be overlooked. If in the original purchase the judgment had been at fault it was believed better to face a loss and start over again than to stick to a bad bargain. Upon the positive side it was advised that the busy professional man invested his accumulated earnings to better advantage if he assumed certain fixed charges whereby his savings month by month were placed in the hands of those qualified to make earnings pay. One of the best forms of such investments, he said, was that of life insurance, which, as at present operated under State regulation, gave the protection of savings for after years with a larger payment in case of death. The building and loan associations, also under State control, when well managed, gave the investor a very fair return and an investment upon real estate security which, in the last analysis, was the highest possible form of security. A mortgage upon real estate, Mr. Gates believed, was not a particularly good investment for a doctor, unless the mortgage were in the hands of one able to attend to the condition of the property. The world, it was said, had but for a few generations regarded as legitimate investment in anything other than land. For many centuries the Christian Church proscribed the taking of interest as a moral offense, and the laws of nearly all civilized countries had made it a crime, while the voice of the publicists and ethical writers had been raised against it. The origin of this prejudice was commonly attributed to a passage in Aristotle to the effect that as money did not produce money, nothing more than the principal sum loaned could be equitably claimed. John Calvin deserved the high honor of having first detected the fallacy of this argument by observing that while money did not produce money, that which might be purchased with money, did, wherein was a perfect justification for the payment of interest. In the buying of a bond, which was in reality the lending of money to a corporation, it should be known that the corporation occupied a satisfactory place in the industrial field, that the bond was secured by a first mortgage protected by an adequate sinking fund, did not run for two long a time, and was salable. Business and professional men, successful in making money, it was observed, gave surprisingly little thought to its safe investment; they followed individual hobbies, and lost. The point to be always borne in mind was the difference between money invested or loaned at interest and money embarked in speculation. The rules which obtained in

the making of an investment obtained also in its sale. While a bond may have maintained a certain fixed price for a considerable period, the improper handling of its sale might very greatly decrease its price. In conclusion the author said that to the ordinary person the purchase of stocks offered no investment whatever. There was needed the technique of the professional trader, or the fatuous stroke of luck to obtain success; and upon this point it was observed that the few possessing the gift of winning told the least of how it was done.

Dr. JOHN B. MCALISTER, President of the Pennsylvania State Medical Society, Harrisburg, congratulated the Society upon the choice of the subject under discussion and thought it unfortunate that such matters were not more generally considered in medical societies. Fortunately the time had passed when the physician prided himself upon working hard and living and dying poor.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held November 16, 1915.

Dr. T. STUART HART IN THE CHAIR.

Observations on Forty Cases of Typhoid Fever Arising from a Common Source.—Dr. ORRIN S. WIGHTMAN presented this paper in which he stated that the only way definite conclusions could be reached relative to the methods and treatment of typhoid fever was through the observation of a sufficient number of cases to offer a fairly accurate comparison of results. With this idea in view he had chosen certain factors entering into a recent series of 40 cases of typhoid fever treated at the City Hospital. All of these cases were traced to a common origin, and thus offered a bacillus which could be cultured, and an attenuated vaccine carefully made which offered a reliable method of using vaccine therapy of known dimension, that was, so far as an isolated common infecting agent could be known. Of these 40 cases, 20 were set aside; 10 of these were given vaccine treatment and 10 were used as controls. The vaccines were given in doses varying from thirty-five to one hundred million, usually but one dose being given. The unsensitized vaccine proved dangerous and was promptly discontinued. The serum was at first sensitized from an immune patient, later immunized rabbit serum was used, and, still later, strains of the Army serum were used; these proved most satisfactory of all. An intravenous injection was followed by quite a marked reaction, which usually began to subside at the end of twenty-four hours, though in some cases it took from forty-eight to seventy-two hours. Practically all the cases in which there was a marked fall in temperature within twenty-four hours after the injection lost all the subjective symptoms of the disease, but this was not a true guide as the pulse rate did not reduce in proportion to the temperature chart. Aside from the temperature drop and general feeling of well-being, there seemed to be no limitation of the course of the disease, nor were they less careful in the subsequent management of these cases than of others. Practically all the cases had a severe albuminuria with casts. No rashes accompanied the use of the vaccine. The pulse became rapid and running and respiration in proportion. There was a tendency to marked peristalis of the intestines with cramps and diarrhea. The marked kidney reaction together with the urinary findings warranted caution in this direction. A second series of experiments was made with reference to dietetics. A series of ten cases was confined to the liquid diet, and a second series of ten cases was given the so-called mixed diet. Feedings in both instances were given in small quantities every two hours, starting at 6 A.M. and continuing until 10 P.M. Those confined to the liquid diet were in much poorer shape at the time of normal temperature range than the mixed feeders, and made a longer convalescence. The caloric value of the food was charted each day, and it was surprising how low a food value was compatible with an uneventful course of the disease. Particular care was accorded the mouths of all the patients, in order that reinfection from this source might be prevented. Dobell's solution was used freely and chewing gum was given several times daily. Rules for the care of the ward and all patients were prominently posted and rigidly enforced. The care thus exercised was fully justified in that there was no evidence of any infection among the physicians, nurses, or other patients in the hospital.

Dr. ALFRED MEYER asked what was the common source of infection.

Dr. WIGHTMAN replied that under the city administration this was hard to find, but the cases must have come from one of the adjacent islands. In all there were about eight cases sent to the hospital and they got about one-half of them.

Dr. MEYER said that it seemed to him that there was an immense amount of valuable evidence contained in the medical literature of all countries regarding the value of immunization against typhoid fever and that at present the only doubtful point was the duration of the immunity, but that in all probability this was at least two years. In 1914 he sent a questionnaire to forty large hospitals and training schools for nurses in New York inquiring whether nurses, house staff, and administration staff were immunized. The replies indicated that the institutions in New York were behind the times in not acting up to the evidence at hand to limit this disease in institutions. There was practically but one hospital in the City of New York where compulsory vaccination obtained, and that was in Mt. Sinai Hospital. In a very small number of institutions only volunteers were immunized.

A Case of Extreme Hematemesis; Transfusion Three Times.—Drs. R. F. DONALDSON and C. N. B. CAMAC reported this case. Dr. Donaldson presented the patient, a girl nineteen years of age, and stated that the case presented several points of interest worthy of mention. Her history was unimportant except for frequent attacks of tonsillitis in childhood and an attack of what was apparently acute infectious arthritis, when she was thirteen years of age. On January 15, 1914, the patient, seemingly in good health, save for a vague epigastric distress, vomited about a pint of pure, dark-red, unclotted blood. This was repeated on January 17 and again on January 20, when she was admitted to the City Hospital suffering from a grave anemia. Physical examination was otherwise negative except for a rough systolic mitral murmur well transmitted to the axilla. On the following morning the patient had three more attacks of vomiting, which caused the loss of thirteen ounces of blood. The blood picture at this time showed 1,800,000 red blood cells, with 22 per cent. hemoglobin. There was slight polychromatophilia and two normoblasts were found after twenty minutes' search. Dr Camac's notes at this time showed that the patient's lips bled readily and were crusted; the pupils were small, conjunctivæ pearly white; pulse regular and about 120, full but not forcible; visible pulsation of the vessels of the neck; slight thyroid fulness; no intrinsic thyroid pulsations. There was a visible precordial impulse, which was diffuse and found by palpation in the fourth interspace, just outside the midclavicular line, four inches from the median line. At the point of maximum impulse a loud first sound associated with a murmurous element, which was heard in the axilla, also was noted. There was a softish systolic murmur differing in quality from that of the precordial midclavicular impulse heard at the body of the heart, over and to the right of the sternum. The percussion note over the lungs anteriorly was resonant. There was no excess of adipose tissue on the abdomen, but the costal margins were obliterated. The lesser curvature of the stomach began at the uper border of the fifth rib. The tympanic note extended to the costal margin, where it was replaced by a flattish note, tympany returning at the level of the umbilicus. Liver dulness was replaced by a tympanic note, which was continuous with that of Traube's space. There was no venous prominence over the chest or abdomen. A direct vein to vein transfusion from her twin brother was successfully performed by Dr. Harry Janeway. It was followed in two hours by a profuse menstrual discharge which was more or less continuous for the next eight days. Five hours after the transfusion the patient was given 55 c.c. of horse serum intravenously. This was followed in a few hours by her seventh and last hematemesis. On the following day a second transfusion with a different donor was successfully performed. There was slight hemolysis and agglutination with the cells of the donor. A hemoglobinuria of seventy-two hours' duration followed this transfusion, when a third transfusion from a previously tested good donor was performed and this improved the patient's condition markedly. From this time on she steadily improved, until April 14, 1914, when she was discharged from the hospital. She had en-

joyed good health since that time. Recovery in this case seemed to be due in a large measure to the three transfusions. The method used, the direct vein-to-vein transfusion, would probably at the present time be supplanted by the indirect method with citrated blood. Their experience with the latter at the City Hospital had shown the technique to be exceedingly simple, and carefully controlled cases had shown only a very slight decrease in coagulability three-quarters of an hour after transfusion, and a definite increase in coagulabilty one hour and a half later. This case was interesting because it showed the possibility of recovery even in the presence of almost exsanguinating hematemesis, and because of the marked improvement following the transfusions.

Dr. LEWISOHN said that he was much interested in the subject of the increased coagulabilty of the blood after citrate transfusion; if citrated blood was transfused into a patient, the time of coagulability of the blood was shortened. Shortening the coagulation time by the citrate method in certain conditions offered a great advantage over other methods of transfusion, especially in hemophilia, purpura, etc. The only proper test for coagulation time was to introduce the needle in the vein of the patient and to take a test every one-half an hour, but the method was not easily applied. He had tried it in two patients and he found the coagulation time, shortened in the beginning, returned to normal in twelve hours. It seemed that there must be an over-production of prothrombin after injection of the citrated blood. The coagulation time was normal again after twenty-four hours. So far as the clinical application of the citrated method was concerned, he had seen about fifty cases of transfusion performed by this method. One great advantage was its simplicity.

Dr. MOSCHCOWITZ said that during February he was called upon to operate upon four cases of unequivocal ulcer of the stomach, but at operation no ulcer was found. In many of these cases of severe and profuse hemorrhage the victims might die, of course, but it seemed to him that the deaths were due, not to ulcer of the stomach, but to erosions of this organ.

Dr. HENRY ILLOWAY said that the case reported by Drs. Donaldson and Camac was certainly a most interesting one. In the consideration of the question as to the cause of the hemorrhage it was possible, as had already been said, that a large erosion of the gastric mucous membrane might have suddenly occurred, as it was held that an anemic condition favored the development of ulcus ventriculi, and this girl, the reporters said, was markedly anemic. However, the subsequent history of the case, the fact that she could eat well, ate the food given to hospital patients shortly after the arrest of the hemorrhages, spoke very strongly against such an assumption. The hematemesis might have resulted from the rupture of a small aneurysm in the stomach and such a case had been reported. It must also be remembered that varices, small aneurysms, of the esophagus located mostly near the cardia, where the esophagus ended, and there was a transition of tissues, might be the source of very severe hematemeses. It was a question whether the hemorrhages might not have been due to the condition of the blood, analogous to what they saw in scurvy. According to the description given of the patient such an assumption would not be at all far fetched.

Dr. JOSHUA M. VAN COTT said that he was very much interested in the condition of the teeth and their possible relation to the mitral lesion in this case. It was suggestive of infection of an embolism from the mitral valve, involving a deep branch of the gastric artery. Years ago he saw a somewhat similar case at the New York Hospital when the late Dr. Frank Ferguson was the pathologist there. A young girl died of repeated attacks of hematemesis and the autopsy revealed a very small ulcer of the stomach which had bitten the gastric artery.

Dr. DONALDSON said that in this case when the teeth had to be extracted no pus was found at the roots.

Some Clinical Observations on Battle Shock.—Dr. FOSTER KENNEDY said that he had seen many cases which had been described as suffering from "bullet shock." They differ from those instances seen in civil life only in degree. It was astounding that in the first line trenches there was so little grave mental or nervous disturbances, and it was only under the greatest physical stress that there followed a mental breakdown. It was seldom fear that knocked these people out; it was usually a lack of sleep. If a man was well fed and got five out of twenty-four hours for sleep, he was usually able to avoid that collapse in which he would laugh or cry and had to be taken away. Dr. Kennedy said he had seen a fairly large number of paraplegias and the like, especially after a heavy shell had exploded in the neighborhood of the men. He saw one man stripped naked, with his clothing in strips, who had not a single wound. He related an interesting case of a child of ten years who was with the family at their mid-day meal when a shell fell in the middle of the room. This little girl was in the corner of the room stirring soup. The bursting shell obliterated the house and killed the people in the house except the little girl, and the part of the room in which she was standing was left intact. Her mental processes stopped abruptly at the moment of the explosion of the shell and her life was held up. Dr. Kennedy did not believe there was any especial form of insanity developed by war, but the more feeble minded persons would break down under the stress imposed upon them. On the other hand, it was true that civilians who were asthenic, hesitating, and feeble in time of peace became frequently astute and strong members of society in war, succeeding in mobilizing their reserve forces to meet the extraordinary demands put upon them.

An Unusual Atypical Case of Pulmonary Osteoarthropathy.—Dr. HARLOW BROOKS reported this case. He stated that the patient was an Austrian by birth, twenty-eight years of age. His family history was negative except that he asserted that his father and his own son, a child of five or six years, presented physical peculiarities similar to his own. In so far as the child was concerned, however, this statement was disproven, for while the child resembled the patient it was in none of the deformities which characterized the case. The patient used alcohol moderately, denied history of venereal disease, and the Wassermann reaction and complement fixation test for gonorrhea were both negative. His wife had borne two healthy children and had had no miscarriages. The patient was stupid mentally, slow in thought, and the details of his history were probably not trustworthy. His present illness started three months before his admission to the hospital with severe headaches, heavy night sweats, and a persistent headache. During this time he had coughed a great deal and raised much sputum, but he did not attach much significance to this symptom since he said that he was accustomed to the cough, which he did not mind so much as the severe pains in the legs, back, arms, and particularly in the wrists. The patient presented in the gross the picture of a powerful, well-muscled male. The most striking peculiarities were shown in the head, the frontal eminences being very large, the face marked by very heavy supraorbital arches and by heavy loose movable masses of semi-cartilaginous consistency situated symmetrically at the outer angle of each eye. The zigmoid arches and malar prominences were very large and palpation indicated a thickening of the periosteal and subcutaneous connective tissue. Firm pressure caused pain. Some nodules of almost bony solidity were present in the subcutanous connective tissue. The lateral nasal bones were also much thickened and tender; true bony formation was apparently taking place here. The end of the nose was globular, cyanosed, usually cold, and apparently the site of fibrous growth. The thorax was well formed, but the respiratory excursion was narrow and the lateral view showed a tendency to the stoop characteristic in acromegalia. Although the extremities in general were shapely and well muscled, the wrists and ankles were notably large and tender on pressure or manipulation. The bone borders felt nodular and infiltrated. The fingers were typically "sausage shaped." The toes were slightly clubbed. The movements of the hands and feet were definitely impeded, as though from the thickened skin. Occasional atrophic areas of skin also appeared over the entire body. A thorough physical examination gave negative results in all other respects. The patient's pains were relieved under restricted diet, rest in bed, salicylate of sodium and sodium bicarbonate. At the time of his discharge the diagnosis lay between acromegalia leontiasis ossa and possibly an obscure type of osteoarthropathy. The patient reported from time to time and finally came with very definite chest symptoms, diffuse bronchitis, flattened percussion note over the entire chest, numerous râles, abundant purulent sputum, and the typical swelling and tenderness of the periosteum in the usual location. This development confirmed the diagnosis of pulmonary osteoarthropathy.

Dr. GEORGE B. WALLACE asked if there was any ele-

ment of myxedema in the case which had been reported.

Dr. BROOKS said that they had tried the thyroid treatment but to the detriment of the patient.

Dr. ALFRED MEYER said that some of the photographs circulated showed a marked retraction of both apices. He asked whether inoculation of guinea pigs with sputum had been practised to determine the presence of tuberculosis.

Dr. BROOKS replied in the negative.

The Diagnostic Importance of the Estimation of Uric Acid in the Blood in Cases of Chronic Arthritis.—Dr. JOHN CARROLL read this paper, in which he reported the results of a part of a study begun in cooperation with the staff of the Strecker Memorial Laboratory and having for its object the better classification of chronic arthritides, based on a combined chemical, bacteriological, and clinical analysis. After citing the many factors that presented difficulties when one attempted to draw conclusions from the amount of uric acid appearing in the urine, the essayist reviewed the conclusions of Folin and Denis in a recent article which were as follows: 1. In gout the blood was almost invariably high in uric acid while the non-protein nitrogen was usually within normal limits. In arthritis the blood not infrequently was high in uric acid, but most such cases had abnormally high non-protein nitrogen as well. 2. Neither qualitative tests for uric acid in the blood nor quantitative determination of uric acid alone could be depended upon in a differential diagnosis in gout or other arthritides. 3. For differential diagnosis in gout or arthritis by means of blood analysis the patient must be put on a purin-free diet and the uric acid determination must be accompanied by the determination of non-protein nitrogen. In the present study all medication was withheld for two weeks and a purin-free diet was instituted for five days before the specimens for analysis were taken. In 27 cases thus studied, 13 had abnormally high uric acid concentration, all being above 3.3 mg. per 100 c.c. In 10 cases the uric acid was below 2.1 mg. per 100 c.c., and four cases had uric acid above 2.7 and below 3.3. Of the 13 cases with high uric acid, 12 were cases of gout, and one was of sufficient importance to justify reporting in detail. This patient was a male, 34 years of age, who was admitted to a New York hospital ten years ago suffering with an acute gastrointestinal illness. There was repeated vomiting of blood, and a diagnosis of duodenal ulcer was made. The patient at this time noticed pain in the joint of the middle finger of the right hand. After this time his history had been one of a slow continued succession of joint involvements up to the present time. He now presented the classical picture of arthritis deformans. Five years ago he had an acute attack of diffuse nephritis. His admission to the City Hospital had been for an acute attack presenting the picture of gastroduodenal ulcer. This was one of the three cases in the series in which the rest nitrogen in the blood was above the normal figures, being 59 mg. per 100 c.c., and this and the high uric acid concentration (6.4 mg.) could be explained by the concomitant nephritis. The 11 cases with low uric acid were the types classified under arthritis deformans, four being of the pure atropic type; four of the periarticular type, with a doughy swelling of the periarticular tissue without much deformity, with a moderate degree of temperature, a moderate leucocytosis, and a general glandular enlargement; three were classified as a chronic arthritis associated with and due to intense pyorrhea, marked anemia, moderate temperature, great deformity, exquisite pain, and mobilization of the joints, with moderately high uric acid. The borderline cases had a blood urea above 2.7 mg. per 100 c.c. and below 3.3. Two were definite cases of gout in which the crystals were demonstrated, and two were cases of spondylitis deformans. A high filtrate nitrogen was present in three cases, one being the case cited in detail, and the other two were in definite gout cases in which a coincident cardiac decompensation existed. From the analysis of these cases the essayist stated that he felt justified in drawing the following conclusions: (1) That in gout the blood was almost invariably abnormally high in uric acid, while in non-protein nitrogen it was usually within normal limits. (2) That is non-gouty arthritis the uric acid was usually low. (3) That the non-protein nitrogen, when above normal in either gout or arthritis, could usually be accounted for in recognized associated conditions that cause it, such as increased catabolic or fever-cardiac decompensation and nephritis. (4) That for a differential diagnosis in doubtful cases of gout or arthritis, the specific medication must be withheld for at least a week or ten days and the patient kept on a purin-free diet for at least five days.

The Use of Bichloride of Mercury as a Substitute for Salvarsan in Intraspinal Injections.—Dr. LIVINGSTON HUNT read this paper, in which he called attention to some of the work that was being done in neurology at the City Hospital. He said it was not an effort to introduce a new therapeutic measure nor to disparage an old one, but rather a record of work done. The war had made salvarsan so difficult to obtain, and its price was so prohibitive, that they had been obliged to seek other means in the treatment of syphilis of the nervous system. Accordingly last summer they had tried the intraspinous administration of mercury. He stated that his paper was only a preliminary report on 45 cases, 40 of which were given intraspinous injections of bichloride of mercury, and five were given sublamine injections. In all 100 injections of bichloride of mercury and 33 injections of sublamine (mercury-ethylenediamene sulphide) were given. These cases at the same time were given every week intramuscular injections of salicylate of mercury and in the very early ones intravenous injections of salvarsan. The cases treated comprised cases of tabes, general paresis, cerebrospinal syphilis, tabo-paresis, clinical tabes, that was tabes with a negative serology, and syphilitic hemiplegia. The intraspinal injection of mercury was made in the following way: About 50 c.c. of blood was obtained from the patient's arm with a needle of large caliber, and collected in a sterile cylinder, preferably four hours after an intravenous injection of salvarsan. The blood was slanted, the clot separated, and then left over night in the ice-box. The next morning a sterile centrifuge tube, containing about 13 c.c., was readily filled with clear serum, and was then centrifuged for five minutes. A few red blood cells were collected at the bottom of the tube, and the supernatant fluid was poured into a sterile, freshly washed cylinder. To this one-fiftieth of a grain of bichloride of mercury was added.

The mercury was prepared by taking one gram of bichloride of mercury, very carefully weighed, and adding it to a liter of sterile distilled water, which was then brought to the boiling point. The bichloride would then completely dissolve and 1.3 c.c. of this solution contained approximately one-fiftieth of a grain of bichloride. The mixture was then made up to 30 c.c. with sterile saline, and inactivated for a half an hour at 58° C. It was then injected within an hour. The injection was given with the patient lying on his side. A 30 c.c. syringe was used and the fluid run in by gravity alone. The foot of the bed was elevated for an hour after the injection, and phenacetine was used liberally for the pain. After analyzing the cases somewhat more in detail Dr. Hunt summarized the forty-five cases as follows: Six cases showed marked subjective improvement as regards the general conditions; nine showed marked subjective improvement; twelve showed some improvement subjectively, but it was slight; thirteen showed no improvement; two became worse, and three died. In seventeen of the cases there was a well-marked reduction in the cell count and globulin, the Wassermann reaction not being readily changed. The author reported seven cases in which he had been able to follow the history closely from the beginning of the treatment to the present moment, together with the physical and laboratory findings. He concluded as follows: (1) The reaction from bichloride of mercury or sublamine in no way differed from the reaction which followed the administration of salvarsan. (2) The sublamine did not seem to give the same reduction in the cell count or clinical improvement as did the bichloride. (3) No ill effects followed these injections. The three deaths could be easily accounted for as the patients were practically moribund at the time of treatment, and were given the injections as a last resort. (4) The cases of tabes and cerebrospinal syphilis were helped more than any others. (5) Such improvement as did occur was evident in the feelings of the patient, in the sphincter control, in the pains, the gait, and the serology. There was no improvement in the reflexes. (6) Such intraspinous treatment could only be given at intervals of two weeks, because a cell count did not fall sooner. (7) The reaction obtained was one in which the cell count was first greatly increased and diminished only later. (8) The cell count and the globulin yielded much sooner than did the Wassermann reaction.

Stated Meeting, Held December 21, 1915.

DR. T. STUART HART IN THE CHAIR.

Causes of Death in Diabetes.—Dr. ELLIOTT P. JOSLIN of Boston said that he believed that the life of a diabetic patient might be prolonged, and that coma was an avoidable accident. The results of investigations with Professor Benedict at the Carnegie Laboratory and also observations at the Russell Sage Laboratory strengthened him in this belief. Also, the fact that under simple fasting treatment no death from diabetes occurred at the New England Deaconess Hospital for 350 days, confirmed this belief. During the past 21 years, 17 deaths from diabetes had occurred under his supervision in hospitals, and the rest outside. In order to avoid enthusiasm, Dr. Joslin said he had ascertained the causes of 98 per cent. of the deaths of diabetic patients seen by him since 1894. Of that number, 421, 152 died without coma. Of those, there were 13 miscellaneous deaths, 15 due to cancer, 16 due to tuberculosis, 32 to infections, and 56 to cardiorenal and vascular trouble. It would appear probable that if the methods employed in the treatment of these same arteriosclerotic conditions in non-diabetic patients were carried out, these methods would work well with the diabetics. An infection was an additional load for the diabetic to carry, and to it he often succumbed. The advantage of treatment of infections of the leg, recommended by Dr. Slettin in the *Journal of the American Medical Association,* 1913, Vol. 60, p. 1126, was emphasized. Several of the tuberculous cases had done very well. The bad prognosis formerly given was probably due to the patient's coming late for treatment. The cause responsible for most of the deaths was coma. Upon studying these cases it was evident that the predisposing cause was etherization in quite a group of cases. Ether anesthesia was a burden which a light case of diabetes might bear easily, but which might change a moderate case to a severe one, and a severe case might be fatal. Impaired kidneys which were unable to excrete the acids formed were a second predisposing cause; third, infections, both local and general; fourth, and this is by far the largest group, a rapid change to a fat-protein diet. This was the culminating factor in many long-standing cases of diabetes. Fifth, a rapid loss of fluid due to decrease in salt in the diet appeared to have caused coma in one instance. Coma in a diabetic patient was like the perforation of a duodenal ulcer in a dyspeptic; the catastrophe was not of recent origin. In severe, long-standing, and complicated cases, Dr. Joslin said he had prepared patients for fasting by omitting fat for two days, then omitting protein, and upon subsequent days halving the carbohydrate until only 10 grams of carbohydrate were given, and upon the following day fasting treatment was taken up. Upon the first days of fasting one should give broths. Otherwise the patient would lose weight because of lack of salt in the diet. Since September 24, 1915, no sodium bicarbonate had been given a diabetic patient either in or outside the hospital, and yet acidosis had been controlled. A chart of fatal and living cases showing the duration of life for each decade was shown, and in each decade except the sixth and seventh, the living cases, despite the fact that this number included those recently coming for treatment, showed a duration of life considerably greater than that of the fatal cases. This was good evidence that the treatment of diabetes was improving.

The Treatment of Diabetes, with Especial Reference to Acidosis.—Dr. EDGAR STILLMAN of the Rockefeller Hospital said that the object of the fasting treatment of diabetes mellitus was not only to render the patient permanently aglycosuric, but to control acidosis. After glycosuria, acidosis was the most dominant factor in the treatment. The term acidosis signified the accumulation of acid bodies in the blood and tissues sufficient to neutralize enough of the sodium bicarbonate there present to reduce the alkaline reserve to a level below normal; it did not mean an actual acid reaction of the blood and tissues. Urinary tests for acidosis were often misleading in that they were indicative merely of the excretion of acid bodies and were not a true index of the actual accumulation. On the other hand, an analysis of the blood sodium bicarbonate by the Van Slyke method offered an accurate measure of the accumulation of these bodies and gave a true index of the degree of acidosis present. Diabetes might be classified into four groups according to their response to fasting. It was necessary to bear in mind that each group should be treated individually, indicated by the degree of acid intoxication measured in degree of blood alkalinity. With a knowledge of the degree of acidosis, determined by the method described, almost all cases of diabetes might be treated by the fasting method safely and with benefit.

The Relation of Prognostic Factors to Treatment in Diabetes.—Dr. NELLIS B. FOSTER said that those factors which influenced prognosis were not habitually considered as intimately related to the problem of therapeutics because of the custom of thinking in the terms of acute disease, though the necessity of doing so was self-evident. When a man suffering from chronic renal disease was advised to seek a mild winter climate, the physician was trying to avoid the danger of pneumonia to his patient, thus considering a prognostic factor as a problem in preventive therapeutics. Chronic disease was the cause of death in only a minority; the majority, weakened and undermined in health, died of acute superimposed infections, or of complications. It was necessary in each case of diabetes to form a clear estimate of the dangers which menaced the individual patient in order to carry out the prime endeavor of prolonging life, and it was no less requisite to consider these factors in the means adopted to ameliorate the symptoms of the disease. Infections took first rank among the dangers which beset the diabetic and accounted, by precipitating coma, for over 78 per cent. of the deaths. Since this danger, which killed the majority of diabetics, menaced all alike, any mode of treatment which disregarded these prognostic factors was lacking in foresight. The disease once contracted, the only safety was in keeping the patient in some condition approximating to normal vigor so that infective agents found a less fertile soil. Disregard of one ultimate aim of therapy in diabetes, that was, an approach toward a healthy state of resistance to infectious disease, so often led to calamity that he was frankly pessimistic for that group of cases which could attain and preserve a sugar-free urine only at the expense of nutrition. The average diabetic not only had more comfort and sense of well-being when his urine contained no sugar, but his actual resistance to infection was higher. There were cases in middle life where a severe glycosuria was not complicated by acidosis and where under-nutrition and loss of strength were the striking features; most of these cases regained strength and energy after the glucosuria was controlled. With others, the diet which controlled the glycosuria, necessitated that the patient remain some 20 per cent. under normal weight; while with a diet that held him but 10 per cent. under weight he had less than 15 grams of sugar daily in the urine. It was doubtful which was preferable. Again, exercise benefited the majority of diabetes, but some patients had slight rises in temperature after exercise though without the exercise the tolerance for sugar was too low for safety. These questions were intimately concerned with the future of the patient and were best decided by remembering from what direction danger approached. The real criterion of success in treatment was not the fact that the urine did not contain glucose, but the percentage of blood sugar. To excessive hyperglycemia was to be assigned a large degree of impairment of function; the tolerance appearel *nil*, but after a few months' treatment when the blood-sugar was reduced to only a little over normal there was often a surprising ability to use carbohydrates. It was impossible to tell in advance whether any given case was mild or severe; many that seemed severe in the beginning, even with considerable acidosis, proved after a year to be only mild; but this was true only when the disease was not of long duration. Dr. Foster said he divided his cases into two groups: early and advanced. The severity of the acidosis or glycosuria in the beginning was no criterion of the actual condition and this was demonstrated by cases that were infused at the beginning of treatment because of incipient coma. The history of these cases indicated about a year's duration of the diabetes, and some of them were now using on five days of the week unrestricted amounts of starch without resultant glycosuria; one of them had normal blood-sugar unless the routine vegetable day was omitted for several weeks. All were under thirty-five and all up to normal in weight and vigor. These cases illustrated the difficulty in differentiating mild from severe diabetes. Concerning the cases of young adults who were observed first when the disease was of some years' duration, the advanced cases, the results had not been encouraging even when, on account of slight acidosis, it appeared in the begin-

ning that the task was much easier than with the early cases. The glycosuria might be easily controlled, but the blood-sugar was difficult to reduce to normal; it remained normal only under the most restricted conditions and, as a rule, the tolerance was too meager to preserve health over long periods. To this group belonged those patients who had adhered to diet and died of complications and infections wherein coma occurred only as a sequel to acute disease. Of those who had not been so rigidly dieted, the majority had died in coma. The period of life in both groups averaged over two years from the beginning of treatment. The point was that with advanced cases in young persons the results were often discouraging even when the disease was apparently under control. With early cases much could be expected from treatment; vigilant control of the diet so that glycosuria was absent and the blood-sugar down to nearly normal was justified since with time tolerance increased, and even a dangerous degree of acidosis did not necessarily frustrate this design, since it could be abolished. With early diagnosis in some young adults with severe diabetes and considerable acidosis much could be accomplished by vigorous treatment, the end to be attained being a sugar-free urine, blood-sugar as near normal as possible, and absence of acidosis. The chief danger lay in the after period when because the urine was so persistently normal the necessity of the diet seemed doubtful and restrictions were too often abandoned with consequences that were sometimes serious. The therapeutics endeavors in young patients, in whom the disease was early or advanced, were directed to prevent the development of acidosis or to abolish it after development. If there was no acidosis, it was not necessary to resort to fast-days as a means of controlling the most extreme glycosuria, although this could be attained most rapidly by the complete withdrawal of food, but this was not always safe as starvation induced acidosis. Where acidosis dominated the picture and the disease was of long duration, the menace was coma and the fact that any of the patients could be relieved of their danger, even for a brief time, by fasting was a remarkable contribution to the knowledge of diabetes, and this was the special field for the fasting method which should be used only when other and less drastic methods were inadequate to effect the desired result and only in well equipped hospitals where acidosis, induced by fasting, could be measured, and treatment regulated to meet the new menace.

Dr. FREDERICK M. ALLEN of the Rockefeller Hospital said that deaths under the fasting treatment seemed to occur under three conditions: First, in the patients in whom the glycosuria did not clear up on fasting and in whom death had sometimes seemed unavoidable; but a case recently observed by Dr. Geyelin might indicate that even this type of patients might be saved under sufficiently careful treatment. Second, in those other unusual patients who developed acidosis on fasting, and died because the warning symptoms were not recognized in time by the attending physician. It was to be hoped that the use of the Van Slyke apparatus would give adequate notice of danger in such cases. Third, in those who cleared up as usual on fasting, but who were then placed on diet which allowed glycosuria to return; the glycosuria was again stopped by fasting, glycosuria again brought back by diet, and so on until the patient was practically starved to death. The duty of the physician consisted not merely in fasting the patient sugar-free, but also in devising a diet which sufficed to nourish him permanently without bringing back the sugar. Many physicians would like to have general directions for the diet of patients, with recipes and food lists for each meal. These had not been published and were possible only to a very limited extent. The great essential was that physicians should recognize the need for individualizing the treatment for every case. The diet of every patient had to be worked out to suit his tolerance for carbohydrate, for protein, and for fat; these were added in small portions, day by day, according to some method to show the tolerance for each. The treatment was like that of a heart case—first absolute rest and then putting on strain very gradually and cautiously. A few hours' study would enable any physician to order foods according to their composition; he should order them on this basis and not from set diet-lists and should not undertake to treat diabetes unless equipped with this information. Some patients needed carbohydrate first, especially when there was acidosis; some needed protein first, especially when they were very weak; none needed fat first, and the previous attempts to introduce large quantities of fats on so-called fast-days and vegetable days had been a mistake and responsible for much of the bad prognosis. The second feature in the treatment was exercise. It was always possible that some injurious effect might be observed, but as yet there had been no febrile elevation of temperature, nor any sign of harmful influence in any case. Beginning gradually, when the patient was weak, the exercise was increased to make an athlete of him as far as possible. Severe diabetics had reached the point where they walked several miles a day, went roller skating, jumped rope, climbed stairs, threw the medicine ball, and spent most of their day in muscular exercise. Aside from the slight rise of tolerance, the benefit consisted in abolishing insomnia and neurasthenia and building up the patient's general vigor and resistance. The differences between this method and previous methods of treatment might be grouped into the radical differences and the differences of degree, or detail. The radical differences were: first, the long fast and the demonstration that this cleared up glycosuria and acidosis in cases of the most desperate type. Magnus Levy had emphasized the fact that the only known method of warding off coma had been the neutralization and elimination of acetone bodies by means of alkali; he pointed out that the ideal treatment for coma would be some way of causing the acetone substances to be burned, but that no such method was then known. The fasting treatment did cause the acetone bodies to be burned. The second radical difference was the discontinuance of the use of maximal quantities of fat, and the demonstration that severe cases required limitation of fat and calories as well as of carbohydrate and protein. This was the reverse of the previous method which aimed to introduce fat as abundantly as possible. The other group of differences, namely, those of degree, or of method, were not without importance, and might be decisive in many cases. Among these might be mentioned, first, the shorter time required, since many patients could stay only a limited time in the hospital; second, the principle of requiring permanent sugar and acid freedom in all cases; third, the reduction of weight to any point that might be necessary to achieve these ideals, this reduction often being considerably greater than practised by the Naunyn school; fourth, the education in eating simple foods free from artificial flavors or inducements to overeating; fifth, the use of routine fast-days, even when patients were not showing sugar with the idea of bringing them farther and farther away from the point of showing sugar; sixth, the training of patients in the testing of their urine and other details of treatment, so that they could carry it out intelligently at home. The prognosis could be learned only by further experience. Thus far, results had seemed to justify the belief that diabetes ordinarily was not an inherently progressive condition, but rather the simple weakness of a metabolic function. No patient who had followed the treatment faithfully had died thus far, except one who died of tuberculosis; also, none had reentered the hospital in worse condition than on his first admission. From the standpoint of the diabetes alone, it would probably be conceded that patients would do better when glycosuria and acidosis were kept absent. This left merely the question of their general health and resistance under this program. It was believed that this was the proper treatment, not only for coma, but also for infections. No complication had occurred in any treated patient. Those coming in with carbuncle, gangrene, and other infections had seemed to do better under fasting treatment than before this was instituted. One patient had survived pneumonia. At the Rockefeller Hospital there had been more colds this winter among others than among diabetic patients. It was believed that the resistance of patients was higher when they were kept free from glycosuria and acidosis than when these were allowed to continue, and exercise and fresh air raised this resistance to what seemed a higher level than could ordinarily be attained with diabetic patients. The gain in weight and tolerance with many patients, even with high blood-sugar, seemed to indicate that overstrain was successfully avoided. The question of inherent downward tendency could never be settled by these cases of utmost severity since keeping them alive at all might involve some overstrain and a final fatal result. It was believed that this treatment would at least assure the greatest possible comfort, usefulness, and duration of life even for these cases, and that the efficient application of these principles to the great mass

of mild or moderate cases would save such patients from further downward progress.

Dr. H. Rawle Geyelin said that, before going into the account of one particularly interesting case at the Presbyterian Hospital, he would like to emphasize one point that Dr. Allen brought out which he himself had seen illustrated at the Presbyterian Hospital and also at the Vanderbilt Clinic; this was that after these patients were sugar-free on the Allen treatment of fasting, a general line of diet could not be prescribed applicable to each and every case; one had to feel one's way and try out first carbohydrates, then proteins, and lastly fats; also by increasing one food constituent out of proportion to the original individual tolerance. This was very important. Two or three cases which he had seen lately could stand 50 grams of carbohydrates alone before showing sugar, but would not stand 10 grams of carbohydrates where only 20 grams of protein were given in addition. The case he spoke of originally, which was particularly severe, showed sugar on 20 grams of protein alone. The patient was a boy, 19 years of age, who had had an extremely acute history with an onset of three weeks' duration before admission to the hospital and a loss of weight amounting to 40 pounds in this short time. When he came to the hospital he had 90 grams of sugar in a 24-hour specimen and was on the verge of coma with typical air-hunger respiration and all symptoms very suggestive. There was a large amount of beta-oxybutyric acid in the urine—50-60 grams. He had then been fasting for 36 hours and the week previously had been on restricted carbohydrate diet. When the patient was admitted, there was a distinct lowering of the carbon dioxide tension in blood and alveolar air which was regarded at the time as one of the most serious indications so that there was some question as to continuing the fast. This was done, however, and at the end of a five-day fast the patient had been excreting every day between 70 and 80 grams of sugar and there was an excretion of urinary nitrogen ranging to 35 grams, this output being tremendous when it was considered that the patient was fasting. At the end of the five-day fast he had been showing a distinctly decreasing carbon dioxide tension of the plasma and seemed to show less acidosis. On the third day of the fast he showed very marked air-hunger and began to show very great distaste for his carbohydrates; this increased to nausea. At the end of five days, as he showed a large amount of nitrogen in the urine and a correspondingly large amount of sugar, it was determined to feed him, beginning with pure carbohydrate; but the only thing he could take was milk, so it was necessary to resort to protein-fat-carbohydrate diet. After a day's feeding he showed rather distinct signs of improvement and he was then able to be transferred to Cornell for calometric study. He was fed for three days before being transferred. At Cornell he was put on a mixed diet, chiefly protein, for 24 hours; then the protein was kept high. He was still excreting large amounts of sugar and nitrogen so that at the end of the second 24 hour period he showed D:N ratio of 3.8, which was very high. At the end of three days' feeding and study of the effect on his metabolism, he was put on a fast. His clinical symptoms had improved before this fast and the carbon dioxide of the plasma went from 19 to .55, this, of course, being accompanied by an intake of large amounts of bicarbonate. He had improved in the last two fast days so that his sugar was less than half in the urine and the urine-nitrogen had fallen to 16 grams. So that the case which had seemed to be absolutely doomed now looked as if there was a very good chance for recovery. The interesting point was that the second fast had seemed to do the patient good, whereas the first one absolutely did harm, and the administration of a protein-fat-carbohydrate diet followed by a pure protein diet was accompanied by a general improvement.

Dr. Graham Lusk urged that the D:N ratio be taken into consideration in the diagnosis of the intensity of diabetes. He referred to the case of Dr. Geyelin which had been investigated by Dr. Du Bois at Bellevue Hospital. The patient when given a meat and fat diet containing 16 grams of nitrogen, eliminated 36 grams of nitrogen in the urine and showed a D:N ratio of 3.8. On the third day of starvation the D:N ratio was reduced to 2.8, indicating that some of the sugar derived from protein during the fast was being oxidized. In a severe case it seemed that the procedure which involved the determination of the D:N ratio might be of significance in diagnosis.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

California State Board of Medical Examiners.

San Francisco, June 15-16, 1915.

(*Concluded from page* 310.)

GENERAL MEDICINE

1. Typhoid fever: (*a*) etiology; (*b*) symptomatology; (*c*) pathology; (*d*) diagnosis. 2. In a case of general anasarca, how would you proceed to determine the underlying cause? 3. What are the early signs of tuberculosis, both subjective and objective. (*b*) Describe two important tests for tuberculosis and give relative value. 4. (*a*) Differentiate acute cerebrospinal meningitis and acute anterior poliomyelitis. (*b*) Give treatment of the latter. 5. (*a*) Describe and give management of a case of persistent gastroenteritis in an infant on artificial diet. 6. Give ten causes of headache, and indicate location of pain in each variety. 7. Give a brief discussion of epilepsy, and give general advice to such patient. 8. What is the significance of a blood pressure of 240 in a woman 60 years of age? 9. Give symptoms and treatment of chlorosis. 10. Discuss the various types of asthma from etiologic standpoint, and give general management of one type. 11. Discuss the complications and sequelæ of scarlet fever. 12. What is the usual type of pneumonia in the child; in the adult; in the aged? (*b*) Give description and treatment of one type of pneumonia.

OBSTETRICS AND GYNECOLOGY

1. What is a blue baby? Give pathology and treatment of the condition. 2. Ophthalmia neonatorum: Give etiology, pathology and treatment. 3. (*a*) What are the indications for the use of forceps? (*b*) for cesarean section? 4. Diagnose tubal pregnancy before rupture. 5. Describe the mechanism of labor with a left mento-anterior position. 6. Differentiate polyhydramnios from twin pregnancy. 7. Name the ligaments of the uterus and give the origin and insertion of each. 8. Define and give etiology and pathology of cystocele, rectocele, hematocele and procidentia. 9. Describe an operation for complete laceration of the perineum. 10. Give diagnosis and treatment of pelvic abscess. 11. Give cause, symptoms and treatment of subinvolution of the uterus. 12. Erosion of the cervix: Give cause and treatment.

SURGERY

1. (*a*) What conditions will cause bleeding from the stomach? (*b*) State briefly etiology, symptomatology, clinical and laboratory findings, and prognosis of gastric ulcer. 2. What symptoms and signs would result from fracture of the skull over the right Rolandic area? 3. State briefly the general considerations in the treatment of gunshot wounds. 4. (*a*) Name the different varieties of goiter. (*b*) When is removal of the thyroid gland indicated? (*c*) When is the ligation operation indicated? (*d*) When is no surgical interference indicated? 5. (*a*) Diagnose posterior dislocation of hip. (*b*) Describe briefly the necessary manipulations to reduce said dislocation. What is the after-treatment? 6. Describe the operation and name structures encountered in ligation of the superficial femoral artery at the apex of Scarpa's triangle. 7. (*a*) Describe the operation of removal of the appendix. (*b*) What are the indications for said operation? 8. (*a*) Describe the symptoms and signs of oblique fracture of head of humerus. (*b*) Describe briefly the treatment. 9. Describe briefly a typical case of acute empyema, giving all aids to diagnosis of said condition. 10. Give the diagnosis, course and prognosis of cancer of the rectum. 11. Describe the treatment of acute gonorrhea in the male. 12. Differentiate gallstones from right-sided kidney stones.

HYGIENE AND SANITATION

1. Indicate the limitations of private practice as compared with public health practice. 2. (*a*) What are the most important foreign ingredients in water? (*b*) Mention five methods of purifying water. 3. (*a*) What prevalent acquired defect in school children's eyes is directly due to school life? (*b*) Discuss the prophylaxis of eye defects. 4. Why should the registration of vital statistics be compulsory? 5. In what ways are health and efficiency of school children promoted by fre-

quent physical examinations? 6. Describe the modern method of dealing with an epidemic of diphtheria among school children. 7. What diseases are transmitted by animals and insects? 8. Discuss antityphoid inoculation. 9. Name ten preventable diseases and indicate the mode of prevention. 10. Discuss modes of dissemination of diseases which can be transmitted by indirect contact. 11. Discuss the efficiency of formaldehyde as a disinfectant. Describe most efficient method of using it. 12. Describe an efficient method of disinfecting excreta.

ANSWERS

GENERAL MEDICINE.

1. TYPHOID FEVER. The bacillus of Eberth is the pathogenic microorganism of the disease; it is conveyed by contaminated food or water, by flies and by fingers. *Symptoms:* Insidious onset, weakness, headache, epistaxis, vague pains. The temperature rises gradually, about 2° in the evening, and falling 1° in the morning. Diarrhea, tenderness in the right iliac fossa, enlarged spleen, and a characteristic rash which appears from seventh to twelfth day. During the second week the temperature remains at a uniform level; typhoid state and delirium may be present. The pulse becomes rapid, weak, and dicrotic; the heart sounds are feeble; the tongue is coated, fissured, and tremulous; sordes appear on the teeth; the abdomen is distended; the stools are yellowish and offensive (said to be like pea soup); the Widal reaction may be positive. In the fourth week the temperature becomes normal. *Pathology:* "Principally inflammation of the lymphoid tissue of the lower portion of the ileum, with more or less catarrh throughout the bowels. Peyer's Patches—first week.—Are swollen through infiltration of leucocytes, the surfaces raised and fawn-colored—the infiltration involves the submucous coat. The lesions are most numerous at the lower end of the ileum. Second week.—The surface becomes abraded; sloughs form, which are often bile-stained. Third week.—Sloughs come away, leaving ulcerating surfaces. Typical typhoid ulcers are thus formed. A few solitary glands undergo the same process. At the end of the week the ulcers begin to granulate, but healing is usually slow. Mesenteric glands may undergo the same changes, but more often become swollen, red, and tender only, or break down into cheesy masses. Other organs—Spleen and liver are enlarged; heart is soft and flabby. The voluntary muscles undergo granular degeneration; in fact, similar changes to those found after death from high temperature."

Diagnosis is made by the symptoms, mainly the Widal reaction (if positive), temperature, eruption, enlarged spleen, low leucocyte count, and diarrhea.

2. *Anasarca:* If the edema began at the feet and spread upward, the cause is probably cardiac disease. If it began in the face and spread downward, it is probably due to renal disease. It may also be due to trichinosis, in which case it will be found to have begun over the affected muscles. It is also found in Hodgkin's disease.

3. The early manifestations of pulmonary tuberculosis are: (1) *Physical signs:* Deficient chest expansion, the phthisical chest, slight dullness or impaired resonance over one apex, fine moist râles at the end of inspiration, expiration prolonged or high pitched, breathing interrupted. (2) *Symptoms:* General weakness, lassitude, dyspnea on exertion, pallor, anorexia, loss of weight, slight fever, and night sweats, hemoptysis.

Calmette's ophthalmo-reaction: "One or two drops of 0.5 per cent. purified old tuberculin are instilled into one eye. Tuberculin ready prepared for this purpose is on the market. If tuberculosis exists anywhere in the body, a conjunctivitis is induced within twelve to twenty-four hours. This generally subsides within a few days. The method is not without some, though slight, risk of injury to the eye; and the test is absolutely contraindicated in the presence of any form of ocular disease. A second instillation should not be tried in the same eye.

Von Pirquet's method: "This is the most satisfactory of the tuberculin tests. Two small drops of old tuberculin are placed on the skin of the front of the forearm about two inches apart, and the skin is slightly scarified, first at a point midway between them, and then through each of the drops. In about ten minutes the excess of tuberculin is gently wiped away with cotton. No bandage is necessary. A positive reaction is shown by the appearance in twenty-four to forty-eight hours of a papule with red areola, which contrasts markedly with the small red spot left by the control scarification."—(Todd's *Clinical Diagnosis.*)

4. In *cerebrospinal meningitis,* Kernig's sign is present, and examination of the cerebrospinal fluid (following lumbar puncture) will show the presence of the *Diplococcus intracellularis meningitidis.* In *acute anterior poliomyelitis,* both of these signs will be absent.

Treatment of acute anterior poliomyelitis: "During the acute stage the patient should be isolated and confined to bed. Mild laxatives and febrifuges may be used with some advantage. Hexamethylenamine (2 or 3 grains every two hours during the acute stage) has been recommended by Dana and others for the purpose of sterilizing the cerebrospinal fluid. Aspirin or morphine may be necessary for the relief of pain. Warm baths and lumbar puncture are also worthy of trial. The affected limbs should be wrapped in cotton wool. In the course of two or three weeks, if the acute features have entirely subsided, the use of massage and electricity should be begun. The treatment of the latter stages is chiefly surgical, and has for its object the prevention or correction of deformities."—(Stevens' *Practice of Medicine.*)

5. *Gastroenteritis:* Artificially fed babies in the hot, humid, summer months are especially prone to this infection, superinduced by the ingestion of unwholesome milk. Infants and children under two years are mainly attacked. In the *mild form,* the stools first attract attention; they are curdy, loose and foul. The fever is moderate and the child fretful. The character of the stools soon changes to a greenish yellow, and they become more numerous, five to six a day, and the fever rises to 102° to 103° F. If prompt measures are taken, recovery is rapid and quite certain. In the *severe form,* vomiting, with loose frequent spinach-green stools and high fever may be seen at the outset. Vomiting follows the ingestion of nearly all the food offered. The fever and inability to take food produce weakness and extremely rapid emaciation, and later a comatose condition with marked prostration. The fontanel is sunken and the pulse is weak. The stools may be streaked with blood and contain mucus. The fever frequently rises to 104° or 105° F., and death may be preceded by coma or convulsions. In the *toxic form,* the symptoms are severe from the outset. High fever and intense prostration are added to the vomiting and frequent stools (which are green and intensely foul). Cerebral symptoms soon supervene, and delirium and coma usher in the end.

Management: Place the patient in the coolest, cleanest, and largest room possible. A cotton slip and diapers only are to be worn. A competent nurse must be secuerd if possible. Reduce the fever by frequent cool sponging or tepid baths. An initial purge with castor oil or calomel is indicated. Stop milk in all forms for at least twenty-four hours, placing the child on a starvation diet of boiled water alone, or on barley water made with one ounce of flour to the quart. Resumption to cow's milk feedings must only be made when the stools resume the normal type.—(From Chapin and Pisek's *Diseases of Children.*)

6. *Headache,* due to *anemia,* may be felt in the forehead, vertex or orbit. That due to *hysteria,* is felt on the top of the head. That due to *neurasthenia,* is usually vertical, but may be felt as a band round the head. That due to *nasal disease* or *sinus disease* is felt at the root of the nose and running thence back to the occiput. *Ocular* headaches are frontal or occipital. That due to *constipation* or *digestive disorders* is frontal and orbital. That due to *uterine disease* is felt on the vertex or in the occipito-cervical region. That due to *cerebellar lesions* is felt in the cerebellar region. Migraine affects one lateral half of the head, particularly the eyeball. That due to eyestrain affects the frontal, temporal, and occipito-cervical regions.

7. *Epilepsy:* Epilepsy is a disease manifested or characterized by a periodic disorder of consciousness and by muscular convulsions, either of which may be absent in exceptional cases. According to the severity of the condition it is called *petit mal* or *grand mal.* The convulsions may be tonic or clonic, or may alternate. A family history of nervous disorders, alcoholism, or syphilis, poor physique, abnormal and difficult labors, rachitis, malnutrition, the infectious fevers, particularly scarlet fever, intestinal worms, injury to the

cranium, and disorders of menstruation are some of the causes of the disease. The pathology is unknown.

The attack is usually preceded by a peculiar sensation termed an *aura*, which may be sensory, motor, or psychic in character. The spasm generally begins at the free end of one extremity, and rapidly involves all the muscles of the body. The epileptic cry or groan is heard, and the patient falls unconscious. The spasm is first tonic in character, and gives way to a fine, general tremor, which is followed by a clonic condition; coma then ensues. There is at first pallor of the face, which is quickly followed by congestion and cyanosis; frothing at the mouth or nose, vomiting, and relaxation of the sphincter smay occur. Various mental disturbances, automatism, mania, delirium, or persistent coma may follow one or more seizures.

Treatment: Surgical operations are of value in this disease only when there is evidence of injury to the brain and skull. The general treatment consists in the proper regulation of the diet, exercise, and sleep, and the administration of the bromides. Pastry of any kind, rich puddings, cake, pork, veal, ham, anything fried in grease, high seasoning, and alcoholic beverages are strictly prohibited. Tea may be given weak and in small quantities; coffee is allowed only for breakfast. The patient should eat slowly, masticate thoroughly, and should not overeat.

The bromides in their various combinations and preparations may be administered. To prevent the attacks, inhalation of amyl nitrite (♏ 1—5), or a few whiffs of chloroform may be tried. When the status exists, highly nutritious food must be given early, and perhaps by enema. Chloral may be judiciously administered. When other methods have failed, hypodermic injections of the bromides, strychnine, and whiskey may be tried.—(*Pocket Cyclopedia.*)

8. The significance of this high blood pressure may be any of the following: Chronic interstitial nephritis, lead poisoning, gout, arteriosclerosis, angina pectoris, cardiac hypertrophy, and cerebral hemorrhage.

9. In *chlorosis*, the skin is generally yellowish-green, and the conjunctiva pale or yellowish. The pulse is soft, but of good volume, and a hemic murmur can generally be heard at the base of the heart. Palpitation of the heart and breathlessness are generally present. The blood is characteristic, and the diagnosis is made by an examination of this fluid. It shows (1) A great diminution in the amount of hemoglobin; (2) a slight diminution in the number of red corpuscles; (3) poikilocytosis; (4) occasionally a few nucleated red corpuscles; (5) a very slight leucocytosis.

Treatment consists in regulating the bowels, taking nourishing food, exercise, sunlight and fresh air. Iron in some form is specially indicated; Blaud's pill is most frequently prescribed.

10. *Asthma* may occur as a symptom in cases of chronic nephritis (*renal asthma*), or in chronic heart disease (*cardiac asthma*); it may also be caused by the action of the pollen of certain grasses or plants on a particularly sensitive respiratory mucous membrane (*hay asthma*); certain irritants may also cause the condition (*bronchial asthma.*)

Treatment of hay asthma: Any existing nasal trouble must be found and removed or otherwise treated; a change of climate is often beneficial, a sea voyage or a sojourn in a mountainous district being of service; tonics, such as strychnine, quinine or arsenic, should be administered before and during the attack; the eyes may be washed with a solution of boric acid (about 1:50); the application of Dobell's solution in the form of a spray or of adrenalin solution (1:5000) on pledgets of cotton has also been recommended. Some have also advocated the treatment by antitoxic serum or pollantin.

11. *The chief complication and sequelæ of scarlet fever* are: Arthritis, or rheumatism, which may lead to suppuration or pyemia; endocarditis and pericarditis; otitis media, with suppuration; facial paralysis; bronchopneumonia; suppuration of the glands, particularly of the cervical glands; nephritis; uremia; anasarca.

12. Bronchopneumonia is most common in childhood and in old age; lobar pneumonia is most common in adults between 20 and 50 years of age.

Bronchopneumonia is a term applied to inflammation of the lungs which, beginning in the bronchi, finally involve the parenchyma of the lungs. This disease may occur at either extreme of life. Three varieties are described: (1) A simple, acute form, following a severe bronchial catarrh; (2) a secondary form, occurring after the infectious fevers, tuberculosis, nephritis, cardiac disease, emphysema, and the lodgment of foreign particles in the bronchial tubes; (3) a rare suppurative form, with the formation of abscesses in tne lung. In addition to the bronchitis there are scattered areas of consolidation and collapse throughout the lung.

Symptoms: In children the onset is marked by convulsions, high temperature (104° F.), violent cough, rapid respiration (60 a minute), intense dyspnea, rapid, feeble pulse, cyanosis, and cold extremities. Localized areas of dulness are present, but often not detected. Fine subcrepitant râles are heard posteriorly at the base of the lungs. Sibilant râles may also be present. The disease may be mistaken for lobar pneumonia, but the diagnosis can be made from the physical signs of each disease.

Treatment: Absolute rest in bed and a nutritious diet; the chest should be enveloped in a thick cotton jacket; the temperature of the room should be equable —about 65° or 70° F. If the bowels are inclined to be constipated, fractional doses (gr. 1/6) of calomel are advisable every hour until six or seven doses have been taken. In the earliest stages the tincture of aconite is of service. Its action should be *cautiously* watched, and as soon as the pulse becomes soft, the drug may be omitted. Usually six or seven doses are sufficient. If the temperature rises above 102.4° F., it should be reduced by means of a cold bath. Phenacetin may be given to control the temperature, but should not be used routinely. After the third or fourth day a flaxseed poultice containing mustard (℥ss) may be applied to the chest and renewed every hour. After the poultice has remained on the chest about 2 hours, give the syrup of ipecacuanha (♏ 15) every 10 minutes until emesis is produced. Both these procedures should be repeated on the following day. When the poultice is removed, replace it by a cotton jacket. If the heart is weak, give cardiac stimulants.—(*Pocket Cyclopedia.*)

OBSTETRICS AND GYNECOLOGY.

1. *Blue baby* is the name given to a newborn infant suffering from asphyxia livida. The condition is due to some interference with the feto-placental circulation, which results in an extreme venous congestion of all the fetal organs; this congestion is particularly marked in the right side of the heart, spinal cord, cerebral cortex, lungs, pleura, liver and spleen. There may also be present some disturbance of the respiratory center. The *treatment* consists in removing any foreign matter which may be present in the mouth or respiratory passages; in stimulating respiration by slapping the child's back or buttocks, or by sprinkling it alternately with hot and cold water, or by dipping it into hot and cold water; artificial respiration must be tried and persisted in so long as any sign of cardiac movement is apparent.

2. OPHTHALMIA NEONATORUM. *Causes:* The gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. *Pathology:* The palpebral conjunctiva is first affected, then the ocular conjunctiva and cornea; the latter becomes hazy, ulcerates, may become perforated with escape of one or both humors and collapse of the eyeball. Adhesions of the iris, corneal opacities and staphyloma are other possibilities. *Prophylaxis:* Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth. *Treatment:* Wash the eyes carefully every half hour with a saturated solution of boric acid; pus must not be allowed to accumulate. Two drops of a 2 per cent. solution of nitrate of silver must also be dropped on to the cornea every night and morning. The eyes must be covered with a light, cold, wet compress. The patient must be isolated, and all cloths and compresses used must be burnt.

3. *Indications for the use of forceps* are: (1) *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother and child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. (2) *Passages at fault:* Moderate narrowing, 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. (3) *Passenger at fault:* A. Dystocia due to (*a*) occipito-posterior, (*b*) mento-anterior face, (*c*) breech arrested in cavity. B. Evi-

dence of fetal exhaustion (pulse above 160 or below 100 per minute). (4) *Accidental complications:* Hemorrhage; prolapsed funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both.—(Jewett).

Cesarean section (conservative). *"Indications:* The cases in which it is performed are: (1) Extreme deformity of the pelvis, in which delivery by forceps and version is excluded, and in which craniotomy is either impossible or would be more dangerous to the mother than cutting into the abdomen and uterus; and in which there is not room for a successful symphyseotomy. Such cases present the 'positive' indication for cesarean section; there is nothing else to be done. Flat pelves having a conjugata vera of 2¼ inches or less, and justo-minor pelves with a conjugata vera of 2½ inches or less, present this positive indication; (2) cases of more moderate pelvic contraction in which craniotomy is possible, but cesarean section is agreed upon to *save the life of the child;* (3) mechanical obstruction in the pelvis from fibroid, cancerous, bony, or other tumors which cannot be pushed up out of the way or be safely removed; (4) irreducible impaction of a *living* child in transverse presentations; (5) in women dying near the end of pregnancy the child, if alive, is rapidly delivered by *post-mostem* cesarean section; (6) various other obstructions from inflammatory adhesions, atresia, constrictions, etc., of the vagina, and uterine displacements, may rarely require the operation; (7) recently the operation has been done in eclampsia cases, where more conservative methods of rapid delivery were impracticable; and (8) in placenta prævia, chiefly with a view to lessen the infant mortality attending the usual treatment of this complication."——(King's *Obstetrics.*)

4. In *tubal pregnancy* there will be signs of early pregnancy, hypogastric or inguinal pains, probable history of a previous sterility, probable expulsion of decidual membrane or shreds, softening of the cervix, enlargement of the uterus, presence of a distended tube, contractions of the wall of the gestation sac; if rupture occurs, there will be sudden, excruciating pains over the lower abdomen and on the affected side, shock, collapse, and symptoms of internal hemorrhage.

5. *Mechanism of labor with a left mento-anterior position:* "The successive steps are: Extension—The head presents at the superior strait imperfectly extended, so that every case of face presentation may be said to begin as a brow presentation. There is also at first imperfect engagement of the presenting part, on account of the large diameters presented at the superior strait. Under the influence of the expulsive action of the uterus and the resistance of the pelvic walls, the brow, caught upon the pelvic brim, is held stationary, while the chin descends lower and lower by an extreme extension of the head. Molding, or an accommodation of the shape of the presenting part to the shape of pelvis, occurs to a moderate degree or not at all, because the face is a loose fit in the normal pelvis. The molding is confined to the back of the skull. Lateral inclination is a constant feature, so that one cheek is a little deeper in the pelvic canal than the other one. Descent of the presenting part follows the dilatation of the cervical canal, the descent of the chin being accomplished almost solely by the extension of the head, and not by a descent of the head as a whole. Anterior rotation of the chin occurs as soon as it encounters the resistance of the pelvic floor. Anterior rotation is followed by the engagement of the chin under the symphysis pubis. Then follows the delivery of the head by flexion and propulsion, the mouth, nose, eyes, and forehead sweeping over the perineum and appearing successively at the posterior commissure. Restitution and external rotation follow the escape of the head from the same causes that impose those movements upon the head in a vertex presentation. The delivery of the body takes place as in a vertex presentation."—(Hirst's *Obstetrics.*)

6.

POLYHYDRAMNIOS.	TWIN PREGNANCY.
The uterine tumor is more definitely tense.	The uterine walls are not so uniformly distended and tense.
Fluctuation may be elicited.	Fluctuation is absent.
There is inability to palpate the fetal limbs.	A number of fetal limbs may be palpated.
The lower uterine segment is unusually distended, tense, and elastic; the presenting fetal part is recognized with difficulty.	There is no undue distention of the lower uterine segment; the presenting part of a fetus may be readily detected.
The fetal heart sounds are faint or altogether absent.	The fetal heart sounds are distinct; heart sounds of different rates, corresponding to the two fetuses, may be heard.

—(Dorland's *Obstetrics.*)

7. The LIGAMENTS OF THE UTERUS are: (1) *Broad ligaments,* which extend outward on each side from the side of the uterus to the side of pelvis. (2) *Rectouterine ligaments,* which extend backward from the intraperitoneal portion of the cervix uteri to the peritoneal investment of the rectum. (3) *Round ligaments,* which extend from the uterus just below the Fallopian tubes, through the inguinal canal to the labia majora. (4) The *ovarian ligaments,* which extend from the superior part of the uterus, behind the Fallopian tubes, to the inner end of the ovary. (5) The *uterosacral ligaments,* which extend from the highest part of the cervix uteri to the sides of the sacrum opposite the lower border of the sacroiliac synchondrosis.

8. *Cystocele* is a hernia of part of the bladder into the vagina, covered by the mucous membrane of the anterior vaginal wall. *Rectocele* is a hernia of the rectum into the vagina, covered by the mucous membrane of the posterior vaginal wall. The two conditions are generally found together. *Causes:* Lacerated perineum, prolapsed uterus, relaxation of the structures forming the pelvic floor, and subinvolution of the vagina after labor. *Symptoms:* A dragging sensation in the lower pelvic cavity; a feeling of distention at the vulva; loss of power in urination or defecation; tumor of anterior or posterior vaginal wall (or both) more apparent on straining; prolapse of uterus.

Hematocele is a collection of blood (generally) in the (pelvic) peritoneum or connective tissue. As a rule the hemorrhage is intraperitoneal and is the result of some accident in the course of an ectopic gestation.

Procidentia is complete prolapse of the uterus (or other organ.) As a rule the uterus first becomes retroverted, it then sinks till the cervix appears at the vaginal outlet, and then protrudes through the vagina and vulva and causes inversion of the vagina at the same time. It is generally due to laceration of the perineum, and follows rectocele and cystocele.

9. *Lacerated perineum:* "The parts are cleaned and a pledget of sterile cotton or gauze pushed up the vagina to stop any flow from the uterus obscuring the wound. The sutures (preferably of aseptic silk) are passed with a moderately curved needle about two inches long as follows: Beginning at the posterior end of the laceration (that nearer the anus), the needle enters the skin near the edge of the wound and follows a circular course until its point appears at the very bottom of the laceration (a finger of the other hand in the rectum guarding against its penetrating that canal); it then enters the opposite side of the laceration at the bottom of the wound and comes out of the skin opposite its point of entrance, having followed a similar circular course to that pursued on the other side where it first went in. The ends are *loosely* tied or secured by catch-forceps, until the requisite number of sutures are passed in a similar manner (half an inch apart), when the wound is again cleansed, the vaginal plug removed, and the sutures tied tightly enough to coapt the parts without injurious constriction, the order of succession in tying being that in which the sutures were passed.

In "complete" lacerations—those of the third degree—through the sphincter ani to the rectum, the operation is more difficult. The rectal tear is first stitched with *catgut* sutures (a short, curved needle being used) and going through the rectal wall only. The sutures are tied on the inside, so that the knots are on the mucous membrane of the bowel. They begin from above and come down to the sphincter ani, the cut ends of which are drawn out with a tenaculum while the sutures penetrate them. These *catgut* sutures need not be removed; they will digest in the

tissues and disappear of themselves. The posterior wall of the vagina is next sutured with fine silk, from above downward toward the hymen. Finally, skin sutures through the perineum itself, including muscles of the pelvic floor (as just described for lacerations of the first and second degree) complete the operation. The silk sutures may be removed in about a week. Antiseptic dressings are applied as after an ordinary labor, extra care being taken to keep the wound aseptically clean by daily irrigation with the creolin solution."—(King's *Obstetrics.*)

10. PELVIC ABSCESS. *Diagnosis:* "From the history of the case the source of the infection may usually be traced to a previous attack of gonorrhea, or a septic labor, or a criminal or ordinary abortion. The temperature and pulse run a characteristic septic course. Vaginal examination shows the uterus elevated towards the symphysis pubis and fixed, while posterior to the cervix, often obliterating the fornix and bulging the posterior vaginal wall, lies a hard, dense, at times fluctuating, shapeless mass, extremely tender on pressure. In the chronic stage a differential diagnosis from impacted fibroid is often possible only by operation. *Treatment* during the acute stages should be expectant as long as the patient's condition warrants it. Absolute rest in bed, prolonged hot vaginal douches, hot or cold applications to the abdomen, free catharsis, and morphine when indicated. When the abscess steadily increases in size and the symptoms show no improvement, operative interference is imperative. The simplest method is evacuation by direct incision into the abscess, posterior to the cervix, with subsequent drainage by gauze or rubber tubing."—(Child's *Epitome on Gynecology.*)

11. When the uterus does not return to (approximately) its normal size and condition within about six weeks after labor, the condition is called *subinvolution. Subinvolution* is caused by fibroid tumors, pelvic inflammatory conditions, early resumption of sexual intercourse, premature rising from bed, retained secundines, uterine displacements and adhesions, etc. It is characterized by enlarged uterus and irregular bleeding. In all cases rest in bed, copious hot vaginal douches, abstinence from sexual intercourse, correction of constipation, and the administration of tonics are beneficial. Any treatment should be preceded by thorough curettage. Displacements should be corrected.

12. An *erosion* of the cervix is an area on the vaginal surface of the cervix which is covered with columnar epithelium, and consequently presents a reddened, inflamed appearance. Some confusion has resulted from the application of the term *ulceration* to this condition. There is no ulcer and no granulating surface, for the whole area is still covered with epithelium. The erosion is caused by an irritant vaginal or uterine discharge (*e.g. gonorrhea*, endometritis). *Treatment:* A possible cause should be sought for and corrected. The general health will be improved by the administration of preparations containing iron, such as Blaud's pill, Basham's mixture, and the four chlorides. Exercise, diet, and the condition of the bowels should receive attention. The local treatment consists in the administration of hot vaginal douches two or three times daily; the use of glycerine tampons for twelve hours, twice a week; the application of tincture of iodine to the cervix, once a week; and the application of silver nitrate, zinc chloride, pure carbolic acid, or Churchill's tincture of iodine directly to the cervical mucous membrane.

SURGERY.

1. *Bleeding from the stomach may be caused by:* Ulcer or cancer of the stomach; congestion of the portal circulation; cirrhosis of the liver; irritants; malignant fevers; acute yellow atrophy of the liver; acute gastritis; rupture of an aneurysm.

GASTRIC ULCER. *Etiology:* Injury, bacteria, hyperacidity of gastric juice, changes in the blood or blood-vessels of the stomach; it generally occurs in young people (20 to 30) and is apt to be associated with chlorosis. *Symptomatology:* Pain, localized in stomach, coming on soon after a meal, and of a sharp or cutting nature, and often relieved by vomiting; hematemesis; tenderness over the stomach; the condition is generally improved by starvation or by a milk diet; analysis of gastric contents shows an excess of free hydrochloric acid; there may be "occult" bleeding. Prognosis is guardedly favorable; hemorrhage and perforation are apt to be fatal complications; relapses are common; the mortality is about 10 per cent.

2. *Fracture of the skull over the right Rolandic area, might cause:* Paralysis of some of the muscles on the opposite side of the body, the muscles affected depending on the exact site of the fracture and consequent pressure; concussion; necrosis of bone or osteomyelitis; pyemia; septic infection; cerebral abscess; convulsions.

3. *Treatment of gunshot wounds:* "The treatment of wounds due to the leaden bullet is that of any other infected wound in which a foreign body is lodged. Hemorrhage, if present, should be checked at once, and if necessary the patient reacted from shock. For determining the position of the bullet, the *x*-ray is by far the best means. In the absence of the *x*-ray one should ascertain the direction from which the bullet was fired and the position of the body at the time, examine the clothing for the position of perforations in relation to the skin wound as well as to determine whether portions are absent, and see whether or not there is a wound of exit. After disinfection the wound may be explored for the bullet and any foreign body which has been carried in with it. This is best done with the sterilized finger, enlarging the wound if necessary. When deeply lodged out of reach of the finger, a probe may be employed. Various electrical devices have also been invented for the detection of bullets. The bullet may be removed with the finger, or with strong forceps, such as the sequestrum forceps or special forceps. The wound is then disinfected with bichloride of mercury solution and drained with gauze. When a large number of shot are scattered in the tissues, or when the exact location of a bullet is not known, less risk will often be taken in leaving the bullet than in a long or mutilating operation to remove it."—(Stewart's *Surgery.*)

4. The *different varieties of goiter* are: Parenchymatous, fibrous, cystic, adenomatous, and exophthalmic. As a rule every rapidly growing goiter should be removed; ligation of the superior thyroid arteries has proved successful in the case of goiters recognized early; ligation is also indicated in acute severe exophthalmic goiter; malignant growths should not be operated on unless recognized and treated early.

Parenchymatous goiter: "Operative treatment is indicated when there are symptoms referable to pressure on the air-passages, esophagus, or blood-vessels, especially if there are signs of commencing cardiac disturbance; and in goiters which are steadily increasing in size. The evidence of a goiter becoming malignant is also a reason for removing it by operation. Kocher considers it advisable to operate if the patient becomes breathless by making pressure on the goiter from side to side."

Adenomatous goiter: "The only treatment is to enucleate the adenomata or cysts from the gland. The thyroid is exposed by a transverse curved incision, the tissue covering the nodule is incised, and the adenoma shelled out."

Malignant goiter: "It is only in the earliest stages that a malignant goiter can be successfully removed. In the later stages complete extirpation is not to be attempted, as it usually involves the removal of a portion of the trachea or esophagus, and the operation generally proves fatal. Operative interference is often called for, however, for the relief of respiratory embarrassment. Tracheotomy may prove a very difficult and dangerous procedure, owing to the trachea being buried under the goiter and displaced or narrowed by it, so that it is not easy to reach the trachea or to introduce an efficient tube beyond the point of obstruction. A more certain method consists in exposing the goiter by an incision as for thyroidectomy, rapidly removing sufficient of the growth to expose the trachea and admit of a tube being introduced. If there is a retrosternal prolongation compressing the trachea within the thorax, a long flexible lead tube may have to be passed beyond the site of the compression before the dyspnea is relieved."

Exophthalmic goiter: "Excision of one lobe of the thyroid together with the isthmus and the pyramidal lobe is indicated in all cases that do not present degeneration of the heart muscle, with irregular pulse and low blood pressure. The superior thyroid artery of the opposite side may be ligated with advantage."—(Thomson and Miles' *Manual of Surgery.*)

5. *Backward dislocation of the hip* is of two kinds: (1) On the dorsum ilii; (2) on the sciatic notch. *Dorsal dislocation:* Head of femur lies on the dorsum ilii, and can be felt in the buttock. The obturator internus is ruptured in most cases. The short rotator muscles are lacerated. The trochanter lies well above

Nelaton's line and approximated to the anterior superior iliac spine. The leg is shortened two to three inches. The iliotibial band is relaxed. The leg is flexed, adducted, and inverted. The femur crosses the lower third of the opposite thigh. The toe rests on the opposite instep. A hollow exists in Scarpa's triangle. *Sciatic dislocation:* Similar to the above, except in the following:—The obturator internus tendon is intact and lies over the neck of the femur, holding it down in the sciatic notch. Shortening amounts only to one inch or less. The axis of the femur crosses the opposite knee. The great toe rests on the dorsum of the opposite great toe. *Treatment:* In posterior luxation of the hip joint the patient should be placed on a mattress on the floor, and then be anesthetized. The leg is then to be flexed on the thigh, and the thigh flexed on the abdomen; adduction is to be increased so that the knee is beyond the middle line of the body; then abduct, freely circumduct outward, and finally extend the limb so that it is parallel with the other.

6. In ligation of the superficial femoral artery at the apex of Scarpa's triangle, the patient should be recumbent with the thigh abducted, flexed and rotated outward, and the knee bent and resting on a sandbag. The surgeon stands at the outer side of the limb. An incision is made, about three inches long, in the line of the artery, with its center over the apex of Scarpa's triangle. This incision includes skin and superficial fascia; the internal saphenous vein is drawn aside or ligated; the fascia lata is divided; the inner border of the sartorius is drawn outward; the groove between the sartorius and adductor longus is opened; the internal cutaneous and long saphenous nerves are displaced; the femoral sheath is then incised, and the ligature passed from the side of the vein.

7. *Operation for Removal of the Appendix.*—"An incision is made at right angles to a line (at the junction of the outer and middle thirds) joining the umbilicus and anterior superior iliac spine, one-third being above and two-thirds below it. The cecum is found, and the anterior longitudinal band is traced down to the appendix which usually comes off from the inner side and runs inwards and downwards. If not found there, it should be looked for in the retrocecal pouch or on the outer side of the cecum. The mesoappendix should be ligatured and cut through, a collar of peritoneum turned back, and the mucous and muscular coat ligatured near the base and cut off. The peritoneum should be stitched over the stump, and then the stump should be invaginated into the wall of the cecum by running a purse-string stitch around it."—(*Aids to Surgery.*)

The indications for removal of the appendix vary according to the views of the surgeon. Some maintain that every case of appendicitis should be operated on as soon as the diagnosis is made. Others would operate only in case of rupture, or when suppuration occurs, or in cases which do not improve in a week or so, or in cases which are steadily getting worse. Probably all would agree in taking out every appendix that has undergone more than one mild attack.

8. "The symptoms in longitudinal and oblique fracture of the head of the humerus are broadening and flattening of the shoulder with projection of the acromion. The upper fragment passes upward and outward, and the lower fragment passes upward and inward to rest on the margin of the glenoid cavity below the coracoid process. The elbow is drawn from the side, there is some shortening, and the patient cannot abduct his arm. If the surgeon grasps the patient's elbow and holds it to the side and rotates the arm while with his other hand he grasps the upper fragment, crepitus is very positive. Examination develops wide separation of the fragments. The deformity cannot be entirely corrected, because the biceps tendon usually gets between the fragments, but a useful limb can usually be obtained. *Treatment:* Place the patient on his back upon a hard bed with a small, firm pillow under his head, abduct the arm above the head, rotate it outward so that the back of the hand rests on the bed, and hold it in place by sandbags. This position should be maintained for three weeks, at the end of which period the fracture can be treated for three weeks more as is a fracture of the anatomical neck. If the patient refuses to go to bed, treat the injury as a fracture of the anatomical neck, padding well over the tuberosities. The dressings should be worn for five weeks, passive motion being made after four weeks. In the above injury feel at once for the pulse, to see if the artery has been torn."—(DaCosta's *Surgery.*)

9. *Empyema* is generally secondary to pneumonia, tuberculosis, scarlet fever, or other exanthem, suppurative inflammations, or traumatism. The pneumococcus, streptococcus, and staphylococcus are the bacteria most frequently found. The condition is diagnosed by finding the symptoms of fluid in the pleural cavity; this is withdrawn by a needle and on examination is found to be pus; a leucocytosis is also present. The physical signs are those of fluid in the pleural cavity; that side does not move well, the percussion note is dull, there is absence of breath sounds, vocal fremitus and resonance are diminished. Left alone, an empyema may burst through an intercostal space, usually the fifth. The lung is collapsed in extent according to the amount of pus. The pleura, at first covered with lymph, soon becomes covered with layers of granulation tissue, the deeper part of which is converted into fibrocicatricial tissue, and the lung itself also undergoes some fibroid change. If the pus is let out early the lung and pleura soon expand, but if allowed to go on the infiltration of the lung and the density of the scar tissue covering it hinder expansion. Nature attempts to remedy this in various ways. (1) The other lung expands and pushes the heart over to the opposite side; (2) the chest wall falls in, the intercostal spaces are obliterated, and the spine is curved, with its concavity toward that side; (3) the abdominal viscera are pushed up; and (4) exuberant granulations form on the pleura. If a cavity still remains an operation is necessary. *Symptoms:* Fever, sweats, chill, diminished breath sounds and vocal fremitus, impaired mobility of chest, dullness on affected side, heart displaced to opposite side, leucocytosis.

10. "*Cancer of the rectum* is usually of the tubular or cylindrical-celled variety, and is occasionally the result of a malignant change in an adenoma. The disease may begin as an ulcer, or as a nodule beneath the mucous membrane which reaches a large size before ulcerating. In the former instance the growth usually extends annularly around the rectum, in the latter it increases in all directions. The consistency varies with the amount of fibrous tissue present; thus the mass may be soft, fungating, and friable, or extremely dense with an ulcerated surface, the margins of which are hard and everted. The softer varieties are the more malignant. Metastases may occur in the lumbar glands, liver, and peritoneum, but are comparatively rare and late. The disease is most common in middle life, but it may occur earlier and has been seen even in childhood. The symptoms may be slight or absent, until the disease is far advanced. There may be pain, a sense of fullness in the rectum, tenesmus, and the passage of pus, blood, or mucus. In the later stages the signs of stricture are evident and cachexia develops. Secondary fistulæ into the bladder, vagina, or opening externally may form. The diagnosis is made with the finger and the speculum. If the growth is high up, it may sometimes be detected by having the patient bear down while in the standing position. Death occurs in from one to five years, from exhaustion, obstruction, hemorrhage, or peritonitis."—(Stewart's *Surgery.*)

11. *Treatment of acute gonorrhea, in the male:* "Lessen the acidity of the urine by alkalies, give diuretics, and keep the bowels acting freely. Sedatives such as tincture hyoscyami are useful. All forms of alcohol should be forbidden, otherwise plenty of fluid taken. The patient should rest as much as possible. No local treatment need be adopted in this stage. When scalding ceases, copaiba or oil of sandal-wood, 10 minims three times a day or cubebs, may be given. Their action is diuretic mainly. Cubebs and copaiba may produce a bright-red, itchy, widespread rash. Injections should be used after all irritation has ceased. The patient should pass urine to wash out the discharge immediately before using the injection. A glass syringe is best, and the urethra should be distended by argyrol, 1 per cent. solution, or zinc sulphate, 2 grains to 1 ounce. The injections should be used every two hours at first, and not left off till five or six days after the discharge has ceased."—(*Aids to Surgery.*)

12. In *cholelithiasis*, the attack is sudden; the pain very severe, and generally localized in the right hypochondriac region and often spreading to right scapula and over the abdomen; vomiting, chill, fever, drenching sweats, feeble and rapid pulse are common; liver and gall bladder are swollen and tender; jaundice may supervene; the urine may show bile pigment and albumin; examination of the feces for a few days after the attack may reveal the calculus.

In *nephrolithiasis*, the pain is also sudden and very severe, begins in the lumbar region and follows the course of the ureter, and is often referred to the testicle and glans penis; nausea, vomiting, chills, fever, and sweat are common; strangury may be present; there is great prostration following the attack; there may be polyuria or suppression of urine; with the aid of a cystoscope or sound, the calculus may be found in the bladder; examination of the feces is negative.

HYGIENE AND SANITATION.

1. In *private practice* the physician has to wait for his patients, build up his practice, collect his fees or not (as the case may be), take his chance as to making a living, spend relatively large sums of money for equipment (including books, and postgraduate study), fight against competition and opposition of all kinds (both fair and unfair), and there is no provision for him in his old age except his own savings.

In *public health practice*, patients are provided for the physician, his salary is paid him, there is no fee collecting, a living is assured him, equipment and postgraduate study are also assured him, and there is a pension for him to fall back upon in his old age. In addition, he is compelled to keep up his studies, opportunities for research are provided, and he has a much wider view of life and the possibilities of his profession.

2. FOREIGN INGREDIENTS IN WATER. *Organic:* Particles of animal and vegetable matter; bacteria and other living organisms, animal and vegetable; gases; ammonia, nitrites, and nitrates. *Inorganic:* Particles of mineral origin; gases; salts (chlorides, sulphates, carbonates, silicates, nitrates, nitrites, phosphates), lead, iron, soda, magnesia, lime.

Contaminated water is purified by: Distillation, boiling, filtration, precipitation, and various chemical processes.

3. Myopia, hypermetropia, and astigmatism are the most frequent defects of vision in school children.

Precautions which should be taken in school rooms to protect the sight of scholars, should include the following: (1) The light should be ample, and should come from the left side or from behind the scholar, never from the front. (2) The windows should extend nearly to the ceiling, and should have proper shades. (3) Blackboards should be clean and black, neither glazed nor shiny, and must not be on the same side as the windows. (4) Schoolbooks should be of good paper with good clear type, and the lines amply leaded. (5) Pupils should assume correct attitudes in writing or reading. (6) Desks and seats should be of a proper size, style and arrangement. (7) Excessive study should be forbidden, and children should not be allowed to read when their eyes are tired. (8) Proper medical examination should be made of the eyes when necessary, and defects corrected as soon as possible.

4. The *registration of vital statistics* should be compulsory, because otherwise the figures would be incomplete and therefore of less (or no) value. The birth records are of value, to prove citizenship, and to prove age or descent. The death records are of value, in probate matters, in pension matters, to the physician and actuary. The records of infectious diseases are of value, to physicians, to school authorities, to health authorities, and as affecting quarantine. To the person making the return, there may be no value in it; to every one else the returns may be of the greatest value.

5. Frequent and efficient examination of school children is the only way in which to prevent the spread of infectious and contagious diseases, and to detect illnesses and physical defects in their incipient stages. As a result of a proper examination there will be prompt exclusion and isolation of any one suffering from a contagious disease, or coming from a house where such disease is; compulsory notification of all infectious and contagious diseases; individual towels, drinking vessels, and other implements; children who have had a contagious or infectious disease or who have come from a house where such disease prevailed should not be readmitted to school until sufficient time has elapsed since the occurrence of the last case to insure safety.

6. There should be prompt isolation of sick and suspected until bacteriological examination has shown that the disease is not diphtheria. No one should be released from quarantine, even if not apparently sick, until cultures taken from the throat are shown to be negative. The tendency of the bacilli to persist in throat and nose for long periods of time after convalescence is established should not be forgotten. All children, and to a lesser degree adults, who have been in contact with the disease should have swabs made and cultures taken, and if positive results are obtained, must be isolated until negative results are obtained, preferably on two successive days. (From Gardner and Simonds' *Practical Sanitation.*) Injection of antitoxin, both curative and protective, should be undertaken; the schoolrooms should be sprayed with formalin solution and re-whitewashed.

7. *Diseases transmitted by animals:* Tuberculosis, rabies, glanders, anthrax, tape-worm, and other intestinal parasites, ringworm, diphtheria.

Diseases transmitted by insects: Typhoid, cholera, plague, tuberculosis, dysentery, anthrax, intestinal parasites, malaria, yellow fever, dengue, Texas fever, sleeping sickness, filariasis, relapsing fever, typhus.

8. *Antityphoid inoculation:* "No hygienic measure discovered in modern times compares in value with the beneficial effects which result from the prophylactic inoculations of soldiers against typhoid fever. During the Spanish-American war, out of a total strength of 107,793 men, there were 20,738 cases of typhoid fever and 1,580 deaths, representing 86.24 per cent. of the entire mortality of the war. During the first eighteen months after antityphoid vaccination had been introduced into the United States army, 12,644 persons were vaccinated. Five cases of typhoid occurred among these men, but no deaths, or 0.39 cases per thousand vaccinated persons. During the same period in the remaining six-sevenths of the force there were 418 cases and 32 deaths." (Bergey's *Hygiene.*)

9. *Ten preventable diseases with mode of prevention: Malaria* and *yellow fever*, by extermination of mosquitos; *smallpox*, by vaccination and revaccination; *plague*, by destruction of rats; *Malta fever*, by avoiding the milk of goats; *hydrophopia*, by the systematic and long-continued muzzling of all dogs; *dengue*, by the extermination of mosquitos; *typhus*, by the extermination of lice and bedbugs; *ophthalmia neonatorum*, by the use of silver nitrate solution in the eyes of all newly born children; *foot and mouth* disease, by use of boiled milk.

10. *Dissemination of diseases by indirect contact:* "Diseases like smallpox, measles, and scarlet fever are transmissible by direct contact; and diseases like typhoid fever are usually transmissible by indirect contact. Some of the diseases, however, which are frequently disseminated by direct contact may be, and often are, disseminated indirectly through the medium of food infected with the specific microorganisms, or through the agency of flies or other insects whose bodies have become infected by coming in contact with infective materials. A number of diseases, prominent among which are those due to animal parasites, are disseminated through the use of meat derived from infected animals, through water polluted with animal excrement, or through green vegetables which have come in contact with such excrement. In addition to these there are some diseases in which the infective agent passes one of its cycles in the body of an insect, and is disseminated through the bite of such infected insect. The disease which is best known as being disseminated in this manner is malaria, which is disseminated through the bite of infected anopheles, while filariasis is believed to be disseminated through the bite of another mosquito, a species of culex, and yellow fever by the bite of still another, the stegomyia fasciata."—(Bergey's *Hygiene.*)

11. Formaldehyde is an effective disinfectant if properly applied; it has the advantage of not destroying fabrics; but it is not poisonous to the higher forms of animal life and does not kill vermin such as rats, mice, bedbugs and roaches. It is capable of disinfecting rooms, clothing, and fabrics; but it is inadequate for bedding and upholstered furniture.

12. Chloride of lime is well adapted for the disinfection of excreta. Eight ounces of chloride of lime should be dissolved in a gallon of water, and some of this solution should be placed in the vessel which is to receive the discharge. One or two quarts are then added, and after thorough mixing of the stool and the disinfectant, the two are allowed to stand for one hour.

Myopathia Rachitica.—E. Baumann reports the case of a young child who was seized with an acute attack of fever, pain in the arms, and paralysis. These were diminished in response to the galvanic and faradic currents, but no reaction of degeneration. Antirachitic diet effected a speedy cure.—*Korr. Bl. f. Schweiz. Arzte.*

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Original Articles.

INTESTINAL STASIS FROM THE STANDPOINT OF THE INTERNIST.*

BY E. L. EGGLESTON, M.D.

BATTLE CREEK, MICH.

BATTLE CREEK SANITARIUM.

I HAVE no apologies to offer for bringing before you a paper on the subject of "Intestinal Stasis from the Standpoint of the Internist." For, in my opinion, there is no subject before the medical profession today that is receiving more respectful attention and none the proper solution of which will bring to us more respect from the large class of chronic invalids that is looking for relief. Moreover, I feel very confident that the great majority of such cases belong to the internist, particularly so in all but the later stages of their trouble. That the profession is interested in this subject is proven by the fact that probably in every issue of our prominent medical publications today, some phase of this subject is under discussion.

Lane of London, during the past few years, has been one of the foremost in calling attention to the disastrous effects of intestinal stasis, especially stasis in the small intestine, and in advocating advanced measures for the relief of the same. And his opinions, while considered by many to be radical, have done more to call respectful attention to this condition than those of any other one observer.

Stasis at some point in the intestinal tract, especially the colon, allows for the rapid development of the anaerobic bacteria normally found here, with the result that the protein material present is broken down into simpler products, some of which, such as indol, skatol, paracresol, and others, are of a toxic nature, and, when absorbed into the blood, may cause a serious disturbance of the functions of the vital organs, the nervous system being especially sensitive to their action. It would seem that the majority of individuals consulting physicians are subject in a greater or lesser degree to some disturbance of this kind. Especially is this true of the large class of individuals suffering from chronic illnesses. In all probability there is a definite relation between intestinal stasis and the appearance of the symptoms exhibited by these individuals.

Some observers are of the opinion that intestinal stasis results usually from some mechanical obstruction, and hence we hear a great deal about Lane's kinks, Jackson's membranes, the bands of Reid, etc., conditions which they believe may have been congenital, and the one way to relieve the individual is by resorting to surgical measures. But from the standpoint of the internist, it would seem rather that in the beginning of these cases the trouble was of a functional character entirely, not originating in infancy, and as a result of stasis for abnormal periods of time in some portion of the intestinal tract, a mild inflammatory condition is set up at this point, resulting in adhesions of greater or lesser severity which may require surgical interference. These are terminal conditions which are rarely exhibited in the early stages of intestinal stasis.

In my opinion, the habits of the present day generation have a great deal to do with this condition. There is an unfortunate lack of education as to the care of the gastrointestinal tract. The individual has no conception of the necessity for providing proper foods, hence he selects his diet purely from the standpoint of gratifying his palate, and the result has been a concentrated diet providing insufficient bulk. The diet has also been unsatisfactorily balanced in that it contains an excess of protein material which is very prone to undergo putrefaction. The high tension under which so many people work causes them to be careless of the calls of nature. The mechanism controlling intestinal peristalsis, particularly that part having to do with the act of defecation, is a rather delicate one. It is quite probable that under normal conditions, the presence of solid material in the rectum excites general peristalsis which results in emptying the greater part of the colon. Unfortunately, where the desire is repeatedly ignored, as is apt to be the case with those engaged in sedentary occupations, the function of this mechanism seems to be lost. It is then quite possible that feces remain in the rectum and sigmoid for abnormal periods of time (Fig. 11), and as the result of this retention a mild inflammation of the parts is set up, with a spastic contraction resulting (Figs. 2, 13, 18.) In these cases, an examination of the sigmoid and rectum by means of the sigmoidoscope reveals the presence of a quantity of foul smelling feces which the patient is unable to expel. The mucous membrane is markedly congested and no doubt the inflammatory process extends to the outer walls of the bowel, allowing for adhesions which bind down the pelvic colon, thus forming a mechanical obstruction. By some it is considered that this chronic stasis is an etiological factor in the production of cancer. With the spastic condition which results from the local colitis, we have an abnormal retention of the intestinal contents in other parts of the bowel, particularly in the cecum (Figs. 2, 6, 8), and later on, probably as the result of ileocecal valve incompetency (Figs. 2, 6, 13, 18), in the terminal ileum. With this retention and the presence of putrefactive bacteria, we have the production in excessive quantities of those products of protein decomposition that we have every reason to believe are toxic in character.

In the early history of cases of an atonic character (Fig. 7), no very great discomfort results from

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the constipation. Some individuals will tell you that it has been their habit to have an evacuation only once every other day, or once every second or third day, but there comes a time a little later on when the individual is conscious that he is not in good condition. He suffers from frequent headaches, his tongue becomes coated, his breath is foul, he is depressed mentally, and he seeks some artificial relief. Usually he resorts to cathartics, and the immediate results are so satisfactory that he concludes it advisable to resort regularly to some measure of this character. Because most drugs used as cathartics are injurious to the mucous membrane of the intestinal tract, and inasmuch as their use is something like whipping a tired horse, it is only a question of time when the individual reaches the limit of such treatment, and this ordinarily leaves him in a state of chronic invalidism. The colon has been so injured because of the chronic irritation and the mild inflammatory conditions which have been set up, that it is found under careful examination made with the Roentgen ray to be bound down by adhesions at certain points and to be in such a condition that normal function is out of the question. And this is a probable explanation of a large proportion of the cases of patients who, suffering from general ill health without definite organic disease, seek relief at the hands of the physician. The diagnosis usually made is biliousness, neurasthenia, psychasthenia, liver trouble, neuritis, rheumatism, etc. Practically all exhibit a functional nervous disturbance, as headaches, insomnia, mental depression, forgetfulness, irritability, subnormal temperature, neuralgias, rheumatic aches and pains, cold perspiring hands and feet, mental hebetude, etc., and so it is quite natural that they should be diagnosed as neurasthenics, a term which means just about as much as the term "rheumatism."

Are we confident that because there is an intestinal stasis there results an absorption of toxins of intestinal origin? The proof of this, it seems to me, hardly needs demonstration. The results of our therapy would apparently prove this. Why is it that a person exhibiting symptoms such as have been mentioned above is relieved by a thorough purge? Why is it that the individual himself appreciates very decidedly the relation which exists between the disturbed intestinal function and his distressing symptoms? It is true that some are able to withstand the ill effects of intestinal stasis for a long period of time, not because there is not a decided increase in the toxins but because of the body's ability to protect itself from them. We are endowed with a triple line of defence against these toxins, the first line of defence being the intestinal mucosa which protects by its secretions that have a restraining effect on the intestinal bacteria. The bacterial toxins are in some way rendered harmless by them for an equal amount of toxin administered by mouth and by way of the portal vein. In the first instance the toxic symptoms were much less than when injected into the portal vein. It is quite well demonstrated clinically, as in obstruction of the intestinal tract, that when the intestinal wall is in part denuded of its mucosa, the toxemia is very much more apparent.

The second line of defense is the liver. Here it is that the indol, skatol, and phenols are conjugated with the sulphuric and glycuronic acids to form products that are very slightly toxic compared with their antecedents. No doubt the liver has to bear the brunt of the attack and it is only because of its ability to form less harmful products of those intestinal toxins that the body is so immune from harm. It has been demonstrated that it retains a part of the phenol and indol which is not conjugated. Schupper is authority for the statement that the liver exerts, owing to the biochemical activity of its cells, a marked toxicolytic action on toxins and alkaloids. He demonstrated that the toxicity of the alkaloids—atropine, pilocarpine, cocaine, and apomorphine, was reduced 50 to 75 per cent. Combe has worked out a urotoxic coefficient which was demonstrated by experiments on animals, both before and after ligation of the portal vein, and the conclusion is that the toxicity of the urine is proportional to the degree of hepatic insufficiency.

The third line of defence is the glands of internal secretion, the thyroid, the suprarenal, and the pituitary body. From our more recent knowledge, we are certain they do exert some antitoxic action, as evidenced in the absence of their function in diseased conditions.

It seems, then, that the body is well fortified against harm from the action of toxins of intestinal origin; and probably symptoms of intestinal intoxication result as frequently from the body's losing its power to cope with what might be considered a normal amount of these materials as from an excessive formation of them.

In another class of cases, the intestinal stasis seems to result from a disturbance between the vagus and the sympathetic nervous systems. Under the term "vagotonia," as described by von Noorden and his pupils, we have a condition where, as the result of a lack of balance between the vagus and sympathetic systems, we have a spastic contraction of certain portions of the intestinal tract, especially the left half of the colon, that is not secondary to colitis. Frequently, we observe cases where constipation begins with a definite nervous disturbance from excitement of different kinds. But coincident with the spastic contraction of the bowel, we have a very definite retention evidenced by extreme sensitiveness over the entire course of the colon, especially over the sigmoid and around the terminal ileum (Figs. 5, 17, 18), cecum, and appendix regions. This seems to result in a vicious circle —the spasticity caused by the disturbed nervous condition resulting in intestinal stasis, and intestinal stasis resulting in the increased production of intestinal toxins, the absorption of those toxins having a deleterious effect on the nervous system which is already in a disturbed state. These probably are the most difficult cases to manage that the physician encounters, and unfortunately, they seem to be decidedly on the increase. Frequently, in such conditions, a diagnosis of chronic appendicitis is made and the appendix removed, but inasmuch as the colon as a whole is in a disturbed state, little if any benefit is derived. Frequently, the trouble is only aggravated by the operation.

No matter whether the symptoms of intestinal toxemia result from the slower processes first described, or whether they have developed rapidly as the result of the second condition, they ultimately come to resemble each other very decidedly. We have the loss of weight, the chronic headache, the disturbed appetite, the furred tongue, the depressed mental condition, and the subject suffers from phobias of different kinds. In many instances the skin exhibits a bronzing, leading to the diagnosis of probable Addison's disease. In other cases, we have tachycardia, and the case resembles one of hyperthyroidism. In the majority of cases we have a low blood pressure, although by many observers

the toxins of intestinal origin are considered to be a decided factor in the production of cardiovascular-renal disturbance, where we have an exceptionally high blood pressure.

With stasis of a marked degree in the cecum, we may have a failure of competency of the ileocecal valve which allows for the stasis extending to the terminal ileum. With the lower coils of the ileum loaded with fecal material, we may have this portion dragged down from its normal position into the pelvis, producing decided tension on the mesentery and probably greatly exaggerating certain of the nervous symptoms so common in these conditions. With this malposition and mild inflammatory processes at certain points, we probably have a thickening of the mesentery at the point of greatest tension which may result in a Lane's kink (Fig. 3), which. further aggravates the ileal stasis With the introduction of the anaerobic bacteria of the colon into the ileum, the toxins are produced at a place where absorption is very active and where the mucous membrane has not been trained to reject them, the result being that the body is compelled to cope with an excessive amount of the intestinal toxins.

In cases of spastic constipation where the iliac and pelvic colon is the location of the spasticity, Case has called attention to antiperistalsis which he has observed in a number of cases and this no doubt is a decided factor in producing the marked dilatation of the cecum and in breaking down the competency of the ileocecal valve in certain forms of colitis. Alvarez, in a paper read before the Section of Physiology and Pathology of the American Medical Association at its last meeting in San Francisco, describes a form of antiperistalsis, and his theory is that the peristaltic waves move from the more irritable regions downward toward more quiet segments; but with an irritation at some point low down in the tract, impulses may arise that move upward, which check the progress of the intestinal contents and may even reverse the current. These are very interesting observations and should indicate to us the necessity for relieving the local inflammatory areas which are apt to be localized in the sigmoid or even in the ampulla or rectum.

With this picture of intestinal stasis before us, and the resulting toxemia, and the disastrous effects of the toxemia upon the functional conditions of the organs of the body, what can be done in the way of relief? In deciding upon our therapy for this condition we must keep in mind certain definite conditions. It would seem that the first important thing to consider would be to provide a diet which will stimulate peristalsis, lessen putrefaction, and at the same time afford sufficient nutrition to provide for more energy and to replenish the organs and tissues of the body that are already decidedly below par in their nutrition. We are beginning to appreciate the necessity for a more bulky diet, and early in the history of many of these cases of intestinal stasis careful attention to the frequent relief of the bowel of the fecal contents, an appreciation of the harm which results from inattention to the natural desire in this respect, and a proper regulation of diet are sufficient to relieve the condition entirely. But we may make the mistake of trying to increase the bulk of the diet at the expense of its nutritive value. Unless the nutrition of the body as a whole can be improved, these cases rarely respond satisfactorily, no matter what the character of the treatment may be. To lessen putrefaction we must reduce the proteins to the minimum. In order to accomplish that, it will be necessary practically to eliminate flesh foods from the dietary, and certain of the legumes must be prescribed in moderation. In cases of vagotonia, where there is an intense spasticity, particularly of the descending colon with an irritation of the remainder of the colon, we find too bulky a diet not well tolerated and it frequently aggravates the unfortunate condition.

In cases where we have an atonic condition we are able to resort to physical measures with very great advantage. Massage, manual and mechanical movements, exercises which develop the abdominal muscles, supports which increase the intraabdominal tension—all are of great value. The above mentioned, in spastic conditions of the bowel, must be used very guardedly and probably more advantage will be obtained from rest, sedatives, and the careful and judicious use of hydrotherapy which improves the general nervous condition of the body and tends to equalize the circulation, preventing congestion of the blood, which is so apt to occur in the visceral region. By means of hydrotherapy we are able also to stimulate very decidedly the antitoxic secretory and excretory organs upon which we are depending for our protection against the toxins of intestinal origin.

We frequently are able to change the culture media of the intestinal tract and thus lessen putrefaction. The free use of lactic-acid-forming ferments does much to check the growth of the anaerobic putrefactive bacteria and tends to encourage the growth of the fermentative bacteria which, so far as we know, have no injurious effect. The introduction into the bowel of certain strains of the lactic-acid bacillus is very beneficial in many cases. We frequently find it necessary to resort to laxatives of some character, and this demands very careful consideration. Unfortunately, the limits of this paper are too narrow to discuss this point satisfactorily. In brief it may be said that there are very few laxatives that are not harmful to the intestinal mucosa. It is probable that we are able to resort to the use of the mineral oil and bulky substances, such as agar-agar and bran, in the majority of cases without injury and with great advantage. At times it would seem that antiseptics are of some value, although the majority of observers fail to give a very high place to materials with which it is attempted to produce intestinal asepsis.

Where we have a decided colitis we frequently find it very essential to resort to bowel irrigations. In some cases it seems impossible to accomplish any desired results without relieving the irritation of the colon. By means of irrigation with physiological saline solution, mild alkaline solutions, and especially with oil, we remove the offensive material, soothe the mucous membrane, and provide lubrication which tends to relieve very materially the intestinal stasis. Some observers are advising irrigation by means of appendicostomy or cecostomy, claiming that very much more can be accomplished by these mild operations than by the more mutilating operation of short-circuiting or the removal of portions of the colon.

In cases where the intestinal stasis results from ptosis of a congenital character, the physician is confronted with a condition which will most surely tax his ingenuity. Surgery offers no relief, and the internist may receive great help from the orthopedist. If physical therapeutics can be re-

sorted to early in life, much can be done to train the abdominal organs into more perfect functional condition. If the individual reaches adult life, it seems almost impossible to improve the situation and the patient early falls a prey to some acute infection, and having little resistance, his existence is usually cut short before he reaches middle life.

When is it proper to advise surgery for the relief of intestinal stasis? From the observation of a large number of cases that have been surgically treated, I am of the opinion that it is rarely advisable to resort to surgical intervention except where we have definite organic obstruction. The malposition of the intestinal tract may have no bearing whatever on its function. As the result of a large number of *x*-ray studies it would seem that position is of very little importance. Previously, great stress has been laid upon viceroptosis, prolapsed colon, etc., but in my opinion a prolapsed colon without definite organic obstruction is of very little importance. For the relief of the adhesions which are sometimes found, surgery may be valuable, but unfortunately, a greater number of cases exhibiting marked disturbance as the result of adhesions are post-operative cases, and I doubt whether it is advisable to manipulate the intestines as it apparently seems necessary to do in the endeavor to relieve intestinal stasis, for such manipulation will probably leave a condition where there will be more adhesions than there were previously.

Dr. John G. Clark of Philadelphia, in a paper read recently before the Allegheny County Medical Society, has this to say with reference to the necessity for surgical interference: "Discussing this question as a surgeon, I almost stand in the position of holding a brief for the physician, for my surgical experience has confirmed my original statement so frequently reiterated, that the cases of intestinal stasis primarily belong to the medical man. The frequency of cures at his hands are much more easily enumerated than are the scores of failures, and I do not concede this field of endeavor to him because of the brilliancy of his therapeutic endeavors, but from the observation that it is only the occasional case which the surgeon will handle with greater success. Each division of medicine has made advances, but neither is in a position to boast of any very great progressive movement."

Bainbridge, a very ardent follower of Lane, is authority for the statement that in his opinion, with proper medical attention, not more than one out of ten, or possibly one out of twenty, of these cases should be compelled to seek surgical relief.

It would seem that there should be no antagonism between the internist and the surgeon with reference to these cases. Certainly, in their early stages they belong to the internist. In cases where we have to contend with malignant growths (Figs. 9, 10, 12, 14), tumors pressing on the intestinal tract from without, tuberculous lesions, strictures, following injury, or ulcers, there is no question but that surgery is the one means of relief. But I am of the opinion that the short-circuiting operations, or the removal of the colon or portions of the colon, in the absence of definite organic obstruction, are to be condemned for the results are not such as to be encouraging, and in the majority of cases the patient is left in a far more unfortunate condition than he was previously.

In conclusion, I wish to acknowledge my obligation to Dr. J. T. Case, who has made the *x*-ray studies of my cases and who has kindly furnished the illustrations and slides; and further, permit me to say that, in my opinion, every case of intestinal stasis is deserving of *x*-ray study, the results of which will be of inestimable value to the internist in directing the course of his therapeutic effort and in deciding when the case is one that should be referred to the surgeon.

EXPLANATION OF PLATE.

FIG. 1.—(14,455) Normal colon.

FIG. 2.—(10,870) Marked spasticity in the left half of the colon. Right half of the colon considerably dilated, the dilatation occurring longitudinally as well as in the caliber of the bowel. Hepatic flexure higher than the splenic. Ileocecal valve incompetent as is the rule in these cases. Colon enema-filled.

FIG. 3.—Illustrates a marked degree of ileal stasis, also a moderate colonic stasis. Proximal to the cecum there is a characteristic Lane's kink.

FIG. 4.—(22,110) Shows the enema-filled colon in a case of multiple diverticula where the diverticula are few and scattered and are probably of no consequence.

FIG. 5.—(13,357) Roentgenogram 26 hours p.c., showing the colon filled throughout. The distribution of the barium boluses in the left half of the transverse and in the descending and iliac colon being characteristic of spasticity.

FIG. 6.—(9661) Enema-filled colon in a case of marked dilatation of the cecum and ascending colon, with spasticity in the left half. The ileocecal valve is incompetent, permitting a number of feet of the ileum to fill by the enema.

FIG. 7.—(42,849) An atonic colon, the caliber being much dilated throughout. I have always felt that this patient really had pellagra, but as far as I am aware, such a diagnosis was never confirmed. Such a colon is characteristically seen in cases of pellagra.

FIG. 8.—(11,076) A trace in the pyloric end of the stomach and in the duodenum; a large collection of barium in the upper part of the jejunum and the colon filled from cecum to middle of the descending. Below the middle of the descending colon is a streak of mucus which has imprisoned a certain amount of barium, enough to make it show.

FIG. 9.—(7439) Cancer of the colon. The arrows point to the stenosed bowel on the proximal side of which the barium is banked up in the dilated bowel. This roentgenogram was made about three days after the meal.

FIG. 10.—(16,188) Case of acute small intestine obstruction. For illustration purposes, the barium-filled bowel is preferable to the air-filled bowel.

FIG. 11.—(44,588) A typical case of rectal stasis. The head of the barium column reached the rectum toward the end of the first day, and at the fiftieth hour the barium meal residue is banked up below the splenic flexure, the majority of it occupying the rectal ampulla.

FIG. 12.—(7717) Chronic small bowel obstruction, this being indicated by the gas-filled small bowel. The colon is partially filled by enema and the stomach is shown gas-filled. The rubber tubing is introduced through an appendicostomy opening.

FIG. 13.—(42,833) Shows the same case as in Fig. 16 a few minutes later after the bowel had been filled by enema. Note that the ileocecal valve is incompetent and that the iliac colon is unusually spastic. Stereoscopically it is quite evident that the rounded shadows which I interpret as diverticula are extralumenal. Of course, there is no doubt about their being diverticula.

FIG. 14.—(11,332) Arrow 1 points to the barium which was injected through a tuberculous sinus, whose external opening was in the lumbar region, posteriorly. Arrows 2 point to barium in the bowel 100 hrs. p.c. Arrow 3 points to the topmost point to which the enema column reached. A gap between arrows 2 and 3 corresponds to the area of obstruction.

FIG. 15.—(42,240) Diverticula of the colon seventy-two hours after the meal. They are largest and most numerous in the iliac colon.

FIG. 16.—(42,793) Large multiple diverticula. This roentgenogram was made seventy-four hours after the meal.

FIG. 17.—(13,566) Spastic, enema-filled colon. In this case the spasticity is shown not so much in the narrowing of the iliac and pelvic colon, as in the early response to irritation, evident by the peristaltic wave which began in the cecum and had reached the hepatic flexure by the time this plate was made.

FIG. 18.—(45,008) A typical case of spasticity of the bowel with ileocecal valve incompetency and stasis in the appendix. This roentgenogram was made at the twenty-sixth hour. The left half of the bowel is spastic. The right half of the bowel is widely distended. The appendix is shown filled with barium. The white arrows point to the terminal ileum which still contains barium.

FIG. 19.—(14,368) The track left after a recent mass peristaltic movement. This is due to the trace of bismuth left in the track of the onward rushing mass and is not due to spasticity of the bowel.

Treatment of Facial Erysipelas.—Nobécourt claims to have obtained excellent results in the treatment of this condition by the continued application of a 5 per cent. solution of methylene blue. The solution is applied by a camel's-hair brush or a cotton swab to the diseased surface and for an inch beyond on the surrounding healthy tissue. The dressings and applications are renewed twice daily, usually morning and night, and as often as it seems necessary in order to hasten recovery. —*Journal de Médecine.*

Fig. 1.

Fig. 3.

Fig. 6.

Fig. 4.

Fig. 2.

Fig. 7.

Fig. 5.

Fig. 8.

Fig. 9.

Fig. 10.

Fig. 13.

Fig. 17.

Fig. 14.

Fig. 11.

Fig. 18.

Fig. 15.

Fig. 12.

Fig. 16.

Fig. 19.

SOME THERAPEUTIC SUGGESTIONS DERIVED FROM THE NEWER PSYCHOLOGICAL STUDIES UPON THE NATURE OF ESSENTIAL EPILEPSY.*

By L. PIERCE CLARK, M.D.,

NEW YORK.

From a neurological point of view, I am not one of those optimists who believe that the strict fields of neurology and psychiatry are coming closer together in either the study or treatment of nervous disorders. I believe that the view that they are, is misleading as well as false. During the past decade especially a distinctly new tendency has been born in the field of psychiatric research, or better, a revival has come about, the movement being a more complete and accurate unfoldment of the older school of psychiatrists who saw that the problem of psychotic individuals was based upon inadequacies, conflicts, and unsatisfied longings as the essential motive forces in inducing various types of mental reactions. This older view was for the most part set aside or greatly obscured by the somatists who saw, as they thought, an opportunity to introduce the histopathological researches in psychopathology as a direct interpretation of abnormal mentation. It was but a renewed attempt to bridge the gap between the soma and the psyche, and to work out a psychophysical parallelism between cortical cell changes and psychotic processes. They strove to prove or implied that these two processes had a relationship of cause and effect. If one will carefully review the psychiatric literature of fifty years ago and compare it with that which is now current, aside from the product from the numerically small new school, the observer is at once struck with the much more simple, natural and harmonious light in which case material was formerly considered. To-day one often obtains accounts of the psychoneuroses and psychoses in which the psychologic settings are obscurely hidden in a lengthy report of nephritic or gastrointestinal exposé. When one at last arrives at the momentous scene of vital conflict, where the psychosis really develops, he finds the situation buried beneath a lugubrious account of psychiatric cant-phrases that are often meaningless. The patient's precise behavior, conduct and disordered train of thought are omitted. Formal descriptions of the psychoneurosis and psychosis are well enough, but the key to their interpretation and application involved in them should be at hand. The simple, natural, unvarnished tale of how the toils and conflicts of the patient's real difficulties came about is omitted. I submit, if we are to be of any therapeutic service in such a problem we must know how the particular settings of the psychosis erupted from the plane of everyday happenings and what sort of makeup our patient really possesses. No doubt the neurologists have been the greatest offenders in this respect. They have attempted to force the psychotic states into direct structural brain interpretations. Often one hears it said that the simple accounts of daily happenings, thoughts and conduct of a psychotic individual are not scientific observations and one must pass them over hastily to reach the laboratory analyses and the strictly structural reflex and anatomic study of the case. This prolonged and somewhat fixed attitude on the part of the neurologist has already driven many workers on the functional disorders out of the neurological field and they are taking their studies and investigations elsewhere for report and discussion. The great body of general practitioners and the laity are seeking a therapeutic release from the old formal structural approach to the psychoses and neuroses. Special sanataria are multiplying at an enormous rate to handle these disorders and the average neurologist is left with his palsied and brain tumor invalids to patch them up as best he may.

It is not sufficient for us to recognize that structural or organic neurology is inadequate to handle the nature and treatment of the neuroses but that even many organic disorders are incompletely understood until one gains a proper evaluation of the psychologic settings involved. The so-called organic dementias and cerebral palsies have individual problems which can be approached only on psychologic grounds. For instance, no one pretends to say that the degree and depth of lesion in paresis has any essential parallelism to the degree of psychic dilapidation that ensues. If it proves true that there *is* no essential parallelism between this apparently organic paradigm disease of the brain and its attendant psychosis, one must of necessity consider the latter on psychologic grounds in the terms of its psychogenesis. In no field is the above tentative statement more true than in so-called genuine or essential epilepsy. This nervous disorder has been commonly accepted as definitely organic in nature and origin, although not a few epileptic brains have been found entirely normal histologically, and at least in one instance the brain of a profoundly deteriorated epileptic was used for the study and demonstration of a so-called normal brain (MacCurdy.) In view of the foregoing not a few of us have turned our attention entirely away from attempts to consider essential epilepsy in terms of histologic interpretations and have approached the whole problem from the psychobiologic side. We believe that the epileptic reaction or attack in this convulsive disorder has an individual psychology quite unique.

Before entering upon the specific therapeusis of our thesis I may briefly sketch the essential results of the newer studies. First, that there is a definite makeup or inherent defect of the instincts in epilepsy long before the seizure phenomena are added. Indeed, it is demonstrable in earliest childhood whereas the seizure phenomena may be added years after. These defects embrace all the emotional life and the major portion of the so-called character alterations of the frank epileptic in later life, and they are but the innate defects of the childhood writ large. The seizures are but the pronounced maximum expression of the inherent constitution in environmental conflict and the latter are only made plainer as such individuals deteriorate. The nucleus of these defects is in the realm of egoistic tendencies and an extraordinary supersensitiveness. Upon this primary defective makeup the increasing life demands for adjustments are made, and various kinds and degrees of epileptic reaction develop such as moroseness, sullenness, lethargies, extra lability of mood, tantrums and rages, day-dreams of an intense pathologic sort and frequency, mental abstractions with diminished consciousness, and finally, complete breaks with reality as shown in loss of consciousness and convulsions. The real motivation of the epileptic reactions would appear to be best explained on psychologic grounds—that those emotionally defective individuals are too unstable or

*Read before the N. Y. Neurological Society, Jan. 4, 1916.

rigid in adhering to the infantile attitudes and therefore cannot take on adult life, or make its compromises and adaptations, and when this defect of adaptation of the instinctive demands are hidden or repressed, the unconscious cravings are unable to gain satisfaction from reality as it exists, and causes the psychobiological break or loss of consciousness. Then there succeeds a temporary respite or riddance from the daily tension, the psyche regresses to that point or state where it gains peace and harmony. Abundant case studies have proven these contentions. It matters little whether one places the point or degree of regression in the infantile life or even before that. The state sought or found is usually defined as one of complete physical and psychic freedom, a state of harmony and peace. The foregoing in brief is the mechanism of the epileptic reaction in essential epilepsy. The order in which it originates is first the possession of a defective makeup upon which is placed a variety of precipitating causes. The latter are as varied in number and intensity as life itself. If the adaptive demand is largely in the somatic sphere, it is never finally operative in producing an epileptic reaction until it has passed directly or indirectly through the psychologic channels of mental stress and harassment. Pure physical or chemico-toxic states probably never solely generate an essential epilepsy. There must always be a preparedness in the defective makeup, and the psyche is finally involved in the last elaboration of the fit. The latter at any rate is invariably present and can be demonstrated in any given case. In previous studies the fit expression of the disease was held to possess an essential gratification to the libido inasmuch as it had at least a sexually libidinous element. However, later and more complete studies show that this earlier view is too narrow in concept to embrace the full motive of the fit. Continued studies have shown that the larger meaning of the fit in epilepsy is a broadly psychobiological one, of complete riddance of all phases of reality, and at the same time to gain that life release which is comparable to that before consciousness developed, as symbolized in the peace after death, or before birth. While there may be many modifications of this formulation, I believe its main outlines will prove true. I am aware that at least two large groups of critics are in the process of formation—one contends that the views here expressed are not essentially different from those which have already been laid down and that the theory in its general statement is but a *different way of thinking* about the subject; the other contends that the principles are unsupported by clinical facts and that finally the theory is but a mental artefact alike inadequate and unproven. Both classes of critics I must refer to the complete elaboration of the theory and its ample illustration by case analysis which has already been published in part, and also to the large material now in press which I hope will be fully convincing.

Naturally one asks, what advantage does such study afford? First, in prognosis, it enables one to fairly definitely isolate the possibly recoverable cases from those in which there is little or no chance of recovery on the basis of the inherent mental equipment the individual epileptic possesses, the degree of demands he makes on life to gain proper outlet of his general desires, and to what extent he can satisfy them. This fact is of the greatest importance, inasmuch as the majority of all arrested or cured cases of epilepsy are recruited from the essential epilepsies. The organic epilepsies, once frankly established as such, with the possible exclusion of the depressed fracture and brain tumor cases, are rarely ever arrested. If we may now gain a fair estimate of the degree of maladaptive defect in the particular epileptic, we can begin on a broader and more rational plan of treatment. Opportunity to apply some of the therapeutic principles developed during the study has re-emphasized the importance of some of the old principles of treatment and has suggested other individual helps heretofore somewhat neglected. Obviously in such notes only the broader points of therapeutic suggestions can be outlined. I may say at the outset, one is impressed here as in many another therapeutic field, with the amount of time, pains, and therefore cost the newer views entail. In the first place the method of individual study of the case often takes hours, or even days, to obtain a complete diagnosis upon which to base a proper intelligent treatment. Moreover, when this is even approximately obtained, the amount of care and observation required to get the best results in treatment makes it almost prohibitive to the poor. To meet this latter need only special State institutions are really competent. Then, too, the often parsimonious attitude which the state takes toward properly equipping and maintaining such institutions makes one despair of getting the best results even for the more select and most favorable cases. I know of no state that even approximately meets its obligation in this respect. The greatest demand, moreover, will not be for able and trained physicians, although they are needed badly enough, but for a better trained and efficient nursing class. Leaving out of the question the deteriorated and hopeless epileptics for the time, one may ask, what can be done for the potential epileptic in earliest childhood? We know they are often the despair of the home and school. Such cases need the attention of trained neurologists and psychiatrists. These children do poorly in large groups without individual care. Although institutional schools for neuropathic children are in existence and appear anxious for mild cases for reformation and correction, the potential epileptic with his antisocial tendencies does not come under this designation even though he is devoid of the mildest settings of his disease. These children are ruled against in all the receptive classes in the better grade of homes, and there is a lack of systematic instruction which such children need. It is impossible to strictly classify the types in these homes, as the cost is prohibitive In my opinion and experience such cases do poorly if grouped with even the better grade of morons in the private home-schools. Then, too, all such children do poorly under the strict discipline which is often laid down in the school-homes. It is next to impossible with the poor class of attendants in these home-schools—who, by the way, are usually fearfully underpaid—to make them comprehend that the whole regimen of wise, gentle, but firm discipline has to be entirely abrogated at certain times —it may be for days or weeks at a stretch when epileptic attacks are imminent or threatened. If the children's departments of general hospitals were properly equipped, or better, if the state insane hospitals had cottage adjuncts near them in the country for the psychopathic class, the problem would be solved. If the potential epileptic children are sent to special sanatoria the nursing staff must be constantly drilled in fundamental principles that the

depressions, day-dreams, lethargies, obstinacies, irritabilities, or even absences—should the latter have already intervened—are not states of laziness, latent or active original sin, but psychopathic traits or symptoms needing special direction and care. Such children should be looked after by pedagogic nurses and constantly supervised by trained psychiatrists.

By the most careful analysis of a large number of epileptics one finds the practical experience of Dewey with normal children is doubly borne out here; the potential epileptic has character defects and bad mental habits which antedate the ordinary school age by several years. It is therefore largely in the realm of the nursery that the training out process must commence. This training largely concerns the proper development of the will, especially in the domain of the reflex, instinctive, ideational, imitative and deliberative responses of the child. Active principles of nursery ethics, too, are in greater demand here than anywhere else, the rhythmic periodicity of automatic life, such as the taking of food, sleep, bath, etc., and the inculcation of patience and tolerance of petty annoyances are very necessary. The degree in which the simple impulsive movements escape repression by the developing will speaks for a degree of a continuance of a neurotic element always to be reckoned with. The importance of a study of these various movements of the neurotic child, and especially the impulsive ones, has been dealt with in another paper already published and can only be mentioned here; suffice it to say that the persistence of these uncommon movements play the chief rôle in the so-called spasmophilic makeup of the potential epileptic child. Disharmony in the development of the will is largely responsible for the moral and ethical cramps of these children as shown in the tantrums. Next the child becomes demanding and stubborn and when its instinctive purposes are further blocked the supersensitiveness is further increased. In the past these psychic conflicts or tantrums have been placed on errors in dentition or so-called latent rickets—whatever that may mean; later in life these physical disorders are regarded as the organic substratum of the so-called spasmophilic constitution. This may be so but that it is an incomplete and one-sided view of the constitutional makeup of such children may be well shown by the kind of therapeutic remedies employed to overcome these defects. Gum lancing as a general practice to relieve the extra nervous tension in the neurotic child has fallen into well deserved disuse; so has the attempt to supply the exact chemical composition of defective bone and neural metabolism. The special compounding of glandular substances to allay bad tempers and supersensitiveness still ranks in practical importance with the seeking of the philosopher's stone or the astrologic signs in the therapeutic wish world of the somatists. In place of these futile efforts we find common sense, or *uncommon* sense, comes to the rescue in the guise of a wise nurse or mother whose real insight into the nature of the difficulty and its correction is a boon to humanity. They seem to comprehend that these neurotic children are slow in adaptation, and that the instincts are slow in being brought under volitional control, even to meet the simplest demands of life. They lessen or make simpler the feedings, give the child more rest and quiet, place him more in the open. The whole regimen is treated with considerateness, gentleness and patience. They strive to gain the child's confidence, appeal to his developing reason and attempt to employ various methods to sidetrack or substitute simple interests and amusements to avoid the conflicts and still permit the child some expression of its own spontaneous demands for physical and psychic activity. These lay experts seem to instinctively recognize that the extra neurotic tension is pathologic and more often calls for added rest and quiet instead of an active system of overtraining for a neurotic makeup already jaded and irritated. So, gradually, the wise nurse or mother strives to teach adaptation under a policy of quiet unimpassioned play, and rest. Still there must always linger a group of equally neurotic parents who unwittingly make for an atmosphere of unrest and irritation, and one laments the shrewd dictum of Freud that there are shorter roads for the acquirements of neurotic habits than by inheritance. When both elements are present in the home then there must be substituted the "away from home care and training" as previously outlined.

In the light of our present knowledge it is obviously next to impossible to handle any case of epilepsy successfully in the ordinary way, simply by office consultation. The whole training treatment must have a country or small village setting in which the environment can be fully controlled for the patient and reduced to that social level to which the individual case can readily respond without stress. Most of the epileptics possessing nearly the adult level of intellect are but children in their emotional life. It is interesting to note that there is almost a direct ratio of casual relationship between the degree of purely intellectual weakness and the defect of instincts. Wherever the former is severe th latter is very marked also, but in slight impairment of the emotional life the intellect as such may be nearly intact and well developed. How may one judge of the relative suitability of a given environmental setting in a particular case? This is to be determined in a number of ways. The more pronounced cases show bad adaptation by the anxious, troubled character of the dreams, by marked irritable signs, and even more delicately by the lustreless eyes, indolent movements, cessation of spontaneous interest, a falling of the countenance and a pallor. The latter group symptoms are the true psychic indices that the environment does not fit and they should be watched for just as carefully as we formerly estimated the toxic signs which were once judged to be the important ones in drug sedation in epilepsy. It would be an easy matter in successfully treating epilepsy and epileptics in private practice (the principles laid down here are intended mainly for such) if one were to assume but a negative attitude, and simply remove stress from the supersensitive epileptic individual. If that were all, rest in bed in some general hospital might suffice for a time at least; and in point of fact the temporary improvement many epileptics show for short periods of time in such settings but proves how overstrained these patients usually are and how wrongly we have judged their innate capacity for prolonged endurance. So soon as the environment of daily work and play are adjusted, one needs to carefully elaborate a whole system of upbuilding and education to make stronger and more adult the innate defects. To determine this constructive plan the greatest care and patience is necessary on the part of all concerned. The plan that should be ultimately followed will have to extend over several years, and the initial steps should be undertaken

only after one has sized up the individual defects, or, better still, when one has taken full inventory of the good traits and tendencies that are found. For instance, we must find out the main trends of interest and what the various substitutive reactions are which the patient attempts to use and how far they can be amplified. While we may not hope to psychoanalyze the epileptic in its strict sense any more than we may the feebleminded or precocious dements, the material helps which are furnished by that school afford us the most important guides in the plan of genetic education of epileptics.

In treating the epileptic one assumes more of the paternal guidance and direction of the patient's life such as the undeveloped emotional state of the epileptic demands. The educational and character building require this. The properly developed instincts are not simply distorted, repressed or otherwise held in check as in the psychoneuroses but they are entirely wanting or infantile and must be nurtured and otherwise encouraged to grow. After I had begun to minutely study an ideal group of epileptics and noted the frequent causal relationship between the mood and behavior on the one hand and the occurrence of epileptic reactions on the other, I tried various experiments to see how I could open the patient's eyes to these glaring faults and gain his cooperation. I was surprised to note how readily they understood the simple explanations given (much more readily than many of the relatives) but I was not fully prepared for the naive manner in which the patients proposed to assist at the task. In many instances they looked upon the problem in a very matter-of-fact and, to them, the easiest way. They said, "If we are but to get square with our supersensitiveness to irritation and the resultants of anger, rages, and finally the states of mind where attacks are the only way out, we will simply suppress these irritative states and put a stop to the unconscious demand for fits." Many tried this plan. The apparent working of the scheme was not essentially unlike drug sedation when extra dosage of bromides was employed. Disturbing anxiety dreams then appeared, the sleep was unrestful, and they showed all the signs of physical and mental stress. However, the attacks in most of the patients were steadily lessened; in one who had formerly had several attacks weekly the fits were entirely suppressed for months. But at last the whole plan fell through; some of the patients had grand mal attacks in whom petit mal had formerly existed; others had serial grand mal and one had a mild status; still others had delirious episodes, befogged and anxious states, or day dreams of a hallucinatory character not unlike mild delirium, and some frequently acted as though actually intoxicated by drugs. In brief, direct unrelieved repressive acts on the part of the patient failed as disastrously as gradually increased sedative therapy used to. The whole scheme, however, worked better in the few who would follow a definite guidance and gain some substitutive reaction when the repressive mechanism was applied. The whole observation but furnished additional proof that the fit was but the maximum logical consequence when given the particular type of makeup and instinctive demand which the essential epileptic possesses. None cheated or escaped the logical consequences of fits by a simple repressive remedy. The next attempt was attended by better results—which was in proportion to the degree of their understanding that they could not use the adult normal repressive measures and be free from epileptic reactions. They then realized that they were placed in a similar position to the schoolboy who cannot make his grade work even by forced draft in study, but must return to that level of classwork where he formerly failed to do good work and where he had omitted the necessary process of learning well his daily lesson. It is absolutely essential in both instances that progress cannot be made until the loss is made good. No essential epileptic will ever recover from his grand mal attacks until he has found that life level to which he can fully adapt or adjust himself. Any therapy that pretends to ignore this basic fact is doomed to failure. Even though this level be attained and seizures cease, it will still remain an unsolved problem as to whether the particular epileptic can take on development to meet a more demanding environment of ordinary everyday life without the return of seizures. The failure in this respect is demonstrated over and over again in so-called cured cases discharged from epileptic colonies. The arrested cases cannot stand the stress of a normal individual without epileptic reactions. It is a pity all physicians do not see this matter in this simple light and make arrangements for a gradual cessation of any successful plan of therapy, which is the method applied to the tuberculous, the insane, and the alcoholic. A follow-up principle of after care in all so-called recovered cases of epilepsy should materially lessen the relapsing cases now so common in the pessimistic literature of our subject.

One often wonders what the mechanism of help is which the epileptic employs in his baffling conflicts. Painstaking study shows he most frequently takes up deep philosophic study, the reading or chanting of tragic epics, or becomes engrossed in profound religious subjects. When he is blocked in his everyday outlet he goes to a deeper level of tragic thought, or music. This preoccupation seems to lessen the strictly local pain or hurt of a balked desire; it diffuses the poignancy of the feeling over a larger area of his mind; it lessens, as it were, the local intensity of the unsolved conflict. If one will study these "helps" minutely and compare them, it will be found that the common motif in all is death, usually with a triumphal or victorious element at the end; in short, it is an epileptic reaction as characteristic to the makeup of such individuals as the seizures themselves. The content of these tragic words or songs is home, mother, and heaven in about equal proportion, excepting that the latter is a finale of the others in summation.

In some instances epileptics were urged to live on a higher or lower plane than the one upon which they had their most antagonistic conflicts. The latter principle, as might be expected, was the more successful and will be amplified later. As regards the former, some epileptics were taught that they might so plan their lives on a pattern of extra benevolence and ethical behavior as to rise superior to their everyday harassments and gain a sublimation in such acts as would be the equivalent of a discharged affect. Thus music, artistic pursuit, and certain religious practices of the simpler sort were encouraged. But few gained advantages not obtainable by other means. Most failed from the very nature of their defects; that is to say, so many being individualists in pure culture, a higher level was possible of attainment only in those who had lived a full life and in whom the socialization of their personal tendencies was easy and natural. Much of the extra pseudo-benevolence and religious

zeal of deteriorated epileptics are probably but conscious or unconscious attempts of this sort, thus accounting for the remarkable lability of mood and the frequent recourse to the superman attitude. Under the thin exterior of this assumed superior mood lies the intense rage and dislike which easily break through the thin crust of their high adventure and precipitate them into the maelstrom of turmoil, discontent, and unsatisfied longings of their daily existence. The simpler plan of treatment was to encourage the more intellectual epileptics (it was too uninviting and commonplace for the others to seriously enter into this plan) to try the safer course of directing their activities into garden, farm, and shop work; to try to make adaptations of the commonest kind and when they were mastered, to gradually raise the level of adjustment. When this plan can be worked out it is ideal. I may say here that few so-called normal individuals scarcely realize the paucity of associative reactions of which the average essential epileptic is possessed; and upon these few simple reactions life's difficult problems are to be worked out. Can there be any wonder that, given such an inherent makeup, the individual epileptic sees "no way out" and insists with a remarkable soul stubbornness that the particular trend of reality in which his conflict is engrossed must be annihilated, or he must react away from it by tantrums, day dreams and lethargies, or alcoholic indulgences, as in the partly adjusted, or by a psychoneurotic symptom, or even a plain psychotic episode which calls for no less than the annihilation of his own consciousness? As one of my patients said about an altercation difficulty he experienced, "It had to be ended then and there, as though cut off short and sharp," and by an appropriate gesture of the hand he indicated how clean cut the division must be made to enable him to adjust himself to the situation.

I must say that most frequently the individual epileptic does not see his own conflicts, at least not in a conscious sense as the outsider does, and the vividness and justice of his position precludes his taking other than a firm, fixed, and rigid attitude. He has a vague though definite and painful sense of an insuperable irritation from which he reacts by a depression if a fit does not at once occur. The depression is a protective mechanism, in the nature usually of a regression to day dreams interspersed with sighs and petulance or deeper lethargies of apparent obliviousness to his surroundings, yet attended with consciousness or even mild hallucinatory delirious episodes, or by twilight states of mental confusion and disorientation in which he appears benumbed to reality, and finally all ends in a grand mal attack—the maximum of the epileptic reaction.

However, when we come to the manner of treating the extra states of elation and extra well-being which, by the way, are the immediate forerunners of attacks in fully half of all mildly deteriorated epileptics, the principles that should govern our actions are not so simple or easy. In the first place, one needs to know whether the elation is but the thin veneer of a *purposive* mood to meet or to raise the patient out of the "slough of despond," or whether it is really an *unconscious* and *spontaneous* exhibition of outlet activity, a sort of psychic attack in itself in which, as is not infrequently noted, the patient is particularly disoriented and in a hypomanic state. If the former is the case, gentle redirection and a process of teaching the patient to really square the issue, if possible, on the plane of actual conflict, is the plan to pursue. When this is not possible, perfect rest in bed often works satisfactorily. Certainly any increase of excitement needs to be avoided and that which already exists may be minimized by shortening the contact with the particular setting. This needs to be done with tact and caution, but the wise nurse or attendant can usually find the way out of such difficulties and offer a fair excuse against a repetition of the episode. If the mental exaltation is a slight expression of escape from meeting a previously coercive and unpleasant demand, a direct repression of the state almost invariably causes a severe attack, or an irritable sullenness that lasts for days and from which the patient recovers without an attack apparently with the greatest effort.

In treating individual epileptics one may excavate deeply into the personality, but invariably one comes upon that nuclear substance of character which is adamantine and which cannot be removed; this very fact accounts in no small measure for the relapses in arrested cases although they remain free from attacks for years. Any number of my patients say when this deeper and firmer layer is reached, "No, I can never really forgive an injury or insult; to do so would result in the surrender of my personality; if that be required of me I shall have to remain epileptic." However, in psychotherapeutic talks the individual patient is made fully aware of this defect and this seems to rob it of much potentiality for harm.

Finally I wish to state that the more definite psychological approach to the newer study has engendered the demand for a new type of specially trained and educated attendants. A general hospital training is of little service outside of the purely physical care of such patients; the main work is psychiatric in its best sense. One should take on for such work only medically trained attendants with as broad general education and refinement as possible. They should be given regular instructions in which definite case material and set episodes are considered and explained. "Many are called but few are chosen" for continued service in this most difficult field of nursing, where tact, common sense, and an experience of having lived a "full life" seem to be the main basic equipments for the service.

128 East Sixty-first Street.

USE AND ABUSE OF THE RICE DIET.

By L. DUNCAN BULKLEY, A.M., M.D.,

NEW YORK.

PHYSICIAN TO THE NEW YORK SKIN AND CANCER HOSPITAL, CONSULTING PHYSICIAN TO THE NEW YORK HOSPITAL, ETC.

Having recently experienced in my own person, for the eighth or tenth time, the remarkable controlling effect of the "rice diet," which I proposed some years ago (Medical Record, January 28, 1911), for certain acute inflammatory conditions of the skin, I am constrained to present the subject again briefly, as I do not find that the profession always utilizes it correctly or efficiently.

During the past ten years I have had a large number of patients under this treatment, for a longer or shorter period of time, and have practically never seen it fail to produce the results expected, when properly employed. On the other hand, I have had many patients who reported having been under "rice diet" from other physicians without benefit. I realize that this is often the

case in regard to many remedies and measures advocated, both medical and surgical, which often seem to succeed better in the hands of the originator than in those of others; but there is often a reason for this, in a failure to apply a remedy or measure in suitable cases, or in some error in carrying out particular details properly. The dietary measure which I am advocating is so fundamentally correct, and has proved so invaluable in my hands and in those of very many practitioners from whom I have heard by letter or otherwise, that I would again call attention to it, and try to make clear some practical points in regard to the use and abuse of the rice diet in certain diseases.

It is not necessary here to enter deeply into a consideration of the influence of diet in health and disease, both acute and chronic, as this is recognized widely, although many of the essential details of the same are by no means fully understood: but a few of the principles on which the proposed dietary measures are based may be briefly mentioned.

We all realize that protein is necessary both for the building up and the regeneration of the cells which compose the body; living protoplasm, whether differentiated or not, must contain nitrogen, in addition to its many other component substances. Man seeks this protein largely in the flesh and products of the animal kingdom, and by the gratification of the taste for these substances the system is often so overloaded with nitrogenous elements and their decomposing products that various diseases result.

But the ox and the sheep get their protein from the ground, and man can do the same, and vast numbers of the human race actually do live on vegetarian substances exclusively, or nearly so. There is no need, therefore, to discuss or defend vegetarianism, in theory or practice. The aim of the present writing is to call attention to the fact that under certain conditions it is desirable and profitable to curtail the diet extremely, even along special vegetarian lines, for a longer or shorter period, in order to give the system complete and absolute rest from nitrogenous stimulation, and an efficient opportunity to free itself from excessive and effete stored protein elements which have acted injuriously on some of its tissues.

In my former article, nearly five years ago, I gave very fully my personal experience with the "rice diet" in an agonizing attack of acute vesico-bullous eruption on the hands, from which I had suffered for many years in the summer, sometimes even having several attacks in one season. It would sometimes last for weeks, in spite of various treatments suggested by many medical friends, until it was checked so promptly in 1910 by the diet here described. Since that time the attacks in recurring seasons have repeatedly yielded in the same manner to this dietary treatment alone, with absolutely no other measures, internal or external.

In my earlier communication I stated that the cause of the attacks could not be determined; they always have occurred only during the warm months, from June to September, and sometimes have seemed to follow moderate indulgence in strawberries or peaches. I have never been a large meat eater and take no alcoholics, but for many years have had bad kidney action and frequent gouty symptoms, sometimes severe.

My last attack began on July 17, while enjoying a week-end rest at my country home, five days after returning from an enjoyable trip to the Pacific coast, for a month. The eruption began, as in all other attacks, with a deep itching on the backs and sides of the fingers of the right hand, first toward the roots, leading to a certain amount of rubbing or deep squeezing the tissues. The next day small, deep seated papulo-vesicles appeared, also on the backs of the thumbs, and some itching of the left hand, where papulo-vesicles also developed. Recognizing it as my annual visitor I allowed it to develop for about three days, as I knew it could be controlled by the diet, and then and during the entire attack I employed absolutely no other treatment, internal or external, except pretty free scratching, which gave a certain amount of agonizing pleasure. By July 20 both hands were pretty well affected, with scores or hundreds of deep seated vesicles and considerable general swelling and intolerable itching. I may say that in none of the later attacks have I allowed it to run on to the extent of the one for which I first employed the diet, when there were large blebs between some of the fingers, and a far greater degree of pruritus.

On July 20 I began the "rice diet," and within 48 hours there was marked improvement as to the itching and swelling, with no new lesions, and by the end of five days the attack was virtually at an end; very shortly there was desquamation of some of the vesicles, though many of them simply subsided and were absorbed. I then returned to a plain diet, largely vegetarian, but with very little sweets, and experienced no more trouble. However, from past experience for many years, I can reasonably expect another attack next summer, to be similarly treated, unless I am able to discover some dietary or other cause which can be guarded against. I may add that with many of the attacks there is also some general itching of the body or limbs, with occasional papules, which with scratching could readily develop eczematous lesions, and sometimes did so, until the metabolic disturbance was arrested by the diet.

As many may not have seen the former report of this dietary treatment, brief mention may be made of some of its details, which it is necessary to carry out *exactly*, in order to have good results.

The diet consists exclusively of rice, butter, bread, and water, and nothing else, for each meal, three times a day for a specified time, which may depend upon the nature and severity of the case. The rice is to be well boiled in water, and not too soggy: it is to be taken *hot*, and with only butter and a little salt, not with milk or sugar. It is to be eaten very slowly, and with a fork, not a spoon, and to be thoroughly masticated, in order to secure tne full action of the saliva: I commonly tell patients that they are to spend as much or even more time in taking their simple meal, than any of the others do at the table, fully half an hour at least. The white wheat bread should be at least twenty-four hours old, and taken with plenty of butter: it is also to be very well chewed, "fletcherized." Water, hot or cold, but not iced, is to be drank freely, but not when food is in the mouth. To insure that sufficient water is taken to meet the requirements of the system, and to secure free kidney action, I commonly prescribe also half a pint of hot water one hour before the morning and the evening meal.

The *rationale* of this diet is very simple. For many years my volumetric analyses of the urine have shown me that imperfect or deficient urinary secretion is connected with many diseases of the

skin, and that faulty nitrogenous metabolism appears to be at the bottom of some of them; this is the more apparent in certain acute inflammatory eruptions. It occurred to me, therefore, some years ago, that by relieving the liver and kidneys as far as possible from the intake of exogenous proteins, by excluding nitrogenous elements of diet, the organs would be better able to remove effete nitrogenous material from the system, and the diet was arranged with this end in view. Rice was chosen as being the poorest in protein of all the cereals, and with no purin bodies. White bread was also selected as having on an average only 6.5 per cent. of vegetable protein, almost one-fifth of which escapes absorption. It was directed that the bread should be at least twenty-four hours old, in order to avoid the well-known delay and disturbance of digestion from that which is freshly baked. Butter was given freely on the rice and bread, in order to supply the requisite calories: for a quarter of a pound, which should be consumed each day, represents a total of 894 calories, or nearly one-third of the greatest amount required, and has but a trace of protein. Water alone was given freely, at least five tumblers full daily, as supplying all the needs of the system, without the possible deleterious action of any substances which might be used with it. Milk was avoided on account of its large protein element, and also coffee, tea, and chocolate, as having considerable xanthin products.

As already indicated, this diet is especially valuable in certain acute, inflammatory diseases of the skin, but the more I observe its effect the more I am impressed that its occasional employment may be of service in many disordered states of the system. For acute eczema five days is often sufficient to make a profound impression on the eruption, even without other treatment, internal or external, although it is generally wise to utilize also these to obtain the best results. At the end of five days one can commonly let up on this severe diet, and allow other vegetarian food, continuing the rice diet for one of the meals, breakfast or supper, if possible; or it can be continued longer, and even returned to with an exacerbation of the eruption. In some cases I have, with advantage given the "rice diet" one day in the week, say Friday, over a considerable period of time.

In rare and exceptional instances I have continued the rice diet alone over a considerable length of time. In one case of pretty *general eczema*, with excessive rheumatoid arthritis, in a girl in the New York Skin and Cancer Hospital, the patient was actually kept on the rice diet for three months, using at the same time appropriate internal and external measures. Not only did her extensive subacute general eczema disappear, but her hands, which were at first greatly distorted and firmly flexed, became so free and limber that she moved the fingers readily, remarking, as she held them up and told her story at one of the lectures, "I can play the piano now." She gained ten pounds while under the diet.

In another case, in private practice, a wealthy lady of high position, with *lichen planus*, followed the rice diet perfectly for seven weeks, the period being extended each week at her own request, because of the evident benefit in many directions resulting therefrom. In her case the weight, which was just 200, was reduced to 159 pounds by this and other means, and continues at about that figure. Under this treatment she lost various rheumatic symptoms and great shortness of breath and felt better than she had for many years.

One lady, aged 45, Mrs. C. L. B., with very general *psoriasis* for 24 years, and an almost crippling rheumatism, actually continued the rice diet, at her own desire, for nearly five months, with a few breaks when she made visits. The results were most remarkable; not only did the psoriasis about disappear without local treatment, but she became entirely freed from her rheumatism and was really a different woman, and came down in weight from 185 to 174 pounds. These are rare cases, though I have others similar on record, and I would by no means often advocate such prolonged severe diet; they are only mentioned to show that even in this country, as well as in China and Japan, rice can not only sustain life but contribute greatly to well-being and the removal of disease.

It is, of course, in acute inflammatory disease of the skin, as in my own case and those reported in my earlier paper, that the striking effect of the rice diet is best seen, and I may say that since adopting this line of treatment the management of this class of affections has been very much more satisfactory to me than before.

A very considerable number of cases of *acute eczema* could be mentioned, of both the erythematous and other forms, which have responded in a remarkably prompt manner. In a rather recent severe case of *erythema multiforme*, in a gentleman, Mr. W. H., aged 64, the eruption improved at once, and all life seemed to leave the bullæ within 48 hours; at the end of five days most of the lesions were dried up, and within ten days they had largely exfoliated. His weight fell from 212¼ to 208¼ pounds, and the urine, which exhibited three times the normal acidity as measured volumetrically, fell to normal.

Some rather interesting notes concerning *asthma* are recorded in certain of my case papers in connection with this rice diet. It is well known that asthma is a not infrequent accompaniment of a number of diseases of the skin, as I showed some time ago (*British Medical Journal*, November 21, 1885), and later observation has confirmed this strongly. One of the physicians attending the lectures at the New York Skin and Cancer Hospital, several years ago, first called my attention to a patient in whom asthma ceased almost at once when the "rice diet" was given for a cutaneous trouble, and would return when it was discontinued, but cease again when the rice diet was taken: this he had observed a number of times. Since that time I have often verified the same in many patients, only that with a continued vegetarian diet and careful medication the asthma remains absent, as well as the eruption.

Realizing the great value of the rice diet, when rightly employed in proper cases, and learning of its occasional apparent failure in the hands of others, I am prompted to make some comments upon errors which I have known to have occurred in its employment, both in my own practice and in that of others. Some of the errors in my cases have been from the misunderstanding or disobedience of directions by patients, while those in the hands of others have often resulted from a failure to give exact directions and to insist on their being carried out perfectly.

In some cases patients have eaten the rice and bread too hurriedly, with a spoon instead of a fork, and without sufficient mastication and insalivation,

and so have suffered from indigestion, as is common among the Chinese, who push the rice rapidly into the mouth with chop-sticks from a bowl held to the lips. Others again will take milk with the rice, as I have repeatedly heard patients say that their doctor had told them to live on a rice and milk diet, which is exactly contrary to the plan advocated. Others have taken coffee or chocolate, and often many other articles in conjunction with the rice diet and defeated its object. Some have followed a correct plan for too short a time, others too long, and I have often known it used in unsuitable cases.

To utilize rightly this valuable adjuvant to the treatment of certain cases of cutaneous disease, not only should the purpose and plan of the diet be accurately grasped, but a correct understanding should be made as to what is desired to be accomplished in each individual case. It is not claimed that this dietary regulation is a cure-all for each and every case; indeed it is but a single, very valuable adjunct, to be conjoined with many appropriate medical measures, and followed by such dietary and medical proceedings as will tend to efface the disease; but, as before stated, when rightly employed in proper cases it is an invaluable aid in practice.

It also takes not a little painstaking and careful explanation to make some patients fully comprehend the matter, so that every detail can be carried out intelligently. When this treatment is first proposed or ordered there is always some remonstrance, and questions are always asked as to other articles of food or drink. But experience has taught me that the best results are obtained by adhering strictly and absolutely to the articles mentioned, certainly for some days, and invariably patients have expressed entire satisfaction with the plan and the effects produced.

The matter of diet does not always receive the attention which it deserves from the medical profession. But with growing knowledge and experience its exceeding great importance in certain conditions of the system is coming to be more and more generally recognized. The present communication is an attempt to introduce more widely a definite line of dietary procedure, in a certain class of cases, which ten years' experience in my own practice and that of many others has demonstrated to be of unusual value.

331 Madison Avenue

RADIUM.

A RECOGNITION OF ITS EFFICIENCY AND A PLEA FOR MORE THOROUGH INVESTIGATION.*

By DOUGLAS C. MORIARTA, M.D.,

Saratoga Springs, N. Y.

So much has been said concerning radium in the lay press that you may wonder whether it belongs to the armamentarium of the regular or the quack. Personally, I feel that it is a live subject, and that any adverse criticism from the inexperienced unbeliever, that would affect its use where it is indicated, is unfortunate, for it certainly does possess remedial qualities peculiar to itself.

It has been said that "radium is to be considered a force and not a therapeutic measure"; and notwithstanding its physiological action, this expression is certainly suggestive. Radium has been employed in treating disease for more than ten years, but it is only within the last two or three years that it has been more generally taken up by the profession. A reason for this is, perhaps, that the earliest specimens of radium were disappointing in their action, for it has since developed that they did not contain the quantity of radium that was expected. This was due no doubt to difficulties in producing a pure product commercially.

Radium is a metallic element found in carnotite ore and pitchblende, and first separated by Madame Curie in 1898. It belongs to the strontium-barium group, forms salts with the mineral acids, and is the leading element in the radioactive group whose peculiarity is atomic instability. In the process of disintegration of radium, which never ceases, it loses a portion of its atom and becomes a gas, which is the radium emanation.

Radium emanation can be separated from the radium as fast as it is formed, and a definite amount of emanation is always evolved from a given amount of radium. The emanation from a gram of radium (value $120,000) multiplied by thirty, would only equal a volume of gas the size of a small pin head. When we realize that few practitioners employ more than 100 to 500 milligrams, and most of us work with success with quantities varying from 50 to 100 milligrams, we get some conception of its wonderful force.

In the so-called decay of radium, a particle of radium splits into alpha rays and emanation; this emanation in turn splits into alpha rays and secondary deposit, and from the splitting of this secondary product come the other two classes of rays, known as beta and gamma. If this splitting or decay, which is constantly going on, occurs in radium that is sealed, the emanation is enmeshed in the radium itself, and gives rise to the mechanism of general radiation and the liberation of energy. This is the so-called "ageing" of radium, freshly prepared radium being comparatively inert until the process has advanced thus far. As there are no gamma rays until the third decay product, the maximum of the gamma rays, under these conditions, does not develop for a month.

If, however, the radium is open, or in solution, the emanation is liberated as such, and may be used by inhalation or in solution as activated water. Thus, in any case, the action of radium depends upon emanation, which is its radioactivity. In the one case, as in a tube, there is a uniform activity of the rays from the splitting and successive products; in the other case the emanation is introduced into the body, where the splitting of the rays goes on with the same identical liberation of rays and energy as if it were sealed. Thus the therapeutic value of radium may be roughly divided into external and internal administration.

The three kinds of rays, to which the names alpha, beta and gamma have been given, have well-defined characteristics and differences. Technically speaking, alpha rays are not rays at all, but are positively charged atoms of helium, with a weight four times that of an atom of hydrogen. They are liberated with an explosive force, and travel 12,000 miles a second. The energy of their liberation accounts largely for the heat of radium, and the force of their bombardment for the injuries to the tissues, such as superficial irritation, as well as burns of varying degree.

The beta rays are also not rays at all, but a negatively charged stream of electrons.

*Read by invitation before the Glens Falls Medical Society of New York, December 17, 1915.

The gamma rays are not particulate matter, but a vibration of ether, similar to ordinary light. They do not polarize, pass straight by a magnet, and are not deflected by a prism.

In the use of radium externally it is necessary that the rays should be filtered to avoid superficial irritation and burns. By this we mean simply that the passage of certain rays must be obstructed by the interposition of some material or space that will absorb or stop the rays that are developed which we do not want to use. Alpha rays, being particles all traveling the same distance at the same time, are stopped by a slight obstacle, such as a sheet of paper. Beta rays show different degrees of penetration, being divided into soft, medium, and hard.

If one makes space the filter for these various rays, alpha rays are cut off by a distance equal to 3 cm. of air; beta rays, by about three times that amount; while gamma rays would reach a distance of 100 meters and still affect the electroscope, or travel 3 meters, penetrate a man, and cause a fluorescence beyond him. The ratio of penetration of these rays may be expressed by 1; 100; 10,000.

For the alpha and soft beta rays, one may make simple filters of lead, paper, rubber, or mica. Metals, however, furnish the common filters for the medium and hard beta and gamma rays; silver, aluminum, lead, brass, and more recently gold and platinum, are employed. One centimeter of lead screens the hard beta rays completely; gamma rays need 5 cm. of lead for what is practically complete absorption, although a small fraction will still be left with 10 cm. We thus vary the quality of the rays by filtration. Without filtration, there are 90 alpha particles to nine beta and one gamma ray. Under strong filtration, 600,000 total rays are reduced to 5,000 (gamma) rays.

Mention should be made of still another class of rays which are created when a filter of lead is used in the application of radium; they are called secondary rays, are very irritating, and can be screened by rubber tissue of varying thicknesses.

After the nature of the rays and the kind and amount of filtration have been determined, the third factor in radiation is the density of the tissue to be radiated. A knowledge of all three facts is essential in practice; in fact, they absolutely control and determine the results of radium treatment, when it is used externally, and when these factors are not well understood, it is easy to account for the failures and disappointments in its external use. It is my experience that radium is always going to do *something*, but success in its use will be achieved only after we have learned how to use it.

In considering the use of radium, we will find that the alpha rays must in the main be rejected therapeutically. Their discharge has been called "the most intense liberation of power in nature." *Kinetic energy* is their chief characteristic. As has been said, they account for the heat of radium, their chemical energy is shown in catalysis, and the rays are irritating and destructive to normal tissue. Soft beta rays are in much the same category; but the hardest beta rays which are much more penetrating, are similar in effect on pathological tissue to gamma rays. In gamma rays, it is agreed, we have the most useful therapeutic agent of radium as they will penetrate a great distance, though as we have said, their number is relatively small. Our problem is to get the greatest amount of these rays in any given place. This will depend upon the intensity (amount of radium used), the manner of filtration, and the period or time of exposure. The intensity of an application is greatly augmented by what is termed "cross-firing;" this is simply the focusing of the gamma rays from several sources upon a given district; the burying of a tube will also increase its efficiency many times, because all the rays will thus become engaged; while if it lies upon the surface this is not the case, as only the rays emitted in the direction of the object can be effectual.

Gamma rays are shown to have a predilection for pathological cells, in proportion to their youth, embryonic state, or degree of development; the quantity of radium employed should be at least sufficient to affect the normal tissue. Young connective tissue, in the vicinity of the application, may be observed multiplying and developing vigorously. This is the essence of the favorable action of radium on morbid tissue; normal tissue elements are stimulated, while morbid ones wither and are gone. All observers have seen the wonderful power of radium to destroy growths of a simple and intermediate nature, from warts to non-infiltrating carcinoma. Large cell growths are simply "blown to pieces." New growths differ considerably as to their degree of resistance. Epitheliomata require larger doses than some other morphological tissue. The nearer the surface of the body the new growths are, the easier can they be destroyed, whether benign or malignant. Growths of the mucous membrane of the mouth require large doses and are quite difficult to cure. The effect of radium extends only to the depth of a fraction over an inch; therefore, a large mass to be attacked successfully must be carefully plotted with extensive direct radiation. If possible, a tube of radium should be placed in the tumor mass for a cross-fire. Applicators in the form of needles are here useful. The results of treatment may be complicated by an erythema, or even a severe burning, and by extensive edema. This is usually due to ineffective screening, or too long an application, where a large dose seems imperative. Toxemia from absorption, following prolonged treatment where there is no drainage, must be borne in mind, for I am convinced that massive radiation was a factor in a fatal termination of one of my cases. Burns *per se* are not material if the desired result has been accomplished at the time they occur. They are ordinarily superficial, not very painful, and heal slowly. But if the further local application of this particular field is to be continued, then the early irritation or congestion must be recognized and radium application be discontinued for a time, otherwise sensitization of the skin will result and further treatment must be delayed indefinitely. After the area is once sensitized I find it necessary to renew treatment with much smaller dosage.

As I have said, all these mentioned factors enter into the problem of the successful use of radium. In addition to the knowledge of the character of the rays, the technique of filtration, the time of exposure, etc., we must take into consideration the amount which it is necessary to use, its form and shape, and the location and position of the application. We must also consider the susceptibility of the tissue involved, its pathology, the varying degrees of resistance of the different normal and abnormal tissue cells, as well as other chemical, physiological, and biological factors, all of which must be understood before the therapeutic value of this element can be fully determined. Until experience has given us more knowledge, the results of treat-

ment must, in many cases, be unsatisfactory; not because radium is not capable of doing the things we would like, but because we have not as yet learned how best to make it always do what we want it to.

Radium administered internally has an action startling in many ways. Here it is used either by inhaling the emanation, drinking the activated waters, or water in which radium salts have been dissolved, or by intravenous injections; all of these methods are effective in their proper sphere.

The physiological action of radium sounds not unlike a fairy tale. It often increases the red blood count ¼ of a million in forty-eight hours, and also the hemoglobin markedly in a short time. It stimulates all cell life, particularly that of the enzymes, thus aiding and improving metabolism. It increases the elimination of carbon dioxide, urea, and uric acid, and in addition is said to keep the latter in solution in the blood. It diminishes the viscosity of the blood and greatly increases the quantity of urine secreted. It stimulates and increases the appetite, and aids digestion by activating the digestive ferments. It dilates the blood vessels, through the excitation of the vasomotor nerves. Its action in anemia is little short of marvelous, it relieves the pain and local manifestations of gout promptly, and also the pains of neuritis. It lowers blood pressure almost so surely as you administer it. It is a prompt and powerful tonic and stimulant. In larger doses it often produces a *decided reaction*, causing headache, nausea, lassitude, and general body discomfort. The cases in which this reaction occurs are thought surely to receive benefit from its use. No toxic or lasting ill effects have been reported.

The dosage of radium is quite as important internally as externally. Internal dosage does not seem to have been definitely determined, though we are daily getting a more clear conception as to what can be expected from various dosage. The men who use infinitesimal doses, and there are a goodly number of them, are quite as enthusiastic over the effect secured as are those who use it in larger doses; and none of them hesitates to express his opinion of its therapeutic value. The varying degrees of chronicity and the amount of metabolic derangement seem to be controlling factors as regards the amount of radium emanation to be given. Frequently, we meet patients who exhibit a well marked susceptibility to radium and who react to extremely small dosage. Ordinarily, I classify my cardiovascular-nephritic cases as requiring low dosage and my arthritis cases as requiring high dosage. Each case must be judged as it stands and after treatment is inaugurated its course must be regulated by carefully checked laboratory findings.

I first became interested in radium in 1912, when the National Bureau of Mines announced that some of our mineral springs at Saratoga contained radium in solution, and that others were activated by radium emanations. The Bureau of Mines, in making this announcement, furnished me with the explanation of the value of our mineral spring waters, which to me had always been unexplainable. In a paper written in 1908 I stated that the results I had observed from the use of the waters were surprising, and could not, to my mind, be accounted for by a knowledge of the chemical analysis of the waters. I stated that the natural waters at Saratoga presented unusual therapeutic properties which are peculiar to themselves and not presented by artificial waters made after the analyses of the chemists, and gave as a reason that I believed that the combination of bases of acid radicals in nature's laboratory under pressure and heat did not result in the theoretical formula believed and accepted by the chemists who made the analyses. I am now convinced these peculiar therapeutic properties are due to radium influences. We are not in a position to announce at this time any data relating to the limitations and efficiency of radium as a catalyzer. Suffice it to say that it is a property of marvelous importance.

For years I have had unusual results from our mineral spring waters, when their use was associated with a carefully directed personal regimen, in cases of high blood pressure, gout, obscure neuralgic pain, arthritis, etc., the reasons for which were not clear to my mind, until I became familiar with the physiological action of radium in various amounts and knew that it was contained in our waters. With those who would refer all the benefit derived by these patients to the regulated regimen, and a protein-free diet, I would disagree. Radium, even in such small doses as occur in our Saratoga waters, is a wonderful synergist to metabolism and when it is administered, proteins do not have to be so restricted, neither do nitrates have to be used to control the high blood pressure of arteriosclerosis. As we increase the amount of radium by direct administration, either by intravenous method or by mouth, definite biochemical manifestations are noted which give us reason to accept radium as an active therapeutic force.

A word concerning arteriosclerosis may not be amiss. The early symptoms of this degenerative process are seldom appreciated, because they have not been associated with the diagnosis of the later manifestations. The late symptoms are often confused with atheroma of the arteries, the latter being due to advancing years and senility, while arteriosclerosis need not of necessity be a senile condition. The early symptoms of arteriosclerosis are nervousness, irritability, insomnia, and a general breaking-down in a young person; these are caused by continuous over-work, excitement, speculating, the use of alcohol, gormandizing—in fact, the abuse of nature in every way. A large number of these individuals soon or later, develop the late symptoms, which are characterized as cardiovascular, cardiorenal, and myocardial degeneration, with the concomitant high blood pressure; this latter symptom being very popular, is the bugbear of the public generally and a meal ticket for the profession particularly. It would seem to me that this symptom is not correctly interpreted or well understood, and it occurs to me that physicians seldom differentiate between a high compensating pressure and a true hypertension. In other words, the etiology and pathology of arteriosclerosis are entirely ignored, and the one ambition seems to be the relief of this one symptom, *i.e.* high blood pressure. In my experience, radium never fails to control this symptom when it is intelligently administered. I have treated these cases for many years in my summer practice by regulating the diet, amount of exercise, rest, etc., with the internal and external use of our mineral waters; and usually the symptoms are controlled to a marked degree, without the use of nitrates; and this result, I now believe, is due to the radium contained in our mineral spring waters. Following up this effect I have found that with increased radium dosage I can secure more permanent results in my cardiovascular cases.

In the direct application of soluble radium salts,

my experience extends only over a period of about fifteen months. During this time I have used it in emanation, in activated water, the dissolved salts intravenously, and radium solutions by mouth in about sixty cases. My results have been without exception amazing; so much so that those uninformed concerning radium, or those who are skeptical as to its value, would surely question my conclusions.

I appreciate the fact that the number of cases is too few, and the period since instituting the radium treatment too short for the results to be accepted as cures. Yet they serve to emphasize the statement that I have made that radium is a potent therapeutic measure, when the quantity of radium that should be used in a given case, and the conditions controlling its use are correctly interpreted.

I have found that when a patient is to be treated by radioactive waters or by inhalations, the best results are obtained by commencing the treatment with the injection intravenously of at least 25 micrograms of radium chloride; the idea is to give a goodly quantity to act in the body in the beginning, and to maintain the saturation by replacing the elimination of the dissolved salts, by the waters or by the inhalation of emanation.

The amount of activated water that a patient will accept I have found will vary from 10,000 to 100,000 mache units daily. I have usually administered it in four doses, so divided that three are given one-half hour after meals and the fourth on retiring.

In all cases in which I have used radium internally, I have preceded its use by making a red blood count, noting the hemoglobin and the blood pressure, and making a urinary examination. I have observed that without exception there has been an increase in the red blood cells of from 50,000 to 250,000 in ninety-six hours. Invariably the hemoglobin has been increased. When radium is well borne, it is a marked tonic and stimulant; the appetite has been markedly improved, as have been the digestive processes, and the patient experiences the sense of well being.

In one case of arthritis deformans which I here cite as a type, the patient, a school teacher, 50 years old, was practically a helpless cripple. Her hands were terribly deformed, the joints large and fingers thrown out at an angle; in fact, we had a typical picture of this condition. Her knees and ankles were swollen, the motion in all joints limited, she could not close her jaws tightly, had difficulty in masticating her food, the tissues of her back were in a tumified condition, and she was in constant pain. She was given an intravenous injection of 50 micrograms of radium chloride and then continued to use radium by drinking the activated water. After a period of four months the pain has subsided, she walks without limping, and closes her hands, and, as she says, bites a thread if she wishes to when sewing. I might mention in this particular case, that her blood pressure at the time of taking the injection was 240, the blood count 3,500,000 and the hemoglobin 80 per cent. Twenty-four hours after its administration the blood pressure was down to 180. Ninety-six hours after the treatment, the red blood count was 5,200,000, the hemoglobin 90 per cent. and blood pressure 185. The quantity of urine had increased from 30 to 60 ounces daily.

I have had eight cases of neuritis or myalgia that had existed for months, resisting all treatment, that have been relieved by the use of radioactive waters with a single intravenous injection at the beginning of the radium treatment.

I have had seven cases of nephritis with albumin, casts, headache, loss of appetite, shortness of breath, and precordial distress—one in particular with the headache so strongly marked that the patient was incapacitated. All cleared up so that the patients, to use their own statements, which seemed general, "feel like a new being." I have had two cases of gout which under emanation treatment were entirely relieved of active symptoms.

My results from the local application of radium in malignant and benign growths have been equally startling. I have been permitted to use the element to date in some fifty-three cases, which present conditions varying from carcinoma of the breast to uterine fibroids. As a result I am greatly impressed with the value of radium in gynecological practice.

The large majority of these cases gave entirely successful results—in malignant cases futures are to be considered. Radium exerts a destructive influence on the malignant mass in a manner more humane than any other known agent after the knife has been withheld. It controls pain, hemorrhage, and odor. It frequently gives a hope to the hopeless that I would not withhold. I esteem radium as an invaluable adjunct to surgery and I feel we are fast gaining a better conception as to its efficiency. My recent experience from the use of radium in all of its forms has been so uniformly promising that I actually hesitate to report it and I would not wonder should clinicians question the accuracy of my primary observations and ultimate results. I assure you my convictions that evidence enthusiasm have developed against my prejudices. Personally, I feel that we should endeavor to foster in every manner any investigation that shall have as its purpose a thorough study of this wonderful element. We should be able to look to some of our great research laboratories for real data. The day is past where we will proclaim radium and radioactive substances as agencies of mystery with no special merit. The little we are able to unfold tells a different story. The problem is how soon are we to know and understand its marvelous energy?

511 Broadway.

CONCERNING RUBBER GLOVES.*

By ROBERT T. MORRIS, M.D.,

NEW YORK,

PROFESSOR OF SURGERY NEW YORK POST-GRADUATE MEDICAL SCHOOL.

Some years ago I published an article condemning the indiscriminate use of rubber gloves. This brought out favorable comment from a number of the older expert surgeons, and it called up a great deal of unfavorable criticism from men who had been trained to believe that rubber gloves should be employed in all operative surgical work. Perhaps it is now time for me to state clearly certain views which are the outcome of more extensive experience.

First, let us take up the matter of principles. According to the fundamental ideas of the third or pathological era of surgery, the operator was to remove bacteria and their products most thoroughly from any infected area. This called for a degree of technical work which represented progress, but nevertheless often proved injurious to the patient. Furthermore, it was frequently unnecessary. We

*A paper read at the meeting of the Medical Union, New York, January 25, 1916.

are now passing into the fourth or physiological era of surgery.

The main idea about which our new methods are grouped consists in giving the patient the mildest attack of surgery which will suffice for turning the tide of battle between bacterium and organic cell. It is the idea of conserving the patient's energies and turning him over to himself as expeditiously as possible—in other words, giving him "home rule." Most surgeons cannot introduce their nicest manual technique when wearing gloves.

The methods of the fourth era of surgery include the idea of the least possible degree of handling of sentient tissues, and the shortest incisions which will suffice for accomplishing an object without jeopardizing any of the patient's interests. Furthermore, rapid work is desirable in order to avoid sending prolonged destructive influence into the patient's centers of consciousness, which are never wholly asleep, no matter what degree of anesthesia may be employed. Regarding this, Dr. T. L. Bennett says that the best surgeon is the one who acts all of the while as though he were afraid of waking the patient up.

In order to follow the principles of this fourth era of surgery, one needs to depend very largely upon the sense of touch. We often have to work by touch in a class of cases in which a phrase "expose all of the pathology" belongs to the third or pathological era of surgery, now passing. It is better not to expose all of the patient's pathology in many of these cases in which we already know what that pathology is, and what the patient will be able to do with his repair machinery if he is not shocked too deeply.

In some cases a large incision and tedious technical ideal work will allow many more bacteria to fall into a wound from the air than would be carried in by well prepared surgical hands.

This matter of careful preparation of surgical hands is sometimes neglected by men who put too much confidence in their rubber gloves. I would not advocate any idea which jeopardized the patient's interests. On this basis I made at one time a quiet examination of hospital records of a number of surgeons who worked without gloves, and of a number who worked with gloves. Some of us who depend upon careful preparation of our hands had fewer cases of infection than were recorded against other operators who used rubber gloves in all of their operative work. In only one instance did a surgeon who wears rubber gloves continuously have better results than my own, and he is a better surgeon than I am, anyway.

For hand preparation I have depended for some years upon one of the chemical substances which does not coagulate albumin, and which leaves the skin of the hands soft, and free from that epithelial injury which follows the use of bichloride of mercury. There is doubtless a difference between hands of various surgeons in this respect. Hands which are continually moist, indicating some chronic toxic influence (chiefly from the colon, according to Lane) may carry more active colonies of latent bacteria in their epithelium than would be found in the epithelium of the hands of men in perfect health. We have laid too much stress upon the need for the employment of germicides in hand preparation, when a powerful antiseptic, not a germicide, might cause less injury to the protoplasm of the epithelium of the surgeon's hands.

The advantages of working by the sense of touch in preference to the sense of sight in certain cases has been recognized by surgeons since the earliest days of surgical history. The sense of touch is dulled by the best of gloves.

The operator in a case of perforated ulcer of the stomach, working by sense of touch, may introduce drains down to the region of perforation and complete his preliminary operation in three or four minutes of time, leaving subsequent details for a secondary operation.

In typhoid perforation, or in cases for drainage of the fluid belonging to parenteral anaerobes in typhoid hemorrhage, the entire operation from first incision to last suture may sometimes be done in seconds instead of minutes where one is working by the sense of touch.

When removing firmly adherent organs like oviducts in cases of pyosalpinx, or the appendix in acute infective cases, work may be done through short incisions by aid of the sense of touch very rapidly and accurately. Long incisions naturally predispose to the development of post-operative hernia, if the patient has the luck to live and face that danger.

For cases in which we need to be particular about scarring, one will often work to advantage through incisions which could not be employed if the sense of sight were our chief dependence.

On the other hand, rubber gloves may be worn to advantage in almost all of the so-called "external operations," such as amputations or excisions, or hernia, in fact I need not enumerate. Surgeons there be who are not well trained in the principles of asepsis or of antisepsis, yet who are doing a great deal of operating. For such operators I would prescribe the employment of rubber gloves under all circumstances."

The question of wearing rubber gloves was first brought forth actively at a time when I was most deeply engaged in forwarding the principles of the fourth era of surgery, and for that reason my stand against the indiscriminate use of gloves may have been made with more emphasis than would be placed upon the subject at the present time, when very thin flexible gloves are to be obtained from the manufacturers. Rubber gloves which were put upon the market at first were comparatively thick and cumbersome.

Excepting in abdominal work rubber gloves give a certain percentage of results in their favor, even with the most expert operators, provided that very thin gloves are used. Personally I prefer the ones which are made in such a way that the knuckles of the operator are left free, without the necessity for putting the rubber particularly upon the stretch over the knuckles. There is thus less interference with the sense of touch under these circumstances.

There is no need for bringing up the question of desirability of rubber gloves for use in obstetric work or in various examinations, or for protection of the surgeon in some fields of work in which the advantages are obvious.

Improvements in rubber gloves have been so marked that I do not now have the feeling that was engendered when I saw dangerously bungling work done by men who were wearing thick gloves. At that time it was evident that younger men who were being trained to wear gloves in all operative work would never develop the fine sense of touch belonging to the surgeons of a past school.

616 Madison Avenue.

A BROADER VIEW OF TABES DORSALIS.*

By FRANK R. STARKEY, M.D.,

PHILADELPHIA, PA.

THE development of our knowledge of tabes has been a matter of slow evolution since Duchenne casually alluded to the frequency of syphilis and demonstrated involvement of the posterior columns of the cord in tabes. The cause was a matter of dispute. Leyden declared chill to be the most common and probably the only cause. Duchenne was of much the same opinion, but he and Wunderlich pointed to overexertion, fatigue, and sexual excess as probable causes. Wunderlich also suggested that concussion of the spine might be a causative factor. Erb was the first to lay especial stress upon syphilis as the essential cause of tabes, and he was ably supported by Fournier among the French, and Möbius and his colleagues of Leipsic sustained him fully in this view. Möbius, with much emphasis, declared: "Without syphilis there is no tabes." Erb substantiated his opinions by a long series of tables of cases showing that syphilis was undoubtedly present in a vast majority, if not in all persons who developed tabes, but he believed it was a parasyphilitic disease due to the influence of toxins rather than the actual invasion of the cord by the syphilitic germ. As late as 1911 Oppenheim gave voice to the following: "We are by no means justified in regarding syphilis as the *conditio sine qua non* of tabes, as Brassand, Babinski, and others do. Tabes is further not a syphilitic disease in the pathologico-anatomical sense. The pathological changes have nothing in common with the well-known lesions of visceral syphilis, although Erb does not admit it. It is nevertheless conceivable that syphilitic cachexia is the result of poisonous chemical substances produced in the organism which bring about simple degeneration in certain portions of the nervous system. Those suffering from tabes seldom present any constitutional sign of syphilis." So it will be seen that at no time has there been an unanimity of opinion concerning the etiology or pathology of tabes, and that some of our most learned neurologists and pathologists clung to views that we now believe to be entirely untenable. The discovery of the spirochete in the cord tissues by Noguchi and Moore in 1913 placed an entirely different light on the whole matter, and it is now generally accepted that in tabes there is an actual invasion of the tissues of the cord by the spirochete. We have, however, adhered to the histological picture of a cross section of the cord in our conception of this disease, and accepted the teachings of our forefathers, who considered it solely a systemic degeneration of the posterior columns.

We must now go beyond this very circumscribed view, for it by no means gives us an ample conception of tabes in its broader sense. In view of our present knowledge of the glands of internal secretion and of the autonomic and sympathetic nervous systems and the relation of the endocrinous glands thereto, we are now able to explain many mysterious phenomena of tabes which could not be accounted for solely by degeneration of the posterior columns of the cord. The nuclei of the vegetative system are so intimately associated both in the brain and the cord with those of the sensorimotor system that it is impossible to separate them. The autonomic and sympathetic nervous systems are unquestionably under the control of the glands of internal secretion, and if we study their embryonic origin we will find that the origin of the chromaffin system, the sympathetic nervous system, and autonomic and central nervous systems is closely associated. The reproductive organs are also closely allied in this relation.

It may be well for us to pause for a moment and view the distribution of the autonomicosympathetic system (for the sake of brevity counting them as one). The autonomic supplies the muscles of the iris, ciliary muscle, and orbital muscle (disturbance of this would account for Argyll-Robertson pupil), heart, blood vessels of the mucous membranes of the head, walls of the gut from the mouth to the descending colon, also the gastric glands, liver, and pancreas. The sympathetic, from first thoracic to second lumbar, supplies muscles, glands, and vessels of the skin, vessels of the gut from mouth to rectum, blood-vessels of the lungs, abdominal viscera, arteries, skeletal muscles, spleen, urethra, and internal generative organs. The autonomic, from second to fourth sacral, supplies arteries of rectum, anus, and external generative organs, also walls of bladder and descending colon. A lesion here would account for bladder phenomena, impotency, incontinence of urine and feces, so common in tabes. Other frequent findings in tabes which can be accounted for by disturbance of the autonomicosympathetic system are muscular atrophy, which in tabes does not follow the course of any particular nerve, but occurs in large groups of muscles, frequently unilateral tabetic arthropathies (Charcot joint), perforating ulcer of the foot, or of the mucous membrane, occasionally with gangrene, somatic disturbances of general nutrition, disturbances of nutrition of hair, skin, and nails, and aortic disease, manifesting itself in insufficiency or aneurysm. Cardiac crises and vascular crises have been described by Pal; these crises frequently resemble angina pectoris—a feeling of oppression about the heart, with arrhythmia, bradycardia, tachycardia, bradypnea, and glycosuria, common in association with paralysis of the vagus in pituitary involvements and in tabes. Oppenheim describes a case of tabes which was marked by unilateral total paralysis of the vagus. When we remember that the vagus supplies the pharynx, larynx, lungs, heart, esophagus, abdomen, intestines, and the fundus of the external auditory meatus, we will at once be able to account for the analgesia of the pharynx, laryngospasm, esophagospasm, intestinal and gastric spasticity, and disturbances of the auditory tract. With the autonomic and sympathetic, like the glands of internal secretion, there is a normal equilibrium maintained in health, but in the case of the autonomic and sympathetic this balance is established by a normal antagonism between them. Stimulation of one abolishes the action of the other. The adrenal is the natural stimulator of the sympathetic, and although we cannot definitely establish it as yet, the pituitary and sexual glands are probably the natural stimulants of the autonomic for vagatonia is conspicuous in sexual neurasthenics and at the climacteric. Although the fibers of these two systems are so closely related that it is impossible to differentiate them anatomically, we can readily influence each system separately by the use of adrenalin for the sympathetic or pilocarpine, atropine, muscarine, or a number of other vegetable substances for the autonomic.

We may summarize the symptoms which we com-

*Address delivered before the Wayne County Medical Society, Detroit, Mich., October 18, 1915.

monly find in disturbance of the glands of internal secretion, the autonomicosympathetic system, and tabes, as follows: Disturbances of nutrition involving skin, hair, nails; blue, swollen, or gangrenous skin or mucous membrane; atrophy of large groups of muscles, not following the course of any particular nerve; perforating ulcer of the hand or foot; profuse sweating; neurasthenia; arrhythmia, and other disturbances of the circulatory apparatus; disturbances of respiration; glycosuria; visceral crises; analgesia of pharynx; pharyngeal, laryngeal, esophageal, and pylorospasm; spasticity of stomach or intestines; splanchnic congestion; hyperalgesia of the abdomen; Argyll-Robertson pupil, and disturbances of the sexual organs. We must not expect to find all of these symptoms or signs of involvement of the glands of internal secretion and of the sympathetico-autonomic system in each individual case, any more than we expect to find all of the classical features of typhoid fever in every case of that disease, but a sufficient number of these signs are constantly present in all cases to prove the point at issue.

Arthropathies can be most rationally accounted for as a trophic disturbance through the sympathetic. There is absolutely nothing to differentiate microscopically the cord of a case of tabes showing arthropathies from one in which they are not present, and there is certainly nothing in common between the Charcot joint and ordinary syphilitic arthritis, nor is there the slightest pathological difference in the cord of a tabetic patient with Argyll-Robertson pupil from one with normal pupil, yet we know positively that the Argyll-Robertson pupil may be absent in tabes, and that lesion of the sympathetic will produce it. Eloesser produced Charcot joint by traumatizing a segment whose posterior roots had been cut.

I believe that we should consider the treatment of tabes as separate from syphilis, not attempting to deny the syphilogenesis of the disease, and this in my opinion can be accomplished best by organotherapy. (See Starkey: "Glands of Life.") I think it is not always wise to treat the patient for syphilis, but rather, in selected cases, to treat the tabes separately. I wish to make it very clear that I do not make the slightest claim that organotherapy can cure syphilis, but tabes is not syphilis. It does, however, seem to act as a sensitizer and increases the phagocytosis or formation of antibodies, the patient's resistance is increased and he responds more promptly to antisyphilitic treatment when used in conjunction with organotherapy. I want to emphasize that in many cases of tabes where the syphilis seems to be dormant or quiescent it is better to allow the syphilis to sleep rather than to arouse it to a state of activity by antisyphilitic treatment. Such cases when treated by salvarsan or even the mercurials frequently show marked exacerbations, due to the setting free of enormous quantities of toxins or the liberation of the spirochetes which have been encysted, and do not improve under further antisyphilitic treatment. Since the advent of salvarsan and the vigorous treatment of the primary stage of syphilis incident thereto the percentage of luetics showing early nervous involvement has been distinctly increased. Our experience seems to show that when the disease is attacked in a vigorous manner in the early stages and the secondary stage prevented or aborted, the liability to early and severe nervous phenomena is increased. It would seem that where the infection spends itself by severe secondary phenomena its virulence is attenuated and the liability to involvement of the nervous system is distinctly lessened. The German aphorism; "syphilis does not die but only sleeps," I believe to be applicable here, and when it is in a sleeping or quiescent state it is decidedly safer to let it sleep in these old cases. I have at present under my care a gentleman, 76 years of age, who contracted syphilis fifty years ago and received the rather indifferent treatment in vogue at that time. He has shown no manifestations of syphilis whatever since, until three years ago, when slight numbness of the feet with paresthesia over part of the thoracic region and a rather marked myosis developed. He has absence of knee jerk and a two plus Wassermann. This myosis may be due to his age. He shows absolutely no other signs of syphilis, and I believe that to institute antisyphilitic treatment in this case would be a grave error.

The question of why a very small percentage of those infected with syphilis acquire tabes, while the vast majority do not, has been a puzzling one for many years and numerous very ingenious attempts to explain it have been made. I believe that it can be most rationally explained by assuming a constitutional inferiority involving primarily the glands of internal secretion, the pituitary in particular, and the consequent perversion of its secretion which is poured directly into the cerebrospinal fluid. It may be that when this gland is involved and its secretion perverted it acts as an irritant to the tissues of the cord, making them vulnerable to the invasion of the spirochete, or again the sympathetico-autonomic system, which presides over nutrition, may be originally involved in these patients and their vulnerability thus increased. This seems to be more rational than to believe that a special organism exists which creates tabes only. Certain strains of germs have been shown to have selective predilection for certain tissues, but this can be developed only by passing them through a number of individuals with a definite disease, and this particular phenomenon has never been demonstrated with the *Spirochæta pallida*. It has also been shown that certain prostitutes leave numerous victims of tabes in their wake, but these instances are so rare as to be of little assistance in answering this question.

The following rather typical cases are cited not for the purpose of showing the results of treatment, but solely to illustrate the connection between the glands of internal secretion and tabes.

Case I.—Female, aged 45, married, one child. Family history: unimportant. Previous history: unimportant, except scarlet fever in childhood. Denies venereal disease. Seven years ago first noticed difficulty in walking in dark and numbness of feet; ataxia gradually developed until patient was unable to walk without assistance, then arthropathies (Charcot joint) developed in knees, which necessitated the use of crutches; for past three years unable to stand unassisted, compelled to use wheel chair or crutches, complains of stuffy feeling, shortness of breath. Examination: medium height, quite obese, brown hair, gray eyes, puffy face, myxedematous appearance, unable to open eyes widely, palpebral fissure, narrow, slight external squint of right eye, skin and hair dry and harsh, subcutaneous tissue firm to pressure, entire body, especially legs, swollen in appearance but does not pit on pressure, marked hyperextension of knees making it impossible to stand, temperature 98.6°, pulse 65, abdominal and thoracic viscera normal, Argyll-Robertson pupil, loss of knee jerk, blood pressure 120 mm. Wassermann three plus. This patient presents a typical picture of thyroid insufficiency. An orthopedic appliance for one leg was prescribed and organotherapy instituted. At the end of twenty days was able to stand and walk unassisted with hands behind back. The swollen appearance of body greatly lessened, legs

so reduced in size, readjustment of brace was necessary, crutches and wheel chair entirely dispensed with.

Case II.—Male, aged, 55, chemist. Family history: father died of diabetes, otherwise negative. Previous history: ordinary diseases of childhood, chancre twenty years ago, first noticed difficulty in walking ten years ago, a tendency to fall, lightning pains in extremities and gastric crises, diplopia then developed, was treated by ordinary methods for syphilis and received ten injections of salvarsan which caused diplopia to disappear and lessened gastric crises for a time. These pains, however, returned with usual severity. Examination: fairly well developed male, 5 feet 10 inches, dark complexion, coarse hair, prominent eyes, large lips, high cheek bones, large jaw, angular conformation of body, prominent acral parts, large hands and feet, skin cold and clammy to touch, perspires profusely on slightest exertion, decidedly neurasthenic, tendency to muscular atrophy in large groups of muscles in arms, shoulders, back and legs, very ataxic, Argyll-Robertson pupil, knee jerk absent, examination of thorax elicits aortic insufficiency otherwise negative, dullness in percussion over entire abdomen, splanchnic congestion (evidence of vagotonia), temperature 97.5°, pulse 60, blood pressure 100 mm. Wassermann negative. I believe this patient to represent hypopituitarism and hypothyroidism secondary to hyperpituitarism and hyperthyroidism. This is further borne out by the prompt response to organotherapy. Within one week patient's temperature was normal, pulse 72, blood pressure 120 mm. and within two weeks was able to walk a chalk line without perceptible ataxia. Continued to improve under further treatment.

Case III.—Man, aged 45, occupation, retired, married nine years, no children. Family history: negative. Previous history: ordinary diseases of childhood, including scarlet fever and diphtheria, syphilis eighteen years ago, treated vigorously, did not develop secondary eruption, first noticed tingling sensation in feet nine years ago which extended to legs and arms, walking became difficult one year later and manifested difficulty in starting urine about this time. Present condition: walks with cane and assistance of nurse, decidedly ataxic, complains bitterly of lightning pains in legs, arms, and stomach, partial incontinence of urine and feces, entirely impotent. Examination: Tall, light complexion, prominent eyes, wide palpebral fissure, rather slender, delicate features, tapering fingers, very little hair on body, small bones, fine hair, skin cold and clammy, complains of cold, perspires easily, complains of choking in attempting to drink due to pharyngeal spasm, decidedly neurasthenic, pulse 70, blood pressure 90 mm., temperature 98°, Argyll-Robertson pupil, loss of knee jerk. This patient is undoubtedly one of hypopituitarism of the second classification. I saw him only twice and was unable to make a complete study or note results of treatment.

Case IV.—Male, aged 60, occupation, brewer. Family history, unimportant. Previous history, ordinary diseases of childhood, typhoid fever at eighteen, denies specific infection; first noticed diplopia twelve years ago, then uncertainty in walking, especially in the dark, pains in arms, legs, and various parts of the body, treated for rheumatism, developed girdle sensation, vision became impaired six years ago, now totally blind, walks with wide base but little ataxia, however, makes very little attempt to walk unassisted. Examination: Height 5 feet 8 inches, weight 200 pounds, decidedly stout, dark complexion, coarse hair, shaggy eyebrows, heavy moustache, thick leathery skin, pudgy face, heavy lips, constantly in profuse perspiration, legs swollen and blue, skin cold and clammy to touch; examination of chest reveals small aneurysm of ascending arch of aorta, temperature 97.8°, pulse 60, blood pressure 121 mm., knee jerk absent, areas of anesthesia in mammary region and on inner side of thighs and legs below knees, also some perineal anesthesia, neurasthenic, complains of insomnia, is of a positive stubborn, disposition, very intractable, difficult to manage. Under organotherapy pains reduced, neurasthenia much improved, sweating lessened, insomnia disappeared. Discontinued treatment at end of ten days. I would classify this patient as thyroid insufficiency secondary to hyperthyroidism.

Many of the most troublesome symptoms of tabes can be clearly accounted for by involvement of the autonomicosympathetic system, and bearing in mind the governing influence of the glands of internal secretion over this system, the gratifying results obtained in this disease by organotherapy are easily understood.

The cardinal points in organotherapy are; first, select the glands from uncastrated animals; second, administer by intramuscular injection; third, use in combination as they occur in nature. The adrenal can be omitted in ordinary therapeutic measures, as it is represented by the pituitary. The dosage is to be worked out in each case.

There is no constant relation between the length of time tabes has existed and the amount of destruction found in the cord or severity of symptoms; neither is the severity of symptoms an always accurate index of the extent of the lesion in the cord. I have seen fulminating cases in which the patient became bed-ridden within a year after development of first subjective symptoms and other cases in which, after more than twenty years from onset of symptoms, the progress had been so inconsiderable as to but slightly inconvenience the patient. I have sections of cords showing but slight destruction of the posterior columns in which the ataxia, root symptoms, and bladder and rectal involvement were very marked early in the disease, and later improved spontaneously. The improvement in these cases may be due to sound cells taking on new functions. That an actual regeneration of cord tissue can take place is a matter of dispute, although it is certainly frequent in other nerve tissue.

Corner Walnut and Seventeenth Streets.

A SIGN IN FRACTURE OF THE PELVIS.

By G. P. COOPERNAIL, M.D.,

BEDFORD, N. Y.

In practically all cases of fracture of the pelvis there will appear in from one to three days a more or less extensive ecchymosis of the perineum and scrotum in men, perineum and labia in women. In cases of not very extensive fractures of the crest of the ilium this sign may not be present.

In fractures of the pubic portion of the pelvic ring (which is the most common fracture), invariably one will find ecchymosis of perineum and scrotum inside of three days.

The diagnosis of fractures of the pelvis in many cases is far from easy. Localized tenderness at the seat of fracture may be the only sign present at the time of injury. Crepitus, the cardinal sign in so many fractures of other bones, is often absent, and in most cases there is comparatively little or no displacement.

This sign does not compare with the *x*-ray in diagnosis of fractures of the pelvis, but it will be found to be of interest, and will be a help to make a diagnosis before using the *x*-ray.

Ecchymosis of the perineum will be found present in a much larger percentage of cases of pelvic fractures than is ecchymosis behind the ear and under the conjunctiva in cases of fracture of the base of the skull (Battle's sign), to which it is analogous.

I have not been able to find this sign mentioned in medical literature.

Mortality from Wild Animals and Snakes in British India.—The recently issued Government resolution on wild animals reports 1,745 persons killed during the past year by wild animals in British India, an increase of 9 per cent. on the last year's casualties. Tigers caused 646 deaths. Snake-bites were responsible for 22,894 deaths, an increase of 1,124 over the previous year's figures.—*The Lancet.*

LARYNGEAL TUBERCULOSIS.*

By MALCOLM F. LENT, M.D.,

LAKE KUSHAQUA, N. Y.

MEDICAL DIRECTOR, STONY WOLD SANATORIUM

WHILE it would be impossible for me to touch on all the phases of tuberculosis of the larynx, I would like to bring before you some of the points which have seemed interesting to us at Stony Wold.

This complication is the most frequent one occurring in pulmonary tuberculosis. Statistics have shown that actual tuberculous involvement occurs in the larynx in fifty per cent. of all cases of pulmonary tuberculosis coming to autopsy, and clinically laryngeal tuberculosis has been demonstrated by various laryngologists in from fifteen to thirty per cent. of their cases. It occurs most frequently between the ages of 20 and 40 (rarely during childhood), and is more often found in men in the ratio of three to two. In our series of 1598 cases of pulmonary tuberculosis admitted to the sanatorium since 1903 we have found that the laryngeal complication was present in 286, or 18 per cent. This is a rather low percentage as compared with the statistics of some observers, but probably can be accounted for by the fact that only women and young girls are treated in this institution.

There has been diversity of opinion as to the mode in which tubercle bacilli gain access to the laryngeal tissues. We may consider that primary infection is extremely rare. There have been a few cases reported, and in those the point could be well raised whether they were primary or not. Was there not some tuberculous focus elsewhere in the body that was not demonstrated, such as a latent pulmonary, gland, or lymphatic disease? It is practically impossible to prove the existence of primary tuberculosis of the larynx without autopsy.

There are three ways in which the bacilli reach the larynx in the secondary infections, namely, by the lymphatics, by the blood-vessels, and by infection from the sputum itself lodging on an already inflamed and perhaps eroded epithelium. These, though, are problems still under discussion, but the weight of evidence probably lies with the lymphatics as the means by which the bacilli are carried to the larynx. As proof of this, generally the laryngeal involvement occurs on the same side as the pulmonary lesion, or in cases of bilateral disease in the lungs, is generally found on the side of the more extensive involvement. The text-books describe the various stages of the disease as anemia, congestion, infiltration, and lastly, ulceration. There is, however, no sharp line of demarcation of one stage from another, and I wish to state that we have observed congestion in the early cases more frequently than general anemia. It has been the general opinion throughout the country, except, perhaps, among specialists and men doing pulmonary work, that each stage must necessarily follow the other in the order above named with a fatal termination, but such is not always the case. I have observed in a number of cases that infiltration does not go on to the ulcerative stage.

I wish now to consider the subjective symptoms. The early symptoms would be, perhaps, slight changes in voice, or a sense of vocal fatigue; slight tickling or dryness of the throat; frequent clearing of the throat; perhaps a temporary loss of voice, and later in advanced cases pain and dysphagia.

*Read at a meeting of the Franklin Co. Medical Society, Dec. 14, 1915.

While I do not wish to underestimate the value of subjective symptoms in some cases, I want to point out how very misleading they are, as there can be an extensive laryngeal involvement with comparatively few and mild symptoms. We have been able to watch this time and again. The dysphagia that we are all familiar with is rather rare, unless there is an acute swelling or ulceration on the epiglottis, which is pinched by the act of deglutition, or an ulcer on the pharyngeal surface of one or both arytenoids, or on the aryteno-epiglottic fold, or on the pharygeal surface of the posterior commissure. We must not wait for the so-called text-book symptoms occurring in the last stages of the disease to diagnose laryngeal tuberculosis—I mean the hollow, rasping cough, aphonia, and dysphagia, characterized by regurgitation of food and severe pain in the throat radiating to both ears.

If the diagnosis of laryngeal tuberculosis were made early, before extensive destruction of the deeper structures of the larynx took place, the outlook would not be considered hopeless, as I believe is the opinion among a large percentage of medical men to-day. The early cases can be much more easily cured, and often an examination of the larnyx will enable us to make a diagnosis of a hitherto unsuspected pulmonary lesion. As it is true the early diagnosis of pulmonary tuberculosis with suitable treatment gives favorable results, so is it true concerning laryngeal tuberculosis. The following case illustrates the point well:

In 1906 a physician in New York City consulted a well-known laryngologist, complaining only of a slight cough and hoarseness. After making the examination, the throat specialist told the physician rather tersely that he was full of tubercle bacilli. What was the laryngeal picture that led him to make the diagnosis? Simply a hyperemia of the posterior end of the left vocal cord. The physician consulted a lung specialist, who found that he had an infiltration at the left apex. I had the good fortune to study this larynx, and in six months' time the left vocal cord had returned to normal, and to-day this same physician is practising and is apparently perfectly well. There are numerous similar cases which could be cited.

The diagnosis in many cases requires but a few moments; in others several days of patient observation will be necessary. A unilateral swelling or hyperemia of either one of the vocal cords, more frequently the posterior portion, or one of the ventricular bands is very suggestive of a tuberculous infection. A tuberculous infiltration of the posterior commissure is probably found more often than in any other part of the larynx. A partial paralysis of one vocal cord is quite commonly found in early pulmonary disease, caused by pressure on the recurrent laryngeal nerve either by enlarged bronchial glands or by an infiltration at the apex of the lung.

We have found, in detecting small, superficial ulcerations, a Zeiss special mirror magnifying twice, very useful, but this is not to be recommended in doing routine work.

The areas which we have found involved in order of frequency are as follows: Posterior commissure, vocal cords, arytenoid cartilages, ventricular bands, aryteno-epiglottic folds, epiglottis, subglottic space. We would have to differentiate from catarrhal laryngitis, syphilis, malignant and benign growths, rarely lupus. Simple catarrhal laryngitis occurs in a large percentage of tuberculous patients, is

generally bilateral, in contradistinction to the congestion of a vocal cord or a ventricular band, in a beginning tuberculous laryngitis. The mucous membrane of the posterior commissure in chronic catarrhal laryngitis may be thickened, but this is not nearly so prominent and is smoother than in a tuberculous infiltration. Without going further into the differential diagnosis we must not forget that syphilis and tuberculosis may coexist, and the outcome in these cases is decidedly unfavorable.

The outlook for recovery, a comparatively few years ago, was held to be absolutely hopeless. The average length of life was placed at from two and a half to three and a half years at the most I think the average duration of life in most cases could be more correctly stated as ten years. Each case must necessarily be considered individually. Some cases even heal spontaneously. An infiltration in the posterior commissure is very prone to heal. The swelling, if small, may be absorbed entirely, or may, if larger, remain stationary for years and not pass on to the ulcerative stage. This is probably due to a fibrous tissue hyperplasia. An infiltration in the ventricular band generally gives no symptoms; this may overlap the underlying true cord and remain stationary for years. We have observed several cases of this kind retract and disappear entirely.

In involvements of the epiglottis and arytenoids the prognosis is much more serious on account of the inability of the patient to take even liquid food, but even in these areas it is possible for superficial ulcerations to become healed, and even an extensive involvement may become arrested for a long time. Tuberculous laryngitis, developing during pregnancy, is nearly always fatal.

The treatment and management of these cases is often sadly neglected. The patients should be given all the advantages to be derived by a change of climate, with the hope of bettering the general condition and increasing their power of resistance, which generally follows a sojourn in an altitude resort. Usually the laryngeal complication improves in direct proportion to the improvement of the general condition and to that of the lungs, but this is not always true, as we have seen cases in which the pulmonary involvement was arrested or quiescent, whereas the laryngeal complication grew steadily worse. The so-called resistance of the patient is an important factor, but not the least important is the supervision, the determination, and the stamina of the patient.

In reference to local treatment we certainly have no drug that is specific, but the few things that we can do are important. First and foremost is vocal rest, and by this I do not mean simply to tell the patients not to talk, but to see that our instructions are carried out. I do not believe that it is enough to limit them to whispering, but to insist on their carrying on their communications entirely by writing. It is not necessary to enforce these strict measures in cases of involvement of the epiglottis, but only where the areas involved must be under more or less muscular strain during phonation, such as an infiltration of a vocal cord or an arytenoid cartilage. Prohibition of alcohol, smoking, or any other irritating influence must be insisted upon.

In making local applications, here again we are obliged to consider the individual case. In some, cleansing the larynx by an alkaline spray followed by vaporized oily sprays of camphor and menthol is all that is indicated, and in some cases the intralaryngeal application of lactic acid, formalin or argyrol will often aid in promoting cicatrization of a previously sluggish ulcer. The electrical cautery has been coming again in favor during the past few years and is in the hands of a few of the laryngologists, in selected cases, giving excellent results. In the far advanced cases with marked dysphagia, the use of cocaine in the larynx should be avoided, if possible. Relief from suffering may be obtained by the insufflation of powdered orthoform within the larynx, a short time before eating. A tablet of orthoform gr. 1, menthol gr. 1/10, and camphor gr. 1/10, dissolved on the tongue also gives temporary relief in these cases.

In pulmonary tuberculosis we all know wonderfully good work is being accomplished everywhere, but laryngeal tuberculosis is absolutely neglected in most instances. Laryngologists are rarely consulted by the patients themselves until they are in the last stages of the disease. The general practitioners are the men who must make the diagnosis early, if they will but take the time and trouble to do it. Any physician can, with a little practice, become skilled in the use of the laryngoscope. I do not wish to leave the impression that laryngeal tuberculosis is not a grave complication, but I do want to make a plea for routine laryngeal examinations, with the hope of making earlier diagnoses, and thereby increasing the percentage of healed lesions in a disease heretofore considered by most authorities absolutely fatal.

A SIMPLE TONSIL OPERATION UNDER LOCAL ANESTHESIA.*

By HAROLD HAYS, M.D., F.A.C.S.,

NEW YORK

ASSISTANT SURGEON IN OTOLOGY, NEW YORK EYE AND EAR INFIRMARY; ASSISTANT LARYNGOLOGIST, CITY HOSPITAL AND NEW YORK POLYCLINIC MEDICAL SCHOOL AND HOSPITAL.

1. *Anesthesia.* The tonsillar regions, pharyngeal wall, palate, uvula (posteriorly and anteriorly) are sprayed with equal parts of 1 per cent. cocaine solution and adrenalin (1/1000). A few moments later the parts are well applicated with a 10 per cent. solution of cocaine (Fig. 1).

The anterior and posterior pillars of the tonsils are then injected with a one-quarter of 1 per cent. solution of cocaine, to which is added an equal part of adrenalin (1/1000). The injection is made with a special needle attached to an ordinary universal syringe (Fig. 3). Twenty to thirty minims of solution are injected, starting from the superior portion of the anterior pillar and going down. One must be sure to have some of the infiltrate reach the plica triangularis. Three to four injections are given in the anterior pillar, one or two in the posterior pillar. The injection is really a Schleich infiltration anesthesia (Fig. 2).

2. As the main attachment of the tonsil is to the anterior pillar, particularly at the plica triangularis (Fig. 1), the next step in the operation is the dissection of the tonsil capsule from the anterior pillar. This is readily accomplished by depressing the tongue firmly and inserting the author's double-bladed knife (Fig. 4) below the plica and then working it upward toward the uvula until the anterior pillar is free from the tonsil capsule.

*Presented to the Laryngological Section, N. Y. Academy of Medicine, Dec. 10, 1915.

3. Instead of using a forceps on the tonsil, the author has devised a modified aneurysm needle (Fig. 5), which does the work admirably. The instrument is very sharply pointed and has two openings through which a piece of stout cord or string can be threaded (silk cuts through the tissues too readily and should not be used). This instrument, suitably threaded, should be brought through the deepest part of the tonsil from below upward (Fig. 6) and one end of the string caught with a forceps and brought out of the tonsil. We thus see that when the instrument is withdrawn the string is through the tonsil and can be used as a retractor (Fig. 6). A knot unites the free ends so that it cannot slip out.

4. The tonsil is now separated from its remaining attachments with a Hurd tonsil separator and with the index finger (Fig. 7). The separation will frequently sever the anterior attachment, but often too great force is necessary to free the posterior pillar. If the index finger is inserted into the opening made between the anterior pillar and the tonsil, traction being exerted on the string-retractor, the tonsil can readily be stripped from its bed with very little traumatism (Fig. 8).

There is seldom any bleeding when the operation

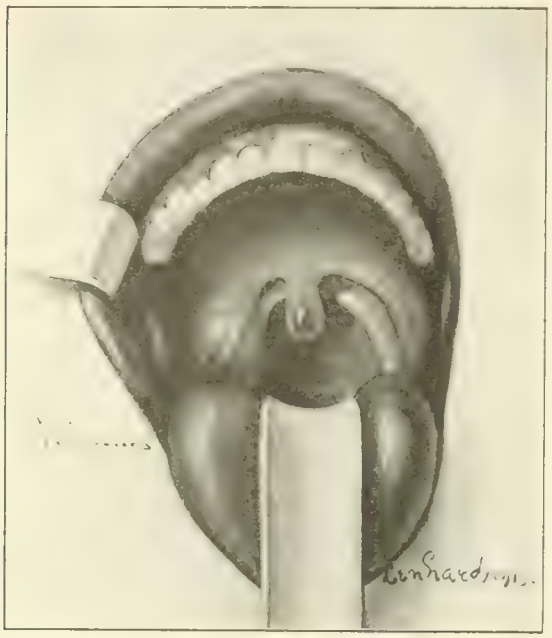


FIG. 1.—The tonsillar region to which application of cocaine is made. The left tonsil has been removed. The anterior and posterior pillars on this side are well shown.

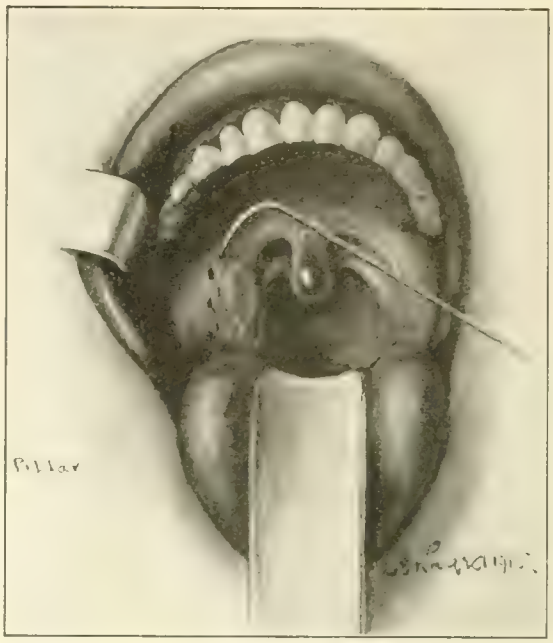


FIG. 2.—Method of injecting the anterior pillar with cocaine and adrenalin.

FIG. 3.—Tonsil needle attached to universal syringe.

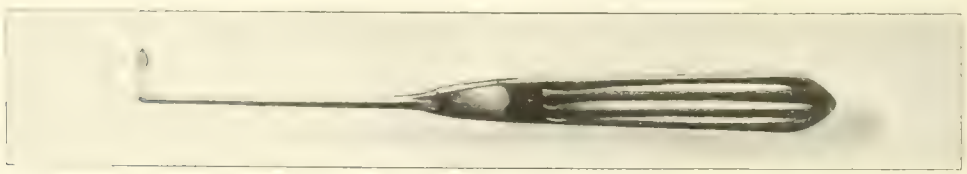


FIG. 4.—Author's tonsil knife.

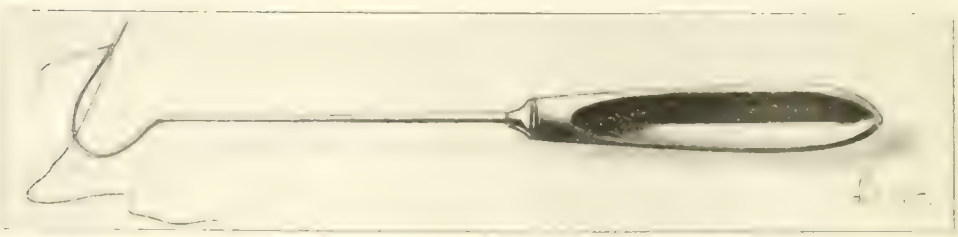


FIG. 5.—Author's modified aneurysm needle (suture carrier) for threading the tonsil.

is performed as above described. A large space is left between the pillars which heals readily in the course of a few days. If one desires to assist the

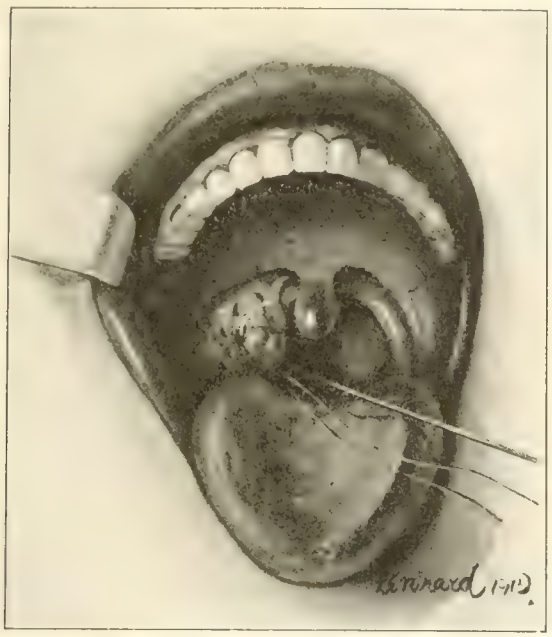


Fig. 6.—The suture carrier threading the tonsil from below upward through the deep tissues of the tonsil.

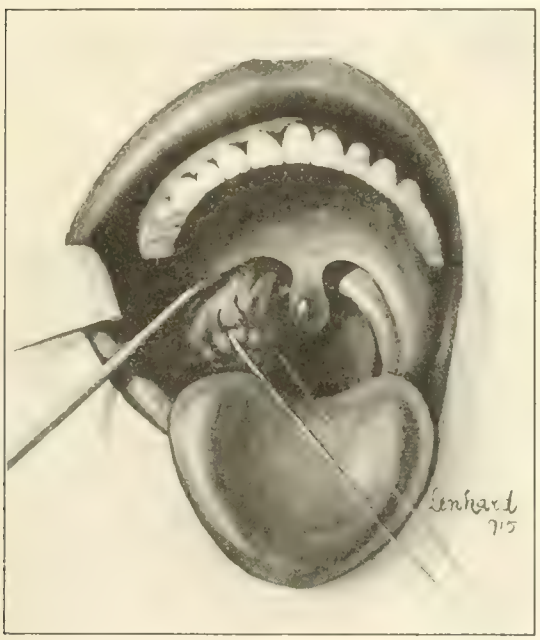


Fig. 7.—The suture through the tonsil used as a retractor, a Hurd tonsil separator completing the dissection.

Fig. 8.—The tonsil removed; note the numerous deep crypts.

healing process he can easily suture the pillars by threading the string-carrier above described with No. 1 plain catgut, which will absorb in a short time.

11 West Eighty-first Street.

CORRECTION OF DEPRESSED NASAL DEFORMITY BY THE TRANSPLANTATION OF CONJOINED BONE AND CARTILAGE.*

By WILLIAM WESLEY CARTER, A.M., M.D., F.A.C.S.

NEW YORK.

This fourteen-year-old girl is from my clinic in Gouverneur Hospital. She fell, striking on her nose, when she was five years of age. As she grew older a marked depression developed below the ends of the nasal bones. There is no obstruction to nasal breathing. The girl has always been healthy and strong, and there is neither history nor suspicion of syphilis.

Examination shows a depressed deformity affecting the cartilaginous dorsum of the nose. There is no resistance on palpation at this point, showing that the tissues are not supported by the septum. The cartilaginous septum is neither crushed nor is it deflected, but is undeveloped, apparently having ceased to grow after the injury; it does not extend high enough to support the nasal bridge. The case shows well the results of the absence of

Fig. 1.—Before operation.

the developmental power usually exerted by a normal septum.

The details of my operation for correcting this deformity have been previously given to this Section. Briefly it consists in resecting a portion of the ninth rib about two inches in length, two-thirds of the section being rib and one-third costal cartilage, the periosteum being preserved on its outer surface. This fragment is then split in its transverse diameter and the outer half trimmed to suit the deformity.

After the left nasal cavity has been freed of its vibrissæ, thoroughly cleansed, and painted with tincture of iodine, an incision is made with a small spatula-shaped knife in the roof of the cavity at a point corresponding to the interval between the upper and lower lateral cartilages. Through this the tissues over the bridge of the nose are elevated, and a cut is made into the frontal bone just above the frontonasal spine. With a small knife, the blade of which is curved upon itself, a pocket is made toward the tip of the nose.

The transplant is then introduced, the upper bony

*Read before the Laryngological Section of the N. Y. Academy of Medicine January 26, 1916.

end being tucked under the periosteum over the nasofrontal process and in close contact with the bone. The tip of the nose is then pulled downward and the lower cartilaginous end of the transplant is slipped into its pocket near the nasal tip. The edges of the incision naturally fall together, and no suture is used to close the wound. The nasal cavity is packed with vaseline gauze for twenty-four hours. In this case the operation was performed on Dec. 7, 1915.

This method of operating has the following advantages over the external route: (1) There is no external scar. (2) The swelling of the tissues is less, as the opening in the subcutaneous sac is at

Fig. 2.—After operation.

the lowest point, thus favoring drainage. (3) The wound is less liable to infection, as the normal nasal secretions inhibit if they do not destroy bacterial growths. (4) The use of conjoined bone and cartilage enables one to repair the bony ridge with bone and the cartilaginous bridge with cartilage; thus reproducing as nearly as possible normal conditions, and preserving the flexibility of the nasal tip.

The results in the cases that I have done by this method have been entirely satisfactory.

69 West Fiftieth Street

TWO LABORATORY SUGGESTIONS.

By GEO. B. LAKE, M.D.,

Captain Medical Corps, U. S. Army

An Eye Shade for Microscopic Work.—The man who is doing nothing but laboratory work, and sits at his microscope for several hours every day, soon learns to disregard the images registered by the eye which is not in use, although it is wide open; but those whose microscopic work is only one of many duties often have difficulty in cultivating this faculty, and the muscular strain necessary to keep the idle eye closed is very tiring.

As a help to the large class of occasional laboratory workers the screen or shade shown in the figure may prove as welcome as it has to the writer. (See Figure.)

Cut the shade out of very stiff cardboard, making the hole of such a size as to fit snugly around the eyepiece of the microscope; remove the eyepiece, force the shade down over the upper end of the tube and replace the ocular.

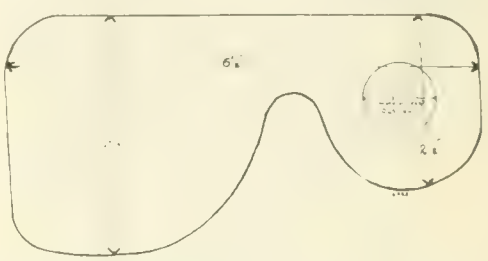
The shade may be readily adjusted to the most satisfactory position.

"Toning" Wright's Stain—All laboratory workers know that Wright's stain does not keep well, so that old preparations frequently fail to make stains which will show the features required.

Being in possession of a very limited quantity of this stain, on one occasion I found that it had gone bad and set to work to see if it could be improved.

The following suggestion, made by an enlisted man of the hospital corps, who was assisting me in the laboratory proved satisfactory.

When the smears were stained too blue (red cells lilac or violet instead of red) a very small drop of



acetic or hydrochloric acid was added to 100 c.c. of the stain. When stained too red (leucocytes, especially lymphocytes, lilac or pinkish) a very small drop of normal sodium hydrate solution was added to 100 c.c. of stain.

By adding very minute quantities of acid or alkali with a glass rod, and staining experimental slides after each such addition, the exact tone desired may be produced in a short time.

Fort Oglethorpe, Ga.

Medicolegal Notes.

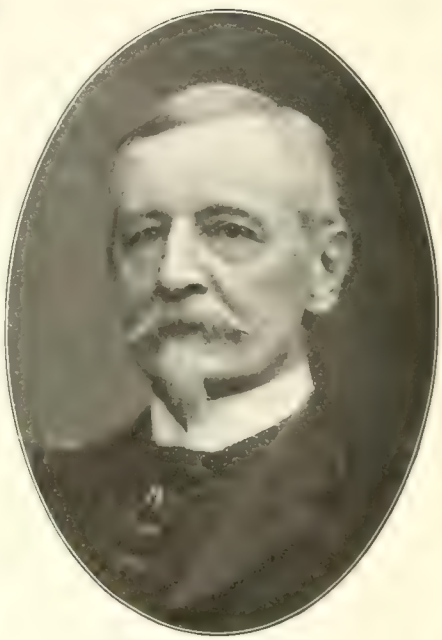
Authority to Practice—"Severing" Tissues Defined.—In an appeal from a conviction of violation of section 17 of the act of the California Legislature of 1913 for the regulation of the practice of medicine and surgery, the defendant contended that section 8 of the act was unconstitutional and void in that it was an unrestricted invasion of the art of osteopathy, chiropractic, and mechanotherapy, as it prevented practitioners of these systems of the healing art from practising their profession "without in any manner severing or penetrating any of the tissues of the human body." Assuming, the court said, as asserted by the defendant, that members of such schools, by practising, as they do, by manipulation and adjustment, are constantly and continuously severing tissues of human beings, and that the practice of their art is impossible without it, still it is very plain from a reading of the whole section that the word "sever," as therein used, means a severance by cutting. Under one form of certificate the holders thereof, as provided in the act, may not only prescribe and use drugs, but may also sever and penetrate with a knife the tissues of human beings. The holders of other certificates are drugless practitioners, and they may not prescribe or use drugs, nor may they operate with a knife or in that way sever or penetrate the tissues of human beings, except that they may sever the umbilical cord. Sections 9 and 10 of the act, providing that to obtain a license the applicant must be a graduate of some college approved by the board of medical examiners, was held not to be unconstitutional as vesting the board with arbitrary power.—People v. Tom J. Chong (Cal.), 151 Pac. 553.

Statute Requiring Certificate to Practise Held Constitutional.—The Iowa statute providing that it shall be a misdemeanor for any person to practise medicine, surgery, or obstetrics in the State without having first obtained and filed for record a certificate from the State board of medical examiners, is held not to be repugnant to the Bill of Rights, the Constitution of the United States, or the State Constitution.—State v. McAninch, Iowa Supreme Court, 154 N. W. 399.

ALFRED C. POST

GURDON BUCK

W. H. VAN BUREN



GEORGE F. SHRADY

ELKANAH WILLIAMS

AUSTIN FLINT

T. GAILLARD THOMAS

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, March 4, 1916.

THE SEMICENTENNIAL OF THE MEDICAL RECORD.

THE MEDICAL RECORD was fifty years old the first of this month. Half a century is not much to speak of in the life of a nation, nor is it anything to brag of in that of an individual. In medical journalism, however, it is somewhat of an achievement, though to our venerable and highly esteemed Boston contemporary and the even more venerable and equally esteemed *American Journal of the Medical Sciences* we may still look like a youngster. The *New York Medical Journal* is but one year older, so we were really boys together and the respect we entertain for our fellow worker in the medicoliterary field is inspired not by its age but by its merits. Throughout the fifty years of its existence the MEDICAL RECORD has had the same publishers and but two editors, the first one guiding its course for thirty-eight years. As we have never before been so old as we are now, and never expect to be so young again, our readers will perhaps pardon us if our talk takes a personal turn, and if we seem to say overmuch regarding our accomplishments during the past half century let it be put down to the garrulousness of age—or the egoism of youth.

The first issue of this journal was published March 1, 1866. It was a paper of 24 pages, and contained original articles, hospital reports, society reports, descriptions of new instruments, reviews, abstracts of articles from foreign journals, news, and editorial articles. The contributors of original articles, whose portraits, with that of the first editor, to whose genius this journal owes its existence, we publish in this number, were William H. Van Buren, Gurdon Buck, Austin Flint, Alfred C. Post, and T. Gaillard Thomas, of this city, and E. Williams of Cincinnati—a goodly list of great names, showing that from the first the MEDICAL RECORD has been a favored channel through which the leaders of the profession have addressed their colleagues. In his salutatory Dr. Shrady set forth the aim of the new periodical. "Its object," he wrote, "will be to present to the profession a faithful record of the existing state of medical science in every one of its many departments; and, as it is more especially intended to meet the wants of the general practitioner, all the different articles published in its columns will be thoroughly practical in their character. With a wide field and ample facilities for working it up, we earnestly hope to fulfill to the letter this part of our design, thus making the RECORD worthy of the countenance and support of the profession, a journal to which they may at all times look for information, instruction, and edification."

How well the MEDICAL RECORD has kept this promise we ought perhaps in modesty to leave to others to say. Few of our readers, however, have lived through this half century—the most wonderful and most glorious in the history of medicine—and they may not realize what great events and discoveries it has fallen to the lot of this journal to chronicle. In another column we present a brief sketch of the progress of medicine in our own time, all of which has been recorded in these pages, and much of which we were the first to bring to the notice of American physicians. Among these were Lister's method of antisepsis, a discovery nearly contemporaneous with the birth of the MEDICAL RECORD; Koch's discovery of the tubercle bacillus and that of tuberculin; the employment of cocaine in eye surgery; the Roentgen rays; the discovery of the antitoxin of tetanus and that of diphtheria, and many more. A partial list of these prior announcements will be found elsewhere in this issue. They are mentioned not in a spirit of boastfulness, but as an evidence that the MEDICAL RECORD has always endeavored to live up to its name as a medical newspaper as well as a repository of scientific communications from the leaders of medical thought in America.

As we have before quoted from Dr. Shrady's salutatory, it will be permissible to repeat what he wrote at the end of the first year, when reviewing what had been accomplished during the first twelvemonth; this we do in the hope that our readers may regard it as a fitting review of the work of the first half century, also. "We have the gratification," he said, "of assuring our patrons that the RECORD is in every way a success. We are in no danger of shocking our modesty by such an assertion, as its claims for favor have rested upon the aid which its numerous friends by their valuable contributions, kind suggestions, and judicious criticisms have given it. In its management it has been our aim to be strictly impartial, and every consideration has been second to that of ministering to the more pressing wants of the daily practitioner. If we have in any respect failed in this endeavor, it has been more an error of the head than of the heart. Our duties to our readers render it incumbent upon us to furnish the best available material, in the shape of contributions, from the most competent men. It is pleasant for us to think that in this regard, at least, we have discharged these obligations."

OPPOSITION TO THE HEALTH INSURANCE BILL.

THE action taken on Monday of this week by the Medical Society of the County of New York in recording its disapproval of the Mills bill, now before the State Legislature, for compulsory health insurance would seem to have been ill-timed and ill-advised. There was no reason for hasty action. The bill is still in the preliminary stage and every-

one knows that it has little chance of being enacted into a law during the present session of the Legislature. By hastily adopting the report of the committee on legislation and refusing to postpone final action until the next meeting, the County Society has not only been unnecessarily hasty, but has also affronted its own special committee appointed to study the subject. The Mills bill has several undesirable features which can easily be eliminated, but the fire of criticism of the committee on legislation of the County Society was directed not so much against the faults of commission as against those of omission. The bill touches upon only a few of the medico-economic problems involved in the administration of social health insurance. The committee which had charge of drafting the bill purposely avoided the inclusion of details of organization in order that they might be written in by the representatives of medical societies. In condemning the bill because it did not include the sections left open for medical advice, the county society defeated its own usefulness in the matter and failed to serve those very interests for the safeguarding of which it thought it was acting. Many of the points raised in the report of the committee on legislation were well taken and should be included in the final draft of the bill before it becomes a law. Nobody seems to question that. The committee would have served the society better if, instead of urging the action taken last Monday, they had submitted their manifold suggestions for the careful consideration of the special committee. As it is, they have put the County Society into a position which it will have soon to abandon if it would be constructively helpful. And furthermore, as we have said before, the Society has unnecessarily and tactlessly offended the special committee called for by the comitia minora to study the subject in a calm and judicial manner.

Whether one likes it or not, social health insurance is bound to come sooner or later, and it behooves the medical profession to meet this condition with dignity and to insist firmly and without heat that a measure designed to benefit and strengthen the social fabric of the community should deal fairly with the physician on whom its eventual success must of necessity depend. Blind condemnation will lead nowhere and may bring about a repetition of the humiliating experiences suffered by the medical profession in some of the European countries. It is our duty to see to it that our laws relating to health insurance shall not only be improvements over those of England and Germany, but also be more considerate of the economic interests of the medical profession. But we should go about this important task with a well-balanced temper and with a determination based on hard thinking and complete mastery of the subject.

PHYLOGENETIC REACTIONS OF FEAR.

THE fireside puss, because of her ancestry and ours, arouses a shuddering reaction of terror in many individuals. Indeed, this fear holds so prominent a place among the phobias that afflict mankind that G. Stanley Hall gave it a special place in his study of fear. (*Amer. Journ. of Psychology*, Vol. XXV., Nos. 2 and 3.) "The Felidæ mnemes and engrams in our psychophysic organization" form one important group, he holds, of registration of ancestral behavior mechanisms, which are ours by inheritance, but which we are still only learning to place under the higher psychic control. Fear probably arises, he says, all but simultaneously with the first automatic response to the pleasure-pain stimulus. It is its immediate product. Henceforth it is anticipation of a repetition of the pain based on the former experience. The ameba reacted with a sudden protoplasmic withdrawal from adverse stimulation and established this anticipatory memory, which has developed into the complexity and diversity of present day fear.

It is a far cry from this beginning even to the dawn of human history, but through these ages these reactionary mechanisms were deeply laid. Hall directs our attention to the diversifying and intensifying of these when the complexities of human life are arising but call as yet only for the more direct automatic response. Our primitive forefathers must needs be constantly on the alert, and gradual transformation of mode of life and change of environment but increased the presence of threatening foes.

The slithery serpent was the chief enemy of his arboreal life. His foes were multiplied when at last he trod the earth in upright manhood. The ubiquitous and fierce Felidæ, with other beasts of prey, the greed and violence of his fellow man, tropical thunder and lightning kept him in a continuous fear of attack, robbery, rape, violence of all sorts. His own unguided imagination supplied besides all the terrors of the supernatural. Emergencies arose quickly. They were in concrete form and called for direct modes of reaction. It was necessary that blood pressure should be increased, respiration quickened, muscles rendered tense, metabolism accelerated through thyroid activity, glycogen multiplied, sweat glands stimulated; in brief, that the whole automatic activity of the nervous system should establish itself in ineffaceable reactions. The race would not have survived had it not been so. It is still, therefore, these basic activities that spring forth at the call of fear. Our relative helplessness before them conditions a special phobia of its own in a fear of shock. We dread the sudden revelation to ourselves and others of the presence and power of the primitive in us.

We cannot question such a phylogenetic foundation to our reaction to fear. Somewhat specious, possibly, may be the more descriptive outline of the origin of our specific phobias, like that of the domestic cat. Our psychic inheritance may not descend to us in such distinct entities. We share with our earliest ancestors, however, something more fundamental and dynamic. The intensity of energy, which motivated humanity no less then than now, stimulated desire first of all—at least, so the new school claims. Fear, according to those who credit the new psychology, arises only out of frustrated desire. The energy balked in its attainment gives rise to anxiety. Illuminating studies in symbolism and its notable employment in neurotic thinking, they say, reveal that the various objects

of fear are not shadowy survivals of the past, but just as real in the wish objects they symbolize as were the terrors of that time. These actually blocked the path of primitive man; at the same time they were symbols for him, too, of desires becoming gradually unattainable. As such, may be, they manifest their fear-provoking power to-day.

OLD AGE IN RELATION TO CANCER.

In the vexed subject of the etiology of cancer there are but few points that are really settled. One of these which is apparently beyond question is that old age predisposes to the development of malignant neoplasms. The difficulties in following the cellular changes which lead to tumor formation in man are many and obvious. A precancerous condition is almost impossible of absolute demonstration. A study on animals is also difficult since they often do not develop tumors or else there is little analogy between the growths to be found in animals and in man. Quite recently Goodpasture and Wislocki (*Jour. Med. Research*, 1916, xxxiii, 455) found multiple tumors in very old dogs which were autopsied, and they were led to examine fifteen old dogs which they were able to obtain. As far as could be told from the condition of the teeth, the presence of cataract, and the general appearance, the animals were approximately fifteen years old or older. In all of the fifteen dogs examined they found tumors in several organs, the liver, spleen, and adrenals being most regularly involved. In fact they never failed to find multiple tumors in every dog which they classified as old before autopsy, whereas in hundreds of normal younger animals they never observed a similar condition.

The uniform and coincident occurrence of these tumors, the fact that they were usually multiple in each organ, and a certain similarity in their mode of formation made the authors feel that they were an expression of a common cause, the picture varying with the character of the tissue in which they occurred. The process was followed best in the thyroid. "Here there is first a cessation of function in multiple foci consisting of a few acini. This is indicated by a disintegration of colloid and shrinking of the acini. The epithelial cells become larger by an increase of cytoplasm which is more granular apparently than normal. In some of these acini, before their lumina have completely disappeared and while atypically staining granules of colloid still persist, we find evidence already of beginning proliferation in the increase in number of cells at points along the epithelial linings. Later the former acinus becomes a solid column of epithelium. The atrophic area is thus converted into a small tumor which increases in size both by proliferation of its own cells and by coalescing with other similar areas." Similar changes taking place at the same time in many parts of the body makes it probable that they are due to a common cause and the most probable one is senescence.

The authors did not attempt to classify the tumors, and with one exception found no evidence of metastasis, so that the growths were, at least in this sense, benign. There were histological evidences of rapid growth to be seen in many of the tumors, so that there was always the possibility of rapid extension. Just how this observation will fit into the theory of cancer etiology it is impossible to say; nevertheless the observation seems to be an important one and one that will have to be considered in the evolution of that theory. Obviously it will not fit every instance of malignancy which one meets, and surely it is not the whole cause, but there is the possibility that it may be an important part of the cause.

THE PSYCHOANALYST AND THE PURITAN STRAIN.

In literature, in art, in manners and morals, there survives in America something of the strait-laced fanaticism of our Puritan forefathers. Diluted it no doubt is by its passage through some eight or nine generations, but nevertheless it is a sufficiently potent force seriously to hamper our artistic life. The criticism consistently levelled at us by our European contemporaries is that we look for the ethical aspect of a work of art, rather than upon its esthetic value. Thus we see upon one hand the condemnation of Theodore Dreiser and September Morn; on the other such things as Little Elsie and Harold Bell Wright.

It is small wonder then that the psychoanalyst has had a hard road to travel. He has been injudicious enough to confess openly that in tracing back psychoneuroses and certain psychoses through their devious ways he has frequently found himself confronted with sexual difficulties. He has quoted such cases with descriptions of their particular difficulties and in return he has been depicted as a peddler of pornography, a sink of salaciousness, and in general about three shades worse than the mayor of Gomorrah. That this storm of disapproval has at least a considerable part of its source in the Puritan way of looking at things seems fairly reasonable. If this is doubted, a careful review of the various published criticisms of psychoanalysis will show two things: First, an assumption is made that psychoanalysis rests its case upon sex, in the grosser sense of the term, and, second, psychoanalysis is to be condemned forthwith for that reason, not because its logic is faulty or its results unsatisfactory.

A common cry against the psychoanalysts, for instance, is their conception of the sexual life of the child and the various hates and loves he may develop within the home. The stereotyped way of considering the child is that it loves its parents, naturally and inevitably, and yet if one is pressed for a reason the only one which seems to present itself is that a child loves its parents because it is right that it should. It can be shown very readily, however, that the parent represents to the child certain restrictions and limitations against which it chafes. A careful retrospect of one's own childhood will reveal many spasms of rage against the parents, moments when one wished either or both of them dead, not realizing, of course, the full meaning of death. The tendency is to regard these episodes with something akin to superstitious awe, as if they

were the result of temporary possession by an evil spirit, and yet this is, after all, a somewhat ludicrous way to approach a psychological fact, and one which is hardly likely to be of much benefit to coming generations.

We should advise the psychoanalyst then who wishes to promulgate his method to avoid mentioning the intimate method of taking anamneses, not to discuss children at all if he can avoid it, put the soft pedal on sex generally—in short, sugar-coat his pill as much as possible, and perhaps the profession will swallow it.

THE CASUALTIES OF THE SUBMARINE IN PEACE AND WAR.

THE submarine has established its efficiency as a terrible agent of offense in the present war. In order to gain its highest point of effectiveness, it is essential that its officers and crew are especially adapted for the duty that falls to their lot, and, of course, they are carefully selected for this service. In the *Military Surgeon*, January, 1916, Wm. H. Halsey, Past Assistant Surgeon, U. S. N., has an interesting article on the submarine, its casualties in peace and war. He emphasizes the necessity that, as every officer and man is needed for the proper handling of the boat, and the loss of any appreciable number of the crew, say, four or five, might easily place it *hors de combat*, it is absolutely incumbent on the medical officers to see that every one of the crew is physically able and well. The medical officer on duty with submarines must of necessity concern himself much more with the prevention of disease and of accident than with their treatment.

Assuming that the crew are fit physically and mentally, and that the avoidable and remediable dangers from the operation of the boat have all been provided against, there still remain the unavoidable and potential accidents, which are not a few. The various forms in which sickness or death may attack the crew of a submersible boat are enumerated and classified by the author according to the conditions under which the boat is operating.

In addition to these, there are the phobias and psychasthenia as they are exhibited in members of the submarine crew, and therefore a naturally nervous and excitable individual is out of place in a boat of this kind because, once his unstable equilibrium is upset, he may destroy the morale of the crew in an instant.

Among the various ever present dangers of life in a submersible is the danger of gasoline intoxication, the onset of which is insidious, and its violent nervous manifestations make the possibility of its occurrence a cause for much dread. It is obvious that dangers from both within and without menace the life and health of a submarine crew in times of peace, and naturally these dangers, certainly those from without, are greatly intensified in time of war. As Halsey says, "In the last analysis it is upon the courage and resourcefulness, upon the health and well-being of the officers and men that the comparative safety of the submarine must depend."

News of the Week.

Semicentennial of the New York City Health Department.—In 1866, the same year in which the MEDICAL RECORD was founded, the Metropolitan Board of Health was organized to supervise the health of the cities of New York and Brooklyn, the counties of Westchester, Queens, and Richmond, and part of the present county of Nassau. At that time sanitary conditions in this city were inconceivably bad, the death rate being higher than that of any other large city in the world, and apparently increasing. During the fifty years of the Health Board's existence the death rate has been reduced from 36 per 1,000 to less than 14 per 1,000. Among the speakers at the dinner which will be given at the Hotel Plaza on March 9 to celebrate the semicentennial of the establishment of the Health Department, will be Dr. Stephen Smith, who was a member of the original Board of Health in 1866 and is still active in public affairs, being a member of the State Board of Charities.

City Death Rate.—For the week ending February 19, the death rate in New York City was only slightly higher than during the corresponding week of 1915, the figures being 15.20 and 15.03 per 1,000 respectively. The total number of deaths was 1,628 as compared with 1,571 for the same week last year. The difference of 0.17 in the rate, however, is equivalent to only 18 deaths, the remaining 39 deaths being accounted for by the increased population. There was an increase of 7 in the number of deaths due to acute infectious diseases, and 16 fewer deaths due to the acute respiratory diseases. The mortality from influenza, heart disease, and nephritis. The death rate for the first eight weeks of 1916 is 16.14 as compared with 14.81 for the corresponding period of last year.

Chicago Death Rate.—The total number of deaths from all causes in Chicago for the week ending February 19, was 760, giving a death rate of 15.9 per 1,000, as compared with 790 for the preceding week and 820 for the corresponding week of last year, when the rates were 1.5 and 17.5 respectively.

Grip Epidemic in New York.—The New York City Department of Health recently reported, as a result of the bacteriological investigation of fifty cases diagnosed as "grip," that the streptococcus had played the leading rôle in the recent epidemic in the city. In the fifty specimens examined, the streptococcus was found in large numbers in twenty-six, the pneumococcus in nineteen, and the influenza bacillus in nine. The investigations were conducted at the Research Laboratory of the Department, under the direction of Dr. Anna W. Williams, each specimen being examined microscopically and by culture. A somewhat similar investigation conducted some months ago showed influenza bacilli in only one specimen out of twenty examined; since in the present investigation this germ was found in nine out of fifty specimens, it is probable that it also played a part in the recent outbreak.

Health Conference.—A general health conference, participated in by eleven States, the District of Columbia, and Federal and railroad officials, was held early in February at Salt Lake City, Utah. Resolutions were adopted covering methods of procedure for the eradication of rabies epidemic in the Western States; the elimination of Rocky Mountain spotted fever; the use of mange in inoculation for the eradication of coyotes and wolves, and the adop-

tion of methods for the better care of indigent migratory tuberculous patients. Dr. T. B. Beatty, secretary of the Utah State Board of Health, stated that a disease, not similar to any known or recognized malady, and transmitted, it is believed, by the bite of an infected deer fly, had been noted in two counties in Utah. The disease is severe and in some instances fatal. It occurs in June and July, and about the same time large numbers of jackrabbits are found dead in the fields. The outward manifestation is an ulceration on the hands, face, or neck, at the site of the bite of the fly believed to be the carrier of the disease.

Medical Prize.—The Argentine Academy of Medicine has offered, in commemoration of the centennial of the independence of the country, a prize of 2,500 pesos for the best unpublished work on a medical subject presented at the Congress of Social Sciences to be held at Tocyman, Argentina, on July 9.

Harrington Lectures.—On May 30 and 31, and June 1, Dr. Milton J. Rosenau of Harvard University of Buffalo Medical School will deliver the Harrington Lectures at the University of Buffalo Medical School. Two lectures will be on anaphylaxis, and the third on "Education for Public Health Service as a Career."

Celli Memorial.—Plans are under way for the erection on the Roman Campagna of a monument in memory of Prof. Angelo Celli, to commemorate his investigations on malaria.

Charitable Bequests.—The New York Association for the Blind has received, by the will of the late Roscoe H. Channing of this city, a bequest of $25,000, to be known as the Susan Channing Bequest in Aid of the Blind.

By the will of the late Adelena M. Cramer of New York, the New York Hospital receives a bequest of $5,000, St. Mark's Hospital, New York, $10,000, subject to a life interest, and the Lutheran Hospital, New York, one-half of the residue of the estate, the value of which is not given.

St. Joseph's Hospital, Yonkers, receives a bequest of $500 by the will of the late Mrs. Jane E. Cornell of that city.

Death of Centenarian.—Cyril McGee, believed to have been the oldest man in New York State, died at his home in Moira last week at the age of 106 years.

Nurses Graduate.—Six nurses were graduated from the training school of St. Mary's Free Hospital for Children, New York, on February 22.

New Hospital Building.—The contract for the erection of the new building of the Passaic General Hospital, Passaic, N. J., has been awarded, the estimated cost being $50,800. The new building, which will adjoin the present, one will be 40 x 67 feet, four stories high, of red brick with limestone and terra cotta trimmings, and provided with every modern convenience.

"Mauretania" Withdrawn from Service.—The British Admiralty last week announced that the *Mauretania* was no longer needed by the Government as a hospital ship and is to be withdrawn from service and restored to her owners. The *Mauretania* was used by the Government during the Dardanelles campaign.

Hearing on Mohansic Bills.—A number of physicians and sanitarians appeared at a joint meeting of the Senate Finance Committee and the Assembly Ways and Means Committee to support the bills now before the New York Legislature which provide for the abandonment of the Mohanic State Hospital and the Yorktown Heights Training School for Boys, and the exclusion of all institutions from the Croton watershed.

Nurses to the Front.—Thirty-three American nurses, many of them from the Mercy Hospital, Chicago, who had been in London for two weeks gathering their equipment, were sent to the front on February 26.

The Harrison Law.—Five prominent physicians of Atlanta, Ga., have addressed to one of the United States Senators from Georgia a letter calling attention to the fact that although nine months have elapsed since Congress passed the Harrison law regulating the sale and use of narcotics, no means have as yet been devised for the proper care of the sufferers addicted to the use of these drugs. While commending the law, these physicians state their belief that the Federal Government should devise some plan to care for these patients, and that a national hospital working in conjunction with the Internal Revenue Department would be more satisfactory than State and County institutions. The State Legislature of Georgia, they say, made a small appropriation for the care of these patients, but the amount was so small that no adequate plan was possible. The note questions whether if Congress had realized the gravity of the new law, provision for the care of drug cases would not have been made in the original act. The letter is signed by Drs. Samuel A. Visanska, Hugh I. Battey, Dunbar Roy, James N. Ellis, and Allen H. Bunce.

The Physicians, Surgeons, and Dentists Fund.—The following appeal has been issued to the physicians and dentists of the United States: "We, the undersigned, having devoted our energies for various lengths of time in helping our colleagues, the surgeons, physicians, and dentists of France; realizing that they are working under terrific stress and strain, under improvised conditions and often with an insufficiency of instruments and material, and feeling that many of our colleagues here would gladly contribute a sum of money monthly for the purchase of instruments and materials here or abroad as wisdom and need indicate; propose that such a brotherly manifestation of solicitude be made, and we call upon our professional brethren throughout this land in sympathy with the cause of liberty and justice, so dear to these two democracies, to pledge themselves to contribute to this fund $2 per month for the year 1916, from January 1, to be paid monthly or in block. This sum to be placed at the disposition of the American Relief Clearing House in Paris, the official bureau of all American charities, and in constant touch with all necessities over there. These sums to be expended in such a way as they may see fit, advised by a representative of the French Academy of Medicine, and a representative of the Minister of War, in order that the wisest possible use may be made of the funds thus furnished. Further, we solicit donations of instruments in first rate condition, and hospital equipment of all kinds; bearing in mind that in the present crisis everything is needed. May we even ask our colleagues to economize in all wisdom, and not to waste in this land of plenty, but to contribute to the cause that which is saved. Also that they may endeavor to interest their various clients to aid us in our work. We pledge ourselves to our utmost to see that every contribution arrives where there is need for it and feel that this friendly gesture of one country to another through our pro-

fessional channel will be received with a gratitude most touching and bear fruit in the relations between our two countries in the future. What the architects, artists, and sculptors of our country have done for their confrères, who are in the ranks across the ocean, we may well do also." The circular is signed by Drs. George E. Brewer, G. W. Crile, Harvey Cushing, Joseph Flint, Walton Martin, and William H. Potter; and approved by Drs. William M. Polk, John Finney, Thomas P. Hinman, E. C. Kirk, W. S. Thayer, H. Holbrook Curtis, John B. Walker, H. C. Moffit, John A. Hartwell, and Hugh Auchincloss. The chairman of the executive committee is Dr. C. N. B. Camac; the secretaries Drs. Foster Kennedy and William H. Ordway, Jr., and Mr. Whitney Warren. All monies subscribed go to the fund without deduction for administration expenses. Checks should be made payable to J. P. Morgan & Company for the P. S. D. Fund and addressed to P. S. D. Fund, 16 East Forty-seventh Street, New York City. All contributions in material should be sent prepaid to P. S. D. Fund, War Relief Clearing House, 133 Charlton Street, New York City.

Obituary Notes.—Dr. HENRY BAIRD FAVILL of Chicago, professor of clinical medicine in the Rush Medical College and professor of medicine in the Chicago Policlinic, died in Springfield, Mass., from pneumonia, on February 20, aged 55 years. Dr. Favill was graduated from the University of Wisconsin in 1880 and from the Rush Medical College in 1883, and had practiced in Chicago since 1890. He was a fellow of the American Medical Association, and chairman of the Committee on Health and Public Instruction, a member and former president of the Chicago Medical Society, and a member of the Chicago Pathological Society, the National Society for Mental Hygiene, and the Illinois State Medical Society, and was attending physician to St. Luke's, the Passavant Memorial, and Augustana Hospitals. He had gone to Springfield to deliver an address before the New England Dairymen's Convention on behalf of the National Dairy Council, of which he was president, when he was attacked by the illness which proved fatal.

Dr. JOHN KOPLITZ of Middletown, Conn., a graduate of the University of Munich, Germany, in 1847, died at his home on February 10, aged 94 years.

Dr. RICHARD H. WHITEHEAD, dean of the Medical Department of the University of Virginia, and professor of anatomy, died at his home in Charlottesville, from pneumonia, on February 6, aged 51 years. Dr. Whitehead was graduated from the University of Virginia, Department of Medicine, Charlottesville, in 1887, and was a member of the American Medical Association, the Medical Society of Virginia, the Albemarle County Medical Society, and the American Association of Anatomists.

Dr. ALFRED L. LALIBERTE of Minneapolis, Minn., a graduate of the Laval University Medical Department, Quebec, in 1904, died at his home of pneumonia, on February 5, aged 40 years.

Dr. LEONARD ADAIR of New York, a graduate of New York University Medical College in 1896, died at his home, on February 24, aged 46 years.

Dr. C. M. SCHINDEL of South Omaha, Neb., a graduate of Bellevue Hospital Medical College, New York, in 1887, and a member of the Nebraska State Medical Association and the Omaha-Douglas County Medical Society, died at Spokane, Wash., from apoplexy, on February 11, aged 53 years.

Fifty Years of Medical Progress.

A RETROSPECT of half a century's advance in medicine and surgery—although it opens a vista into many domains not previously accessible to the healing art—yet provides too short an historical perspective for the unravelling of the many tangled skeins of which is woven the fabric of success unparalleled perhaps in any other field of human endeavor. Overshadowed in its second decade by the most destructive of wars, the twentieth century is still too near its threshold to have contributed to a marked extent to the achievements of the latter half of its predecessor.

In a ramble through the wonderland of medical and surgical research from 1866 to 1916, there are many places that invite to rest and meditation on the marvels that have been wrought in the laboratory, by the bedside, on the operating table. The darkness of early medical history is studded, indeed, with stars, few and far between, of the first magnitude; but while such stars are not lacking in our day, the firmament of the modern sciences is sparkling with innumerable lesser lights, and cooperation is the key which has unlocked a thousand intricate problems of disease.

The evolution of the specialist, in the latter part of the nineteenth century, was the natural outcome of the marvellous extension of the so-called seven branches of medicine (anatomy; chemistry, including physics; physiology; materia medica, including therapeutics; practice of medicine; obstetrics; and surgery). New territories were tilled and explored, in the anatomy of the nerves, the eye and ear, the abdominal viscera; the physiology of secretion, including the endocrine glands, and of digestion; autointoxication; psychoneurology, the degenerative diseases, and insanity.

The progress of scientific medicine in the last few decades, and the application of modern knowledge to the therapeusis of internal diseases, are in many instances equally radical though perhaps less striking than the brilliant achievements of modern surgery. Many a priceless pearl has been added to the diadem of medical science by the patient toilers who indefatigably "grope in the abysses of the microscope." New specific remedies for constitutional and other diseases are elaborated every day in the laboratories, and produce results not dreamed of in the medical philosophy of other days. The control of the great epidemics, which only half a century ago swept over entire countries, decimating the population, is one of the most brilliant achievements of modern medicine in its branch of public hygiene, which is largely based on bacteriology, although a series of other factors have also contributed to its evolution. The advance of applied medical knowledge is strikingly illustrated by the discrepancy between the tuberculosis mortality statistics of New York City in 1870 (421 per 100,000 of population) and in 1914 (169 per 100,000).

The last fifty years have more efficiently enlarged the scope of medicine, both as a science and as an art, than had the two preceding millenniums. Modern medicine is characterized by its absolute freedom from philosophical reflexions and its practically exclusive foundation on known facts. The remarkable knowledge of the ancient anatomists, based on the most painstaking and accurate observations, has been vastly extended by the revelations of the scalpel and the microscope. Histology and embry-

ology—now on the curriculum of the freshman and sophomore years of all medical colleges—fifty years ago were studied only by the elect few. Physiology and chemistry, at that time independent fields of investigation, have become allied sciences, and now vie with each other in furnishing the supports on which rests much of present-day medical teaching. Ophthalmology, otology, rhinolaryngology, from modest beginnings in the course of half a century, have become highly important specialties, and are taught in undergraduate as well as graduate schools. The advance of physiology, bacteriology, and hygiene has had a wonderfully stimulating effect on medicine in general. Views on the nature of infectious diseases have undergone radical changes, and their treatment as well as that of constitutional affections has in many instances been practically revolutionized. It is difficult to realize that a practitioner of the old school knew nothing of the fresh-air treatment of tuberculosis, of tuberculin, of serotherapy in general, nor of the ubiquitous Salvarsan medication! He diligently did his work without the aid of our modern improved methods of examination, our excellent instruments, our new apparatus for electro-endoscopic illumination, and so forth. Modern hospital facilities were not missed, because they were barely known. Reflections on endovenous infusion or endocrine medication would have read to the best of the profession, fifty years ago, like the ravings of a madman.

The countless discoveries of the last few decades illustrate the increasing advance of the medical sciences. The surgeon's merciful tools constantly invade hitherto inaccessible cavities and recesses of the human body, for the growth of surgery has been phenomenal, especially so in the domain of vascular surgery. The clinician has learned to re-establish physiological action, and thus to prevent or modify disease, notably with the assistance of serum treatment. If the mystery of disease has been largely destroyed through the detection of its microscopical agents, so has the halo of miraculous power that formerly encircled the brow of the erudite magister of the healing art.

SURGERY.—The teachings of modern surgery have been profoundly modified through the young science of bacteriology, and the introduction of Lister's principles, which revolutionized the older methods of treatment. Lister's first reports on the antiseptic method bear the date of 1867, and the causes of traumatic infections were discovered by Koch in 1878. An equally wide gulf separates modern aseptic work from the so-called "spray and gauze method," which was practised by many of Lister's enthusiastic followers long after the originator had abandoned the carbolic-acid spray. The spirit rather than the letter of Listerian laws was not generally recognized until the late eighties of the nineteenth century. Superseding his corrosive sublimate antisepsis (1877), steam sterilization was introduced into surgery by v. Bergmann, in 1886. Dating from this period, antisepsis was gradually replaced by surgical asepsis, introduced by v. Bergmann in 1891, which is practically equivalent to "germlessness." In connection with this change, the mode of employment of drainage-tubes was likewise radically altered. Improved methods were also devised, such as Michel's clamps and other devices, for the closure of the operation wound.

Esmarch's artificial ischemia, introduced in 1873, to a great extent has given way to Spencer's clip forceps, small nickel-plated clips first introduced by the English operator, Sir Spencer Wells, which are an indispensable adjunct of the modern surgeon's armamentarium. Besides saving the patient's valuable blood and thereby enhancing the prospects of recovery, the new technique permits a free survey of the field of operation, otherwise apt to be obscured by the hemorrhage. Methods of reducing surgical hemorrhage were perfected in this country and abroad. The application of the Esmarch bandage high up on the body, as proposed by the American operator, R. Dawbarn, serves to withdraw the blood from the arms and the trunk, forcing it downward into the lower limbs, and thereby insuring a minimum loss of blood in operations upon the trunk. Momburg, in Germany, applied the elastic bandage to the waist, thus shutting off the blood supply below that level.

Bier's hyperemia, or passive congestion, introduced in 1903, aims at benefiting diseased tissues by keeping them in prolonged contact with the oxygenated arterial blood, which is thereby permitted to flow freely into the affected part, while the outflow of the venous blood is retarded by the application of an elastic band or other suitable contrivance.

The bearing of surgical anesthesia upon the evolution of modern operations is self-evident. Although general anesthesia dates back to the first half of the nineteenth century, B. W. Richardson introduced the method of local anesthesia by means of an ether spray in 1866; cocaine was first employed as a local analgesic agent in eye surgery by Koller in 1884; and infiltration anesthesia was introduced by Schleich in 1894. Spinal anesthesia and local medication of the cord, often erroneously attributed to Quincke and Bier in Germany, originated in this country, and the new therapeutic procedure was first described by its discoverer, J. Leonard Corning, in 1885. The first paper by Quincke on the technique of lumbar puncture and the study of the cerebrospinal fluid appeared in 1891. G. W. Crile's combination of different drugs (anoci association, meaning exclusion from the operation of all harmful associations), on the basis of his experimental research into surgical shock was reported in an essay awarded the Cartwright Prize for 1897. At the Lakeside Hospital in Cleveland, Ohio, 2,672 operations were performed by Crile up to 1913 with a death-rate of less than 2 per cent.; in the last thousand of these cases the death-rate was less than 1 per cent. (*Divinum est opus sedare dolorem!*—Hippocrates.)

Under the auspices of recent bacteriological, pathological, chemical, and other discoveries, the progress of modern surgery in the last fifty years has been so swift and brilliant as to be best described by the word "phenomenal." Aside from the marvels of technical feats undreamed of in the past, the scientific contributions of contemporaneous surgeons vie with those of pathologists and internal clinicians, in the elucidation of obscure problems of infection, tissue-repair, neoplasms, and so forth. Without entering into detail, advances out of proportion to the small number of decades elapsed since 1866 can be registered in the surgery of the brain and cord; of cancer of the breast; of the stomach and intestinal tract, notably the appendix and the rectum; of the liver and gall-bladder; the pancreas; the thyroid gland; the senile prostate. The scope of major operations on the viscera is constantly increasing, since the first successful cholecystotomy, performed by L. T. Boggs of Indianapolis, in 1867; the first excision of the gall-bladder by Langenbuch,

in 1882, and Kraske's first surgical intervention for cancer of the rectum in 1885.

The introduction of exploratory laparotomy belongs to this period, which also brought the once popular Murphy button. Kussmaul intubated the stomach, in 1867, and twelve years later, in 1879, Billroth performed the first successful excision of the pylorus. Gastroenterostomy was introduced by Woelfler, in 1881.

Modern treatises on abdominal surgery are crammed from cover to cover with new operations and ingenious devices of all kinds, so as to preclude more than a cursory allusion to "the surgeon's playground." A very complete surgical establishment, largely devoted to this branch of surgery, is conducted in Rochester, Minn., by two American brothers, William J. and Charles H. Mayo, perhaps the most widely known of all living surgeons. From all parts of the old world, visitors high up in the profession arrive solely to see the Mayos operate and to study their methods. Cancer of the stomach and intestines has never been more successfully treated than in the Mayo clinics. In England Sir W. Arbuthnot Lane advocates and practises the removal of large portions of the colon, when their stagnating contents become a menace to longevity or to life itself. The "Murphy drip" is an important adjuvant in abdominal operations of all kinds.

Notable advances are to be recorded in the surgery of the chest. The long maintained inaccessibility of the thoracic region—due to the lower air pressure in the lungs than in the outside air—has been overcome by the simple method of intratracheal insufflation devised by S. J. Meltzer of the Rockefeller Institute, which keeps the air in the lungs at the same pressure as the outside atmosphere, so that the chest can be opened without any danger of collapse. Brauer proposed an overpressure apparatus for the prevention of the dangers and sequelae of pneumothorax. Sauerbruch's pneumatic cabinet, an under-pressure contrivance, was introduced in 1904, and the first sixteen cases operated upon according to this method were reported in 1906.

Intubation of the larynx was first proposed by O'Dwyer, in 1885, who practised it with the tube that bears his name. A few years later, the procedure now in use for the forcible passage of air into the lungs, known as the Fell-O'Dwyer method, was first described by its originator. Direct laryngoscopy was introduced by Kirstein in 1894, and direct bronchoscopy by Killian in 1898. Matas, in 1902, described artificial respiration by direct intralaryngeal intubation with a modified O'Dwyer tube, and a new graduated air pump, in its applications to medical and surgical practice.

The surgical treatment of renal disease has been enriched by new operative procedures, such as anchorage of floating kidney; radiographic recognition and extraction of calculi; drainage of renal abscess; nephrectomy; interventions upon the ureters. The extirpation of a diseased kidney was first devised and performed by Simon, in 1869. (Walcott of Milwaukee had removed a kidney in 1861 in the extirpation of a supposed cystic tumor of the liver pressing on the kidney.) Hahn, in 1881, carried out the first nephropexy. The introduction of the cystoscope by Nitze, in 1899, marked a new era in the surgery of the bladder. The technique of vesical operations was greatly improved through the elevation of the pelvis, according to Trendelenburg.

Goiter-surgery has reached a high state of development, through the work of Kocher, Mayo, Payr, and other prominent operators, in this country as well as abroad. The medical treatment of exophthalmic goiter and other affections of the thyroid gland has failed to show results even approaching those realized by the hand of the surgeon.

Hitherto neglected structures, such as tonsils, adenoids, post-nasal vegetations, have acquired surgical importance. The first operation on adenoids dates back to 1868, when Meyer performed it, in Copenhagen, Denmark. A number of improved methods for harelip and cleft palate operations, and others too numerous to mention, must be credited to the plastic surgery of the last half century. Paraffine injections were first employed by Gersuny, in 1900.

Orthopedic surgery, practically an American creation, has never flourished as it does at the present day. The modern transplantation methods of bones and joints (Koenig, Lexer, Albee) represent a wonderful extension of the early methods of skin-transplantation (Thiersch) which opened up a new field of experimental research, especially after Davis of Johns Hopkins University had demonstrated the practical applicability of transplanting large flaps of skin.

Plaster of Paris bandages were first introduced by a Belgian army surgeon, Mathysen, who died in 1878, but were improved and popularized by another Belgian, Hubert van de Loo, who survived him five years. Sayre's gypsum corset for spinal deformities was introduced in 1876.

Vascular Surgery.—The advances in the field of vascular surgery are marked especially by the enormous progress and extraordinary development of the suture, as applied to the bloodvessels, since 1881, illustrated by Murphy's successful circular anastomosis of bloodvessels, in 1896; and culminating in Carrel's methods of vascular anastomosis and tissue transplantation, in 1902.

With the introduction of cardiorrhaphy, the heart itself ceased to be a surgical *noli me tangere*, until now it has not only become a surgical organ, but represents one of the most gratifying fields for the display of operative ingenuity. "The road to the heart is only two or three inches in length in a direct line, but it has taken surgery nearly 2,400 years to travel it." (Harry Sherman.) The knowledge obtainable up to 1868 is embodied in the monograph of George Fischer and dating from that time it was greatly extended by the experimental work of Italian and German investigators. The surgical period begins with Farina's first case of heart-suture, in 1896, and successful cardiorrhaphies are now reported in considerable number, after injuries of all parts of the heart. Separate injury of the pericardium, contrary to former belief, is now known to occur with relative frequency, although wounds of the pericardium rarely remain uncomplicated. At the present advanced state of cardiovascular technique, the outcome of these cases depends largely upon the associated and subsequent complications.

The extraction of a thrombus from the pulmonary artery, after the vessel has been exposed and incised—first performed by Trendelenburg, in Leipsic, Germany—is a most intrepid and often successful emergency procedure, also applicable to the removal of thrombi from bloodvessels in general. Other important advances are represented by the transplantation of segments of arteries and veins; the

insertion of venous segments between the cut and separated ends of a divided artery; the utilization of venous segments for the patching of bloodvessels, ureters, and other tubular structures; the substitution of the venous for the arterial system, when this is obstructed, as a carrier of oxygenated blood (Wieting's operation for reversal of the blood current), and a number of minor manipulations, such as utilization of veins for the drainage of lymph.

Endoaneurysmorrhaphy, the Matas method of intrasaccular suture as applied to the cure of aneurysm, must be accorded a place by itself. This procedure—a triumph of American surgery, with results unequalled by any other method—was introduced over a quarter of a century ago by the pioneer and leader in the domain of vascular surgery. Its excellent results are best shown by Matas' analysis of 225 cases treated according to the method of intrasaccular suture by different operators, with only nineteen deaths (8.4 per cent.), an unequalled record, especially as from this total gross mortality, nine cases must be deducted as not attributable to the operation but due to inevitable accidental or associate conditions. (XVII International Congress of Medicine, London, 1913.)

One of the real advances in the surgery of the vascular system during the last few years consists in the preliminary testing of the collateral circulation, before attempting any operation upon the arteries. The insistence with which attention has been called by Matas to the preliminary testing of the circulation, prior to any interference with accessible arterial bloodvessels, as a means of determining the indications and prognosis of the operation, is regarded by the eminent teacher as one of the most useful of his exhortations. Surgical obliteration of the great vascular trunks was formerly inseparable from the operative treatment of aneurysm. The Matas method of immediate and total occlusion of the artery, by means of simple flexible aluminum bands, as a preliminary test of the efficiency of the collateral circulation, is typical of the conservative trend of modern surgery. The advantages cannot be over-emphasized of a preoperative knowledge of the possibilities of the collateral circulation, meaning the behavior of the peripheral circulation in the dependent regions and organs after the occlusion of the main surgical arteries.

The aseptic absorbable ligature, evolved on the basis of Listerian principles and now produced under practically ideal conditions, has been the means to the twofold end of surgical progress in general, and of the improved aseptic vascular suture in particular.

The treatment of hemorrhage, surgical and constitutional, has been enriched by new methods, notably by improved direct transfusion and serotherapy. Before performing direct transfusion, the modern surgeon ascertains that the serum of the donor does not agglutinate the erythrocytes of the recipient, or vice versa, by means of a careful examination of the serum and blood of both parties concerned in the exchange. In regard to serotherapy, Matas writes that "this mode of treatment, while not at all specific in its character, is based on a rational principle, and has yielded sufficiently encouraging results since its introduction, to deserve further trial, not only in hemophilia, but in all the allied hemorrhagic states."

Modern *brain surgery* successfully attacks many regions, notably the base of the brain, formerly considered as inaccessible in the living. Tumors of the hypophysis, for example, are now unhesitatingly removed by expert surgeons (Harvey Cushing; Hirsch). Interference with the Gasserian ganglion in severe trigeminal neuralgias, was originally the idea of an American surgeon, J. Ewing Mears, who first gave this advice in a lecture held before the American Surgical Association, in Philadelphia, in 1894. The radical operation was first performed by Rose, in London, in 1890, and since that time has been greatly improved and modified. The approved technique of radical extirpation was established by Hartley in America and Krause in Germany.

Remarkable advances have been made in the surgery of the spinal cord, since the operations of Gowers and Horsley, in 1889; such as Förster's operation for locomotor ataxia, by means of resection of posterior roots, proposed in 1909. Intramedullary affections of the spinal cord were rendered accessible through improved methods of laminectomy, notably the work of Elsberg (1912). Surgical diseases and injuries of the nerves have been vastly benefited by the improved modern methods of nerve-resection and nerve-suture.

Surgical Gynecology.—It has been aptly said that surgical gynecology, as represented by the two major operations of ovariotomy and hysterectomy, is typically American. The first vaginal ovariotomy was performed, with a successful outcome, by T. Gaillard Thomas, in 1870; Robert Battey, of Atlanta, removed the ovaries for the production of an artificial menopause, in 1872; T. A. Emmett, in 1874, advocated and performed the repair of a lacerated cervix. Vaginal hysterectomy of the cancerous uterus was first performed by Mary Amanda Dixon Jones, in 1887, according to her original procedure by which the operation was considerably shortened (15 minutes); the patient recovered and was free from recurrence six years later.

In discussing the evolution in America of abdominal hysterectomy and total extirpation of the uterus, Cushing, in 1895, enumerated the following contributions to surgical gynecology in the last half century: Cutter, first application of galvanism to uterine myomata, 1874. Trenholme, first application to treatment of uterine myomata of Battey's operation of ablation of appendages, 1876. Valuable modifications of the intraperitoneal method of treatment of the stump, Marcy, 1881. A series of improvements in the technique of the extraperitoneal method of treating the stump by which intraligamentous tumors and those deep in the pelvis can be removed, J. Price and his pupils, 1886. Total abdominal extirpation of myomatus uterus, by use of clamps (first resuscitation in America of the operation since those of Freund had been abandoned), Lewis, 1888. First separate ligation of the uterine arteries in their continuity and total extirpation by this method, Stimson, 1889. Method of total extirpation by use of a staff, Eastman, 1889. Total abdominal extirpation, fastening stump of vagina to abdominal incision, for prolapse, Polk, 1889. Methods for making the stump intraabdominal but extraperitoneal, Polk, 1888, Kelly, 1890, Byford, 1890, Baer, 1892. Total abdominal extirpation of the uterus with suppurating appendages, as a matter of election, Baldy, Krug, Polk, 1893. Enucleation of the stump as well as the myoma, by the use of a serrated gouge, without severing the uterine arteries, Eastman, 1894. Total extirpation of uterus, in cases of extrauterine pregnancy, where the tube which is not pregnant is diseased, Krug, 1894.

Important events in the history of surgical gynecology during the last five decades are represented by Porro's cesarean section, with excision of adnexa, in 1876; Freund's extirpation of the cancerous uterus, in 1878; Czerny's vaginal excision of uterine tumors, 1881; Saenger's improved cesarean section, 1882; Lawson Tait's operation for extrauterine pregnancy, in 1883; Howard Kelly's hysterorrhaphy, 1887; Wertheim's radical operation for cancer of the uterus, in 1900. The trend of modern gynecology is essentially conservative, and the once fashionable massacre of innocent ovaries (supposedly superfluous adnexa) is now unconditionally rejected.

OBSTETRICS.—The most important advance in the science and art of obstetrics is probably represented by Duehrssen's method of vaginal cesarean section (1896), and the extension of the indications for cesarean section in general. A number of new methods have of late been devised for transperitoneal and extraperitoneal cesarean section. Obstretrical analgesia through a combination of drugs (twilight sleep) is a very recent and as yet incompletely tested innovation. The newer obstretrical teachings were given a changed direction by the discovery of latent gonorrhea in the female (Noeggerath, 1872) and the introduction of Credé's silver-nitrate instillation for infantile conjunctivitis.

Abderhalden's announcement of the ferment-reaction, in the diagnosis of pregnancy, in 1913, is a very recent addition to obstetrical science and opens up a wide vista into as yet imperfectly explored territory. Blood serum derived from a pregnant woman can by these means be distinguished from the serum of a woman in whom pregnancy does not exist and childbirth has not recently occurred. By the majority of writers, this pregnancy reaction is considered as an eminently useful method, provided the tests can be carried out in a reliable manner, in scientific laboratories, like other serological reactions.

PATHOLOGY.—From this lusty branch, sprung from the tree of medical science in the nineteenth century, the physician has been enabled to gather many golden fruits of practical utility. He has become familiar with the normal characters and conditions of healthy tissue, as well as with abnormal conditions, functional irregularities, and disorders of metabolism, through the important advances of the last few decades in all realms of pathological research. Many diseases were for the first time submitted to pathologico-anatomical investigation, and their pathogenesis and etiology no less than the pathological anatomy itself thus came to be better understood. The teachings of inflammation underwent important modifications. Malignant tumors received special attention, more particularly in regard to histogenesis and metastases. The cancer problem gave rise to extensive experimental research and indirectly to many useful discoveries, such as Coley's fluid for treatment of sarcoma. Anomalies of growth were carefully investigated, and conditions such as cretinism, tetany, acromegaly, giantism, fetal chondrodystrophia, were traced to their source, in disturbances of the internal secretions. The so-called lymphatic constitution was definitely referred to persistence of the thymus. (Waldeyer, 1890.) The goiter question led to important experimental and other work upon the thyroid gland. Conditions pertaining to the vascular system, and circulatory disturbances, came to be better understood on the basis of the modern teachings of thrombosis and organization of the thrombus. Important contributions appeared on the subject of retrogressive nutritional disturbances; local tissue necrosis and gangrene; deposits of urates; pathological pigmentations; regeneration of muscle and nerve tissue; compensatory hypertrophy, and so forth. Hematology was enriched by the detailed study of the erythrocytes and leucocytes, progressive pernicious anemia, hemophilia, myelogenic leukemia, and inflammatory leucocytosis.

Many important contributions were added to the pathology of the brain and cord, notably tumors, as well as to the subject of neuritis, and nerve-repair. Idiopathic muscular atrophy and pseudomuscular hypertrophy attracted the attention of investigators. Neighboring lesions of mucous membranes (specific infection of the rhinopharynx) have recently been pointed out as the shortest road of the *Spirochæta pallida* to the brain, resulting in cerebral syphilis, so resistant to medication. (W. Sohier Bryant.) The pathological histology of all eye diseases became a fruitful field of research; important additions were made to the knowledge of keratitis, glioma and neuroepithelioma of the retina. A better knowledge of errors of refraction in the eye has only recently come to be the common property of medical practitioners. The etiology and genesis of acute otitis media were established by German investigators. A number of learned contributions appeared on the pathological histology of the labyrinth. (Bárány; v. Cyon.)

The pathology of the respiratory and related systems was enriched by the investigations of nasal diseases, accessory sinus disease, pulmonary emphysema, pneumonoconiosis. Kocher studied the problem of cachexia strumipriva, and the histopathology of goiter was discussed in many important contributions to the literature. Gull described myxedema in 1873. The parathyroid glands were described by Sandstroem in 1880. Important clinical and experimental contributions to the physiology of the thyroid and the parathyroids were published by Pineles in 1904. Acromegaly as connected with the hypophysis was discussed by Marie in 1886, and Cushing, in 1911, described dyspituitarism. The first case of tumor of the carotid gland was reported by Marchand, in 1891.

The digestive system was not neglected, and valuable articles appeared on tuberculosis of the salivary glands; on esophageal diverticula; peptic ulceration of the esophagus; muscular pyloric stenosis; gastric ulcer and cancer; uremic necrosis of the intestine (Treitz); and intestinal catarrh (Nothnagel). Fifty years ago "inflammation of the bowels" was a much used elastic term, which covered a multitude of sins, now tracked and labeled as colitis, enteritis, pelvic cellulitis, peritonitis, and, last but not least, appendicitis. The indications for early laparotomy in appendicitis, and the now famous McBurney's point were first emphasized in 1891. Articles, long and short, pamphlets, monographs, entire books, were published on the pathology of the vermiform appendix. Numerous contributions of pathological interest concerned the liver (cirrhosis and infarction) and the pancreas (fat necrosis and tuberculosis).

In regard to the uropoietic system, the last half century brought important investigations on the subject of Bright's disease, on the origin of cylinders in the urine; on hypernephroma of the kidney (Grawitz), urinary calculus, and other diseases. The suprarenals were recognized as having an important bearing on metabolism.

The regenerative rôle of bone-marrow in hemorrhage came to be properly understood. Osteomalacia and rachitis became the subject of careful investigation. Coxa vara was studied by v. Bruns, and scoliosis by Albert and Nicoladoni. Anomalies of the bony pelvis were described, in general as well as in particular, and the neuropathic arthritides attracted the attention of pathologists.

PHYSIOLOGY.—Modern physiology is closely linked with pathology, if not inseparable from its problems. The scope of physiological chemistry is far-reaching and embraces the many variegated chemical processes going on in the animal body, such as muscular contraction (a largely chemical phenomenon); metabolism in the liver; the formation of the digestive enzymes; the physiological and pathological part played by the internal secretions. Through its revelations on the subject of chemical bacterial toxins, produced by the activity of microorganisms, the physiological chemistry of the present day is likewise closely linked to bacteriology. The chemical activation of the sea-urchin's egg by Jacques Loeb startled the scientific world in 1899.

The study of the ductless glands—in the foreground of professional interest at the present writing—was inaugurated by the establishment of the fact of internal secretions, by Brown-Séquard, in 1891; followed by the work of Sajous, in 1903.

The action of the digestive glands was investigated by Pavloff, in 1898. The study of metabolism, led by v. Noorden, began in the years 1892-95.

Nearly fifty years ago, in 1870, the localization of function in the cerebrum was established by Fritsch and Hitzig, followed about twenty years later by Monakow. Bowditch demonstrated the non-fatigability of nerve-tissue in 1890. The phenomena of neuromuscular fatigue and exhaustion and the study of the so-called fatigue-toxins have recently attracted the attention of investigators, especially in this country and in Germany (Weichardt). A better knowledge of the structure of the nervous system was inaugurated by Golgi's staining method, discovered in 1873, but not practically applied until the publication of his work ten years later. The now generally accepted neuron theory (Waldeyer, 1891) rests upon the histological investigations of Golgi, Ramon y Cajal, van Gehuchten, and others.

About half a century ago the work of Charcot, on hysteria, attracted as much attention as the evolution of psychoanalysis (Freud) in the present generation.

The internal unity between nervous physiology and nervous psychology was emphasized by Forel, and a wider vista into the delicate and complicated relations between the genesic instinct (libido) and nervous disease was opened up by the work of the Vienna neurologist, Freud, who explains psychoneurotic disease as the result of a mass of suppressed sex-desires. The symptoms are attributed to the fight of the desire against the suppression, and the diagnosis is based upon the detection of the underlying genesic factor, by means of the modern method of psychoanalysis. The treatment aims at changing the patient's attitude toward his complexes, or, more simply expressed, restoring his emotional balance.

DIAGNOSIS.—Important diagnostic procedures, unknown fifty years ago, are represented by the Widal reaction in typhoid fever, a practical application of the agglutination-phenomenon; the serum-diagnosis of tuberculosis, syphilis, and other constitutional diseases; the modern diagnosis of rabies by the Negri bodies; cytodiagnosis, based upon microscopical demonstration of cell-contents in various body-fluids; cryoscopy, or the determination of the constitution of urine by the establishment of its freezing-point; a great variety of methods for the early recognition of gastric cancer, and a number of other diagnostic adjuvants.

BACTERIOLOGY.—The seventies of the last century brought Pasteur's immortal work on the pathogenic microbes, and his protective inoculations against infectious diseases (chicken-cholera, malignant edema, and hog-erysipelas). In the eighties, his famous protective inoculations against anthrax and rabies (lyssa) were first introduced. The great representative of French medicine was honored, in recognition of his merits, by the establishment of the Pasteur Institute in Paris, with its splendidly equipped laboratories for scientific research.

The discovery of the resistant anthrax spores belongs to R. Koch, in 1876, and started a new bacteriological era, especially in Germany. The first volume of the Mitteilungen aus dem Kaiserlichen Gesundheitsamt was published in 1881, and contains a description of Koch's new methods for the isolation and pure culture of bacteria, on which are based the laboratory methods now in general use.

Improved staining methods and dried blood smears were introduced by Ehrlich, in 1874, after Weigert's bacterial stain with carmin, announced in 1871, had considerably advanced the older laboratory technique.

Many germs the names of which are now familiar even to the laity first became known in the course of the last few decades; such as the streptococcus and staphylococcus; the diplococcus of pneumonia; the meningococcus intracellularis; the colon bacillus; the bacillus of rhinoscleroma; the bacillus of leprosy; the bacillus of influenza.

The spirillum of relapsing fever was described by Obermeier, in 1873, and the parasitic ameba in dysentery, by Loesch, in 1875. Anthrax bacilli were first grown on artificial media by Koch, in 1876. Pasteur, one year later, described the bacillus of malignant edema; and Neisser, in 1879, discovered the gonococcus. The streptococcus and staphylococcus were for the first time isolated by Pasteur, in 1880. In the same year, Eberth succeeded in isolating the typhoid bacillus. The ameba of malarial fever was discovered in 1881, by Laveran, who received the Nobel prize in 1907 for efficiency in contagious and epidemic diseases. The epidemic nature of poliomyelitis was discovered by Medin, in 1881. Koch's discovery of the tubercle bacillus was announced in 1882 and in the same year, Löffler discovered the bacillus of glanders, followed, in 1883, by Klebs' discovery of the diphtheria bacillus; and in 1884, by Nicolaier's discovery of the tetanus bacillus. The colon bacillus was discovered by Escherich, in 1886. Weichselbaum discovered the meningococcus, and Bruce the bacillus of Malta fever in 1887. The paracolon and paratyphoid bacilli were described by Gilbert, in 1893. In the same year, Smith and Kilborne reported the transmission of Texas fever by the cattle tick.

Blastomycosis was first described by Gilchrist of Johns Hopkins University in 1893. Kitasato and Yersin, in 1894, discovered the bacillus of bubonic plague.

The discovery of bacteriolysis, by Pfeiffer, in 1895, and of bacterial agglutination by Gruber, in 1896, as well as the Widal-Sicard agglutination test

for typhoid fever, are the notable contributions of the year 1896 to bacteriology. The next year brought Shiga's discovery of the dysentery bacillus; and Bordet's discovery of bacterial hemolysis. Filterable viruses were now investigated by Löffler and Frank. Loos demonstrated the transmission of hookworm infection; Smith differentiated between human and bovine tubercle germs (1898). Finlay's theory of the transmission of yellow fever by mosquitos was conclusively proven by the U. S. Army Commission in 1899. Four years later Dutton and Ford discovered the parasite of sleeping sickness, and Bruce, in 1903, showed the transmission of the disease by the tsetse fly. Koch conducted his investigation of African fever in 1908. In the same year the bacillus of pertussis was discovered by Bordet and Gengou.

Modern contributions more or less directly related to bacteriology are represented by Wassermann's serodiagnosis of syphilis, with the Noguchi modification of this test; v. Pirquet's cutaneous reaction in tuberculosis; Calmette's and Wolff-Eisner's conjunctival reaction (1907); Flexner's experimental production of poliomyelitis (1910). Peyton Ross, in 1911, successfully transmitted sarcoma with filterable virus. Very recently, the plasmodium of malaria has been cultivated in the test tube by Bass (1912). Malaria in Italy was combated by Celli and his fellow workers.

The attention devoted to phytoparasitology is constantly on the increase. Much important work has already been done along these lines and the last half century has firmly established the pathogenesis of many infectious diseases, such as tuberculosis, actinomycosis, leprosy, typhoid fever, gonorrhea, a variety of forms of cerebrospinal meningitis, pneumonia, endocarditis, tetanus, and others.

Organized preventive medicine, based on bacteriological and kindred discoveries, first took root in the early years of the twentieth century. The Eastern countries, Africa, and certain parts of the United States became the theater for the display of dauntless perseverance and wonderful success, in the study of tropical medicine. Sleeping sickness, beriberi, tropical dysentery, and other dangerous diseases of warm climates are now under reasonable control. Yellow fever was checked as a result of the work of Reed, Carroll, Lazear, and Agramonte, confirming Finlay's belief that the infection is carried by a certain species of mosquito. Havana, formerly a hotbed of yellow fever, could now be freed from the ravages of the disease within three months, by Gorgas, whose unrivalled feats in sanitation later on permitted the construction of the Panama Canal. In consideration of his research work into the causes of sleeping sickness and Malta fever, the Dutch Academy has just conferred the Leeuwenhoek Medal on the British scientist, Sir David Bruce. His predecessors in this distinctive award, which is bestowed every ten years, were Ehrenberg (1875), Ferdinand Cohn (1885), Pasteur (1895), and Beyerinck (1905).

A new system of combating bacterial infection by means of vaccine therapy has been based upon recently acquired knowledge of the defensive properties of the blood, and the teachings of immunology. (Metchnikoff, Wright, and others.)

The American army surgeon Ashford successfully controlled hookworm disease in Porto Rico, in 1903-4; and Stiles, in the southern United States, in 1910-12. Loos (1910) showed that the hookworm larvæ penetrate the skin.

THERAPEUTICS.—The therapy of disease has been greatly advanced through valuable chemical discoveries, premeditated rather than accidental. To industrial chemistry the physician is indebted for the inexhaustible offerings of the modern pharmacopeia. Whereas prior to the year 1869, practical medicine labored under a deficiency of medicinal agents, the market is now literally flooded by an excessive supply of preparations of all descriptions, and the conscientious practitioner is confronted with the stupendous task of ascertaining the actual advantages of the individual remedies. Indirectly through the achievements of experimental pharmacology, the general practitioner has learned to gauge more accurately the effect and scope of his prescriptions. The old "shotgun prescription" is a thing of the past, and in its place we have simple, purposeful remedies, carefully planned and dosed so as to meet the requirements of a given case. The days are gone, never to return, when it could be said, even in jest, of a brother practitioner: "His pills as thick as hand grenades flew, and where they fell, as certainly they slew." (Roscommon.)

Selecting some salient milestones on the road from half a century ago to now, we find the first marking the discovery and demonstration of the hypnotic properties of chloral hydrate by C. Liebreich, in 1869. Salicylic acid, with its antiseptic effects, was isolated by Kolbe, in 1874. About this time pilocarpine was first recommended as a remedial agent. Trypsin was discovered by W. Kühne. Iodine was introduced into surgery by Mosetig Moorhof in 1880. The hemostatic effect of the fluid extract of hydrastis canadensis was demonstrated in 1883. The introduction of ichthyol into medical practice, by Unna, dates back to the same year. Antipyrin was first prepared in 1884, by Knorr, the year in which cocaine was introduced as an anesthetic in eye surgery. Antifebrin and acetanilid were prepared by Cahn and Heppe, and sulphonal by Baumann, in 1886. Salol was introduced in the same year by Marcel von Nencki. About this time strophanthus was recommended as a substitute for digitalis, by T. Richard Fraser, in Edinburgh. Creosote gained in popularity as a remedy for tuberculosis, and was followed by guaiacol. A very important and beneficial contribution of industrial chemistry to medicine is represented by Behring's antidiphtheritic serum, introduced in 1893. Four years later, in 1897, E. Fischer synthetized caffeine, theobromine, xanthin, guanin, and adenin. Dreser, in 1898, introduced heroin. The discovery of erepsin by Cohnheim was reported in 1901. Veronal was introduced by Fisher and v. Mehring, in 1903. Einhorn, in 1905, discovered novocain. The announcement of Ehrlich's side-chain-theory, and his introduction of salvarsan, in 1909, bring the recent achievements of medical chemistry practically up to date.

Rather than the securing of the very latest dates and terms, the object of this review is to show the direction of the road that for fifty years has been creditably traveled by members of the medical profession less well equipped than we are with therapeutic facilities. A host of pharmaceutical and biological products for the prevention or cure of disease, constantly superseding one another, are flung annually, not to say monthly, at the bewildered clinician. Numerous synthetic agents have been created, and relatively recent preparations have become more or less indispensable. From the old tried and tested remedies, the efficient substances

are now separated in pure, reliable, and convenient form. The modern application of standardizing by medical and physiological methods the materia medica products, has resulted in an admirable uniformity and reliability of such offerings as compared to those available half a century ago, before the general introduction of standardization methods.

The growth of the pharmacal and pharmochemical industries has been so rapid and exuberant that the great manufacturing houses engaged therein now conduct scientific departments and well-equipped laboratories, under the direction of specialists and experts. Endeavors, not universally sanctioned, are being made to effect a cooperation between university laboratories devoted to purely scientific research and those of manufacturing houses, under the claim of promoting information on therapeutic subjects.

The introduction of clinical laboratories, now indispensable for bacteriological and kindred research, belongs to the second half of the nineteenth century. The first of its kind was probably the clinical laboratory of Ziemssen, in Munich, founded in 1885. Johns Hopkins University not long afterward provided for a similar establishment.

Three distinctive modern weapons in the fight against disease are serotherapy, organotherapy, and chemotherapy as exemplified by the new salvarsan-therapy of syphilis, inaugurated by the investigations of Paul Ehrlich.

Serotherapy is either curative, when it consists in the utilization of blood serum for the cure of an attack of infectious disease; or protective, when it is employed for the prevention of disease. A number of contagious diseases do not attack the body more than once, but leave it in a state of temporary or permanent immunity. The conditions governing immunity have only recently been elucidated by the work of Ehrlich, Behring, and other investigators who have shown that under the influence of the infectious disease, the body is enabled to produce substances which counteract the infectious material. This action may be twofold, namely bactericidal, by attacking the bacterial agents directly; and antitoxic, by destroying the poisonous bacterial products (toxins and toxalbumins). If the bactericidal and antitoxic action overcome the infectious products, recovery results, and moreover certain body elements have acquired the capacity of permanently forming the protective substances (alexins), so that in case of a new exposure to it, the disease fails to develop. This acquired property of the body to protect itself through its own protective substances against renewed attacks of the same disease, is known as active immunity. The protective substances are contained in the blood, and are stimulated to increased production whenever infectious material again enters the body; so that the amount of protective substances in the blood of actively immune animals is greatest soon after accidental or artificial infections. The blood serum of such immune animals, when incorporated into other animals, may exert a double effect: It acts as a curative serum in diseased animals, where its bactericidal or antitoxic substances attack and destroy the pathogenic products. In the blood of healthy animals which are treated with immune serum, the newly incorporated antitoxins are also preserved for some time, rendering the animal passively immune against the disease during that period. This form of immunity, which is always of short duration, is known as passive immunity, because the immunizing substances are not produced by the body itself, but are introduced from without. Inoculation of such passively immunized animals with highly toxic infectious material invests them with the capacity of producing their own protective substances and thus acquiring an active immunity of fairly long duration. The commercial preparation of antidiphtheritic serum is based upon these principles. It is interesting to note that the discovery of the bactericidal powers of blood serum, now so widely known and exploited, dates back to Nuttall, in 1888. In the same year the toxins of diphtheria were for the first time investigated by Roux and Yersin. One year later, in 1889, Buchner discovered the alexins (protective bodies) and Behring, the antitoxins, with which he later treated diphtheria in 1890. This was also the year of the introduction of tuberculin, by Koch.

Organotherapy and Endocrinic Medication.—The recently adopted plan of treating certain evidences of disease by means of routine administration of glandular organs of internal secretion, is also known as endocrinic medication. It was ushered in by Kocher's experimental feeding of goiter-patients, whose thyroid gland had been extensively removed, with raw thyroids of sheep and calves. The early investigations of Brown-Séquard are also of importance in this connection. The internal use of ovarian substances from animals, mostly cows, was promptly suggested in gynecological circles, for women whose ovaries had been extirpated on account of disease. The administration of animal suprarenals was found to retard the course of Addison's disease. Adrenalin, the active principle of these organs, was isolated by Takamine, in 1901. Recently, the use of spleen and bone-marrow has been recommended in chlorosis, kidney in nephritis, pancreas in digestive disturbances, hypophysis in certain nervous diseases and acromegaly, etc., etc. Although it is not easy to exclude the element of suggestion in a number of the cases, organotherapy seems to rest on solidly established facts. The new knowledge of the action of the thyroid on cretinism and goiter, as well as certain forms of obesity and skin-disease, constitutes a well-grounded and permanent gain in the therapy of disease. At the same time, the new method of treatment has the merit of emphasizing the dignity and significance of all the organs and tissues of the body.

Salvarsan (neosalvarsan) is the trade name of the Ehrlich-Hata arsenic preparation 606, and its modification, which has recently supplemented the mercury and iodide treatment of syphilis. Ehrlich's work on the experimental chemotherapy of the spirilloses, notably syphilis, was published in 1910. Through Schaudinn's discovery of the *Spirochæta pallida* in 1905, and the demonstration of latent syphilis, modern medicine has been enabled to achieve one of its greatest triumphs as a healing art. The serodiagnosis of syphilis was introduced by Wassermann, in 1906. Noguchi's modified test followed soon, and the luetin reaction a little later. The demonstration of spirochetes in the tissue of the nervous system, by Noguchi, in 1913, has elucidated some hitherto unsolved problems as to the part played by syphilis in certain fields of neurology. The diagnosis and treatment of syphilis and the so-called parasyphilitic diseases have thus been placed upon a new basis.

Heliotherapy dates back slightly over fifty years, but was first placed on a scientific basis by Fin-

sen's investigations in 1893. The Finsen light, the quartz lamp, actinic ultra-violet rays, are now employed in the treatment of skin diseases, as well as some rheumatic and neuralgic conditions. The future of light-treatment would seem to be more promising than that of electrotherapy, which has hardly come up to expectations.

Radiotherapy.—In December, 1895, Roentgen, in Würzburg, discovered the rays which bear his name and gave them the temporary name of *x*-rays, under which they are commonly known. Two years later, a special institute for *x*-ray examination was founded in Berlin. The most immediate benefits of this discovery were naturally reaped by the operating surgeon, as the *x*-ray permits the localization of opaque substances imbedded in soft tissue and a decision as to the prospects of operative interference for the removal of foreign bodies or the adjustment of fractured bones. Anatomy and morphology have also found a useful adjunct in the *x*-ray. At the present time, the Roentgen rays are in use not only for diagnostic purposes, but also as a therapeutic measure, especially in dermatological practice. Clinicians are still divided as to their value in the treatment of cancer and other tumors, malignant and non-malignant. Internal medicine profits through the representation by the *x*-ray of the deeply situated structures of the body, and the observation of the vital processes of organs, by means of the fluorescent screen.

There is still among surgeons a certain degree of skepticism as to the part radium is destined to play in surgical therapeutics. If time brings a moderation in its now almost prohibitive cost, radium may be destined to become a useful adjunct in the treatment of superficial malignant growths, of rodent ulcers, and certain cases of angioma and vascular nevus. Deeply seated cancerous growths, when beyond the reach of the surgeon's knife, will, however, it is to be feared, prove inaccessible to this newly discovered remedial agent. It is possibly destined to play a still more important rôle as a therapeutic agent in internal medicine, in the treatment of neuritis, arteriosclerosis, arthritis, and various other maladies; but here also it is still in the trial stage and it is too early to affirm or deny its curative powers in these affections. Special institutes have been founded in London, New York, and other cities for the investigation of the physical and therapeutic properties of radium.

The keynote of modern therapeutics is the treating of the patient rather than the disease. Although medicinal and surgical measures are invaluable in so far as life is preserved and health restored, the general management of diseased conditions has a similar importance. Not only is the patient protected against further injury, by modern hygiene and dietetic régimes, but his general constitution is improved. Modern physico-dietetic methods aim at preserving the individual's vitality, rather than at specific treatment of local disturbances. It is only very recently that the true relevance of constitutional and hygienic factors has come to be properly recognized. A forerunner of modern methods of treatment is represented by the "rest-cure," inaugurated by S. Weir Mitchell, in 1877.

The cooperation of modern medicine and prophylactic social hygiene in the last few decades, has brought about an extension of the average duration of human life. While the infant mortality has been the most strikingly benefited—largely through the milk-crusades in defense of bottle-babies—the general mortality figure has also been more or less reduced in all large cities which have introduced radical hygienic improvements. Hygienic successes rest upon compulsory vaccination, disinfection, and fumigation, tuberculosis sanitaria, proper canalization and sewerage, pure water and milk supply, hospital facilities, industrial reforms, and other civic rulings for the benefit of the public, too numerous to mention.

Nursing.—An important outgrowth of the advance of knowledge as to the cause and prevention of disease is represented by modern methods of tending the sick in hospitals as well as the home. "The advent of *trained nurses* as a feature in the practice of medicine and surgery is of comparatively recent growth, and their training schools have been not inappropriately likened to the latest bud on the tree of evolution. The need for a system of trained workers was expressed nearly fifty years ago by Dr. Gross, when he said that there ought to be in all the principal towns and cities of the Union, institutions for the education of those whose duty it is to take care of the sick and to carry out the injunctions of the medical attendant. The training school of Charity Hospital on Blackwell's Island was one of the first institutions in which this idea took practical shape. It was formally opened on August 1, 1875, with fifteen pupils, whose number was almost doubled within the next following month. Originally established as an experiment, it was not long before the school outgrew the tentative stage and became one of the important institutions of the city. At that time, there were only three similar institutions in the United States: The Bellevue training school for nurses, and those in Hartford, Conn., and Boston, Mass." (Quinlan.)

Systematic nursing in this country first gained a foothold in the early sixties of the nineteenth century, in Philadelphia and Boston, gradually spreading from these centers to other cities. The tendency of the present is to regard the art of nursing as an independent vocation, as an adjunct and auxiliary to medicine. The great clinician v. Leyden, in his address before the Fifteenth Congress of Internal Medicine in Berlin (1897) expressed himself in the following memorable words: "The nursing of the sick, already recognized in its full importance, is rapidly becoming an essential and indispensable branch of scientific medicine."

Medical Education.—Concerning advances in medical education in the last half century, facts and figures speak for themselves: Medical schools requiring a three years' course did not exist in the United States in 1875, whereas in 1903, a four years' course was compulsory in 144 medical schools. In 1914, a four years' course leading to the degree of Doctor of Medicine was the standard required for admission to membership in the Association of American Medical Colleges. According to the report of the U. S. Commissioners of Education for 1902-3, there were at that time in the United States a total of 146 medical colleges, also postgraduate; of these, 118 were classed as regular, 19 as homeopathic, 7 as eclectic, 2 as physiomedical. In the last ten years the number of medical colleges has been markedly reduced, as the result of a reform movement inaugurated by the American Medical Association. In 28 States, the medical schools are now integral parts of the State University; in 16 States, there are no other medical schools, this branch of education be-

ing entirely in charge of the State University. A collegiate degree or its equivalent is now a condition for matriculation in the leading medical schools of this country.

Medical Education of Women.—Nearly half a century ago, in 1868, the Woman's Medical College of the New York Infirmary was opened by Dr. Elizabeth Blackwell and her sister Emily: it was in existence for thirty years. The need for separate institutions progressively declined as the majority of medical colleges opened their doors to students of both sexes. The Woman's Medical College at Philadelphia (founded in 1850) graduated eighteen students in 1914; in this year, only two medical colleges were in existence for women students exclusively. In contradistinction, there were in 1914 over 54 co-educational schools, including such institutions as the medical departments of Johns Hopkins, the University of Michigan, and Cornell. In the British Isles, women were admitted to the study of medicine in the late seventies of the nineteenth century. Germany lagged behind and did not admit women students to the state examinations in medicine until 1900; in this year, Heidelberg University was opened to students of both sexes. Medical diplomas have been bestowed upon women by the Faculty of Medicine at Paris, as well as by the Swiss Universities of Zürich, Bern, and Geneva. The Spanish universities of Madrid, Barcelona, and Valladolid admit women students to the medical courses. Sweden offers medical courses for women at the Carolinian institutions at Stockholm and at Upsala. Recently, a medical school for women has been founded by the War Department of the Russian Government, in Petrograd.

Libraries.—The tremendously increased literary output of the last decades has necessitated the establishment of medical libraries and index catalogues, unknown and unneeded half a century ago. In 1875, the Boston Medical Library was started as a library association, with Oliver Wendell Holmes as president. The Index Medicus, a monthly bibliography of the world's medical literature, founded in 1879 by Billings and Fletcher, is now indispensable to the profession. Among the medical libraries of all countries the highest rank is usually conceded to the Surgeon General's Library at Washington, which is followed in size and importance by the library of the New York Academy of Medicine and that of the College of Physicians in Philadelphia.

Through modern methods in the compilation of statistics and of clinical records, the treasures of medical and surgical experience are now rendered more generally available than ever before.

The distinctive features of modern medicine are, briefly summarized, the remarkable increase of general knowledge; the progressive interpretation of the vital processes; the inductive methods of the modern clinician; the dauntless advance of surgery; the improved curative procedures, aided by the admirable finish of instruments and apparatus. Modern medicine has undergone a transformation from an art to a science to be acquired by diligence and application, with the result that there is no lack in our day of skilled physicians assiduously working for the relief of human suffering.

Contemporaneous medical thought is dominated by the reformatory influence of the doctrine of Darwin (published in New York in 1871) and by Weismann's work on the continuity of the germ-plasm, which appeared in 1885. The relation of the natural sciences to science as a whole was discussed by Helmholtz in the latter part of the nineteenth century.

The advance of science in general, and of medicine and surgery in particular, is often held responsible for the materialistic undercurrents in the stream of modern civilization. The injustice of such a charge is most forcibly revealed through this beautiful paragraph from the writings of a great contemporaneous scientist (v. Cyon, 1910) describing his conception of the organic world: "In the absence of scientific proof of the existence of organized beings on other plants, the investigator is justified in regarding this tiny earth as a sort of biological experimental station of our planetary system, its most perfect organism being represented by man. Human delusions are thus efficiently dispelled, in which man believes himself the master of the world, because he laboriously constructs a flying machine on the pattern of a bird, or a submarine boat after the model of a torpedo, which usually afford him the opportunity of destroying himself or his fellows. Science does not even invest man with the supreme control of his own small planet. He possesses the power of adapting the forces of nature to his purposes; the highest goal he can attain as an investigator is the discovery of the laws governing these forces. For so much he is indebted to the Creator of the biological station, who has invested him with a modicum of intelligence and with will-power, so that he may employ his knowledge for the benefit of his fellow-men and for the glory of Almighty God."

F. ROBBINS, M.D.

A RECORD OF ACHIEVEMENTS.

THE following is a partial list of epoch-making discoveries in medicine which the MEDICAL RECORD was the first to announce to American readers (the dates are those of publication in this journal):

Lister's employment of carbolic acid in antiseptic surgery, October 15, 1867.

Esmarch's method of bloodless surgery, December 1, 1873.

Koch's discovery of the *Bacillus tuberculosis*, May 20, 1882.

Prophylactic treatment of rabies by injections of virus, August 19, 1882.

Koch's discovery of the comma bacillus of cholera, March 15, 1884.

Koller's employment of cocaine in eye surgery, October 11, 1884; the first reports of the use of cocaine in this country were made by C. R. Agnew, W. O. Moore, and J. L. Minor in the issue of October 18, 1884.

Intubation of the larynx, February 21, 1885.

Koch's announcement of the preparation of tuberculin reported in the cabled proceedings of the Berlin International Congress, August 9, 1890.

Discovery and experimental use of tetanus and diphtheria antitoxins announced in a special cablegram on December 6, 1890.

Finlay's theory of the relation of mosquitos to the spread of yellow fever, November 24, 1894; confirmation of this theory by the U. S. Army Commission, November 3, 1900.

Relation of mosquitos to the spread of malaria, September 21, 1895.

Roentgen's discovery of the *x*-rays, January 11, 1896, an *x*-ray plate of the hand published February 15, 1896.

Cosmetic employment of paraffin injections, April 13, 1901.

Mme. Curie's discovery of radium, May 3, 1902.

Discovery of the dysentery bacillus as a cause of the summer diarrhea of infants in this country, September 13, 1902.

Wassermann reaction described June 2, 1906.

First report of American cases in which salvarsan was given in syphilis, made by M. S. Kakels, September 24, 1910.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GUNSHOT WOUNDS OF THE CHEST—SIR ROSE BRADFORD'S ADDRESS—HEMOTHORAX, SIMPLE AND INFECTED—MEMORIAL SERVICE FOR LIEUT.-COL. H. B. YATES.

LONDON, Feb. 4, 1916

WE have had a full discussion at the Medical Society of London on "Gunshot Wounds of the Chest." It was opened in a careful paper by Sir John Rose Bradford, who dealt mainly with the subject from the physician's point of view; he was followed by Dr. Morriston Davies with a paper on the surgical treatment, and Capt. H. G. M. Henry, who spoke on the pathology and bacteriology. The discussion was carried on by Col. Hale White, Dr. Murray Leslie, Mr. Cortlandt MacMahon, and Dr. Poynton. Sir J. R. Bradford's opening address dealt with his experience in the base hospitals in France since October, 1914, including many hundreds of cases, not a few of the greatest severity. Many reached the base within two or three days of being wounded, but more did not arrive for a week. A few remained near the front for two or three weeks. Wounds which appear to be confined to the chest wall may include a small entering of the thoracic cavity, and if respiratory symptoms are not well marked the chief danger may be overlooked. Hemoptysis may result from injury to the chest wall, perhaps from bruising of the lung only. Death has followed such injury and no *post mortem* change has been found, thus showing that hemoptysis is not absolute proof of penetration of the lung. Hemothorax also may follow a wound of the thoracic wall without penetration. Pleurisy may be serous or purulent, or again of streptococcal origin. Cases of pneumothorax are not very common, but form a distinct group, having a very large opening; but in some the opening is quite small. In such, situated in the upper chest, a counter-opening is often needed in the lower half. The pleura is generally infected and drainage from the wound imperfect. With perforating wounds of the chest or lung there may be (*a*) hemothorax, (*b*) pneumothorax, (*c*) pneumohemothorax, (*d*) laceration of lung, leading to abscess or gangrene, etc.

Hemothorax may be sterile or infected, the amount of fluid varying from a few ounces to four or five pints. On *post mortem* the parietal pleura is covered to a considerable extent with fibrinous clot, one-eighth inch, or more, thick; the lower and middle lobes of the lung are collapsed and pressed back toward the vertebra or pushed upward to the root of the lung or inward to the pericardium. On the other hand, the upper lobe is greatly distended and pushed against the anterior thoracic wall. The bloody fluid is really defibrinated blood with mostly some exudate from the pleura, so containing many red cells with perhaps lymphocytes, polymorphonuclear leucocytes, endothelial cells, eosinophiles, and myelocytes in varying proportions. Hemothorax at first causes painful or distressed breathing and cough, and in most cases hemoptysis, but this last symptom may be delayed for two or three days, in which case it may be due to bruising or infection of the lung. Dyspnea is urgent at first, but abates in 24 to 48 hours, though as much blood as three pints may be present, if the patient be kept at rest. The temperature at first may be only 101° or 102° Fahr. and soon returns to normal, but sometimes may oscillate between 99° and 103° daily if merely expectant treatment is employed. Two groups of these cases are met with, viz.: (1) where paracentesis is followed by immediate fall of temperature and rapid recovery; (2) where the temperature is not lowered until late, though no bacteriological infection is found. It may be two or even three weeks before normal temperature is reached, but no further operation is required. The physical signs are not precisely like those of pleurisy, but, of course, there is a good deal of similarity. Sir R. Bradford found the most striking fact in cases examined at the front within 24 hours of the injury was the absence of well-marked signs with severity of the symptoms. Displacement of the heart and poor entry of air on the affected side, but not decided dulness of percussion; 24 hours later the case may present the typical signs of extensive hemothorax with perhaps considerable subsidence of urgent symptoms. Bulging of the affected side with scarcely any movement, apex beat displaced somewhat, but not solely, in degree corresponding to the amount of effusion. Vocal fremitus diminished below, increased above the distended lung. Percussion short, dull, high-pitched over the effusion, but well marked above. Auscultation over lower chest gives weakness or even absence of breath sounds; or they may be harsh and bronchophony and pectoriloquy, leading to erroneous diagnosis. The most common mistake is to confuse with pneumonia, as in both there is hurried breathing, pyrexia, and bloody expectoration.

As to treatment, Sir Rose Bradford in the earlier months of the war relied on expectant methods, owing to a supposed risk of secondary hemorrhage, and the cases did fairly well, but were long in regaining health. Serious collapse of the lung also ensued rather often, but not secondary hemorrhage. Aspiration with replacement by oxygen to avoid too sudden expansion was employed with two distinct benefits: the lung rapidly reexpands and the pyrexia subsides, patient quickly recovering and his invalidism being measured by weeks rather than months. The replacement by oxygen is most valuable; it enables all the fluid to be removed at once and a second operation is scarcely ever needed, though it often is with simple paracentesis.

Infected cases of hemothorax were about 25 per cent. of those seen at the front, and in 20 per cent. of them the infection was derived from the lung, *i.e.* the fluid contained lung organisms. The clinical picture may differ little if at all from non-infected cases, so that diagnosis cannot be certain except by exploratory puncture. But usually pyrexia, dyspnea, and icterus are well marked and the patient is very ill, though sometimes at first this is not obvious and later urgent symptoms suddenly set in. Other cases are associated with anaerobic infection and may be mistaken for pneumothorax; others again of a severe type are associated with streptococci and may be complicated with pleurisy, pneumonia, or pericarditis. Mortality in septic cases is reduced by recognition of the presence of the organisms and prompt drainage.

Surgeon-General Carleton Jones, honorable surgeon to H. R. the Duke of Connaught, governor-general of Canada, represented his Royal Highness at the memorial service for Lieut.-Col. H. B. Yates at the Church of St. John of Jerusalem in England, of which order Colonel Yates was a Knight of Grace.

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 17, 1916.

1. Skin Reactions by Various Bacterial Proteids in Certain Vasomotor Disturbances of the Upper Air Passages. J. L. Goodale.
2. Gunshot Fractures of the Long Bones. Channing C. Simmons.
3. Abnormalities of the Heart in Infectious Diseases. Clifford S. Chapin.
4. The Heart in Pregnancy. Erwin H. Taylor.
5. Heart Disease in Pregnancy and Labor. James Lincoln Huntington.

1. Skin Reactions by Various Bacterial Proteids in Certain Vasomotor Disturbances of the Upper Air Passages.—J. L. Goodale states that it has been shown for years that an individual sensitized to a given protein may exhibit a characteristic reaction, if the protein be brought into contact with the mucous membranes, or introduced below the epidermis in sufficient concentration in a soluble form. While two clinical groups are recognized, the seasonal, as illustrated by hay fever and hay asthma, and the perennial, producing vasomotor disturbances at any time of the year, he desires to call attention to a third group of vasomotor disturbances, which may be termed infections, because their appearance seems to stand in relation to bacterial invasion of the upper air passages. In individuals of this class an immediate and characteristic reaction is elicited by the application to a scratch of the skin of *Staphylococcus pyogenes albus*, *aureus*, *citreus*, and *Micrococcus tetragenus;* also by an unidentified bacillus having some of the characteristics of Friedlander's bacillus. The reactions to these organisms are not equal in all individuals. Certain cases of vasomotor disturbance clinically indistinguishable from the above showed no reaction to the organisms tested, and individuals without vasomotor symptoms developed no reaction in any case. It remains to be shown whether the vasomotor symptoms are due in these patients to an infection of the mucous membranes by the organism which produced the reaction on the skin. It is conceivable that the patients may have been sensitized to the special organism by a previous infection of the skin or mucous membranes. Further study is necessary, according to Goodale, and examinations should be made before, during, and after an attack with the organism suspected, to observe whether a variation exists in the intensity of the skin reaction at different periods parallel with the degree of immunity of the individual.

3. Abnormalities of the Heart in Infectious Diseases.—Clifford S. Chapin considers that in studying the state of the circulation in febrile conditions it is necessary to bear in mind three facts, viz., that the heart's action is modified by increase in temperature, that the heart reacts differently according to the toxins produced by the agent causing the fever, and that the heart itself may be the seat of the conditions. Recent researches demonstrate the invasion of the heart by the specific organism in rheumatic fever, pneumonia, typhoid fever, diphtheria, erysipelas, influenza, and septic infections. The results are shown in the occurrence of endocarditis, myocarditis, and pericarditis. The symptoms which follow are not always distinctive, and may resemble the symptoms induced in the heart by febrile conditions alone, or by toxins produced from other sources in the body. Writers usually describe separately the symptoms of endocarditis, myocarditis, and pericarditis; in reality the symptoms described are not manifestations of endocarditis and pericarditis, but are the signs of a myocardial affection. Endocarditis and pericarditis, both acute and chronic, bulk so largely in medical literature because an abnormal sound invariably impresses the mind to a greater extent than an abnormal sign perceptible by the other senses, and the easy recognition of the valvular murmur, and the friction sound has led to the associated symptoms being ascribed to the same lesion. The simple febrile heart shows little change at first beyond having its rate abnormally accelerated by exertion. The sounds are clear and distinct, and there is no increase in size; but with long continuation of fever, a certain amount of dilation may arise, usually on the right side of the heart. In myocarditis, the most characteristic evidence of damage done to the heart muscle is the irregularity of pulse intermission, due to dropping out of ventricular systoles, because of lesions in the auriculo-ventricular bundle. Changes are also found in the size of the heart. Passing on to endocarditis, the only direct evidence of an acute condition is the presence of murmurs at one or other orifice of the heart. Two murmurs are to be considered, viz., a mitral systolic murmur and an aortic diastolic. It is not always easy to tell whether the appearance of a murmur during a febrile attack is due to involvement of the mitral valve in an endocarditic process, or to the relaxation of the muscle supporting the orifice. A diastolic aortic murmur is, as a rule, diagnostic of the involvement of the aortic valve in some destructive process, and, at first, is so faint that the sound does not end with sufficient abruptness. Later this changes to a short whiff at the end of the second sound. Murmurs due to endocarditis are not definitely recognized until after the subsidence of the fever, when the sclerosis sets in. The presence of a musical murmur may be assumed, in acute cases, to be due to a vegetation. In pericarditis dependence has to be placed upon the to-and-fro murmur produced by the movements of the heart, and it is often accidentally discovered. This condition may be caused by chronic complaints, such as diabetes and Bright's disease, as well as from the infectious conditions. Very little embarrassment is felt from pericardial effusion, due to the fact that the normal pericardium is a more or less inelastic bag, and, with the inflammatory invasion, becomes distensible and able to accommodate an enormous amount of fluid with little inconvenience to the heart. The most formidable conditions are met with in relation of the heart in rheumatic fever. The chief lesions in man are: acute dilatation, endocarditis, and pericarditis. As the damage done is a complex one, the term "carditis" is applied to this condition. The most serious form of heart disease in rheumatism, next to malignant endocarditis, is pericarditis—not particularly on account of its intrinsic harmfulness, but on account of the severe type of infection which accompanies it, and the involvement of the myocardium. It is more frequent in childhood than in adult life, and the most characteristic examples occur in the first week of the attack, but there is no period when it may not occur. Attacks of rheumatic fever may complete their course with no heart complication, or the heart may be affected and give no positive sign. It may be only after months or years that any indication will present itself of heart involvement, which the symptoms of the subsequent process of sclerosis may have revealed. While a heart complication in pneumonia may reveal itself by sudden collapse of the patient there are two conditions which are of grave import in this disease—the occurrence of an occasional irregularity before the crisis, and a pulse rate of over 140 per minute. However, neither of these is a necessarily fatal symptom. It is in diphtheria that Chapin considers the heart sequellæ to be most varied and dangerous. The conclusions he draws with reference to this condition are of great importance: the frequency of heart murmurs and irregularity of the pulse;

moderate disturbance of the heart, while severe complications are infrequent. Frequent examinations of the heart are necessary because of the marked changes in rhythm from one hour to the next. Gallop rhythm, late vomiting, and epigastric pain and tenderness are important as danger signals of severe heart complications. Antitoxin does not affect the heart unfavorably, and its early use prevents the appearance of grave heart lesions. Bronchopneumonia is a more frequent fatal complication than heart disease; sudden death from heart condition is very rare when patients are kept in bed for a proper period. Prolonged rest is necessary in all cases, but should be governed by the stage of the illness and the general condition. Heart murmurs and irregularity are of long duration in many cases and should be watched for some time after convalescence has set in. Endocarditis and pericarditis are special complications in scarlet fever, and are covered by the septic and simple or toxic types. The heart cannot be said to show any changes peculiar to typhoid fever. Dilatation may be present, but is not often marked, and is more common on the left side. In acute diseases due to some infective agent, the prognosis depends upon the nature and intensity of the infection, and judgment must be suspended until the cessation of the active lesions in heart conditions. If the heart has resumed its normal aspect, size, rate, and rhythm, the damage has been slight and the outlook hopeful. If some evidence of damage persists, it must be watched to prevent the presence of low inflammatory conditions which lead to the formation of fibrous changes. When the real nature of the trouble is appreciated it will be realized how powerless is the effort to modify the disease process.

New York Medical Journal.

February 19, 1916.

1. Shoes, Physiological and Therapeutic. Dexter D. Ashley.
2. Pedology and Its Possibilities. E. Bosworth McCready.
3. Sir Kenelm Digby and His Powder of Sympathy. William Renwick Riddell.
4. An Apparatus for the Administration of Gas-Oxygen. Will Walter.
5. Diathermia; a Physiological Specific. Albert C. Geyser.
6. The Clinical Significance of a Gastric Analysis. Louis Winfield Kohn.
7. Autolysin. S. P. Beebe.

5. Diathermia; a Physiological Specific. — Albert C. Geyser defines a specific in medicine as an agent which has a selective, curative influence on an individual disease. Every attempt at repair or recovery is essentially a physiological response on the part of the uninjured cells. This response or inflammation may embrace many phenomena, but the essential one is heat. With heat all of the various manifestations may be present, while without it not one can manifest itself. Heat must not be applied from the outside, as that would be heating the tissues by contact and conduction of radiant or thermic energy. What is needed is to have a physiological specific that will cause a functioning of all the deeper-lying tissue, which will express itself in the production of heat, and this heat must originate from within and be conducted outward, and not applied externally. It must be the result of cellular activity responding to a nonpathological stimulus. Such an agent is to be found in the high-frequency current, with its millions of alternations a second when applied for diathermic purposes.

6. The Clinical Significance of a Gastric Analysis.— Louis Winfield Kohn calls attention to the fact that in affections of the gastrointestinal tract every effort should be made to first determine the immediate causes of the symptoms and then afterward to seek the true primary cause. A means which suggests itself for this purpose is gastric analysis, which consists of a macroscopical, microscopical, and chemical examination of the contents of the stomach recovered by the stomach tube following a period of fasting as well as after a test meal. He refers especially to the fasting stomach test, which consists of an examination of the stomach contents of a patient who has denied himself or herself any food or nourishment for a period of ten or twelve hours. By this method motor disturbance can be recognized as directly or indirectly concerned with gastrointestinal affections. As ordinarily performed, the patient is instructed to eat a small plate of rice cooked in milk (about six tablespoonfuls) at 9.30 P.M., and then to avoid food or drink until 9.30 A.M. the next day, at which time the stomach contents are drawn off through a stomach tube and examined macroscopically, microscopically, and chemically. Macroscopically, the residuum is examined for color, consistency, reaction, odor, and amount. In true higher grades of motor disturbance, such as pyloric obstruction, malignancy, and hourglass contractions, etc., a larger precipitate is found containing food particles taken into the stomach several days before the test is made. Microscopically, red and white blood cells, epithelial cells, free nuclei, salivary corpuscles, and mucus may be found in proportion to the condition causing the trouble and indicative of it. The chemical test is not so important, but, in addition to the foregoing tests, assures a more correct diagnosis.

Journal of the American Medical Association.

February 19, 1916.

1. Development of a Fifth Year in Medical Education in the United States. Samuel W. Lambert.
2. Medical Education in the United States. J. M. Baldy.
3. Cancer of the Breast: Figures Which Show that Education Can Increase the Number of Cures. Joseph C. Bloodgood.
4. A Study of the Bacteriology of Chronic Prostatitis and Spermacocystitis, with Special Reference to Their Relationship to Arthritis. Harry B. Culver.
5. Thromboplastin (Tissue Extract) as a Hemostatic. John J. Cronin.
6. Epidemic Cerebrospinal Meningitis Developing Twenty-Two Hours After Abdominal Operation: Report of a Case. Lewis M. Gaines.
7. Experiences with the Kiutsi-Malone Urinary Test for Pregnancy. Irving S. Cutter and Max Morse.
8. Rôle of the Lymphatics in Ascending Renal Infection: Preliminary Report. Daniel S. Eisendrath and Jacob V. Kahn.
9. Syphilis of the Stomach. George M. Niles.
10. Radium in the Treatment of Synovial Lesions of the Skin Richard L. Sutton.
11. Fibrolipoma of the Larynx. Gordon B. New.
12. Hemothorax Due to Rupture of Aneurysm of Aorta: Report of a Case with Recovery, Second Rupture Causing Death. Edward H. Goodman and Richard J. Miller.
13. Peritonitis Following Acute Ovaritis of Anginal Origin Russell M. Wilder.

5. Thromboplastin (Tissue Extract) as a Hemostatic. —John J. Cronin gives an account of the method employed for the removal of tonsils and adenoids at the five clinics under the supervision of the Bureau of Child Hygiene, Division of Children's Clinics, New York City. The clinics have been carried on since March, 1912. For about six months horse serum was employed to prevent hemorrhage, with fair success. In October, 1914, the writer, with T. Joseph Barry devised a combined operation, which while simpler than the former method of procedure, did not overcome the capillary oozing from the nasopharynx. About this time the writer's attention was called to an article by Alfred F. Hess with reference to thromboplastin as a hemostatic, and he immediately began the use of thromboplastin after the removal of the tonsils and adenoids, by applying it to the denuded surfaces. The results were striking. The patients showed only a little bloody saliva after being put to bed, healing was expedited, and many patients were entirely well at the end of four days. Thromboplastin was introduced into all the department of health nose and throat clinics with remarkably good results. The technique of the preparation of thromboplastin is as follows: Fresh ox brains are obtained from the slaughter-house, stripped of their membranes, washed in running water, and weighed. They are then

passed through a meat chopping machine three times, and an equal amount of normal salt solution is added. This suspension is allowed to remain in the refrigerator for forty-eight hours, then it is twice pressed through cheese-cloth. This extract is diluted with one-half its quantity of salt solution. Tricresol is then added in proper proportion so that the finished preparation contains 6.3 per cent. The fluid remains sterile, and maintains its hemostatic potency for months.

6. Epidemic Cerebrospinal Meningitis Developing Twenty-Two Hours After Abdominal Operation.—Lewis M. Gaines reports a case seen in consultation with Charles M. Remsen. The patient, a woman of 30, had been operated upon by Remsen for an abdominal condition on the previous day. On the morning of the operation the patient appeared normal, having no clinical signs. In the evening, hours after the operation, there was some vomiting, but general condition was satisfactory. The following day, after a restless night, a general epileptiform convulsion occurred lasting ten minutes. There were no prodromes, and the seizure appeared out of a clear sky. This was followed by a second convulsion, at 12.40 P.M. Coma had existed from the first convulsion. There was at this time no signs of meningitis, except that the pulse showed startling changes and the respiration became very irregular. Lumbar puncture was done the day following the operation, and 10 c.c. of a slightly turbid fluid withdrawn, which showed a small number of extracellular meningococci. Thirty c.c. antimeningococcic serum were at once administered intradurally. This treatment was continued and about a month later the patient was able to walk with assistance, speech was normal, and memory regained. Except for slight emotional disturbances, there were no symptoms. Gaines points out the following interesting features of this case: (1) The occurrence of cerebrospinal meningitis as an operative complication. (2) The entire absence of the physical signs of meningitis for twenty-four hours after the initial convulsion. There were no Kernig's sign, no ocular manifestations, no prodromal headache, no disturbances of temperature until eight hours after the initial convulsion, and none of pulse or respiration until twelve hours after the initial convulsion. The only symptoms for a number of hours were convulsions, muscular twitchings, and coma. Diagnosis was made as the result of lumbar puncture. (3) The probability that meningococci were present in the purulent material in the nasal passages, and the interesting and unsolvable problem as to whether or not the anesthetic had anything to do with the passage of organisms into the meninges (mechanical factors, lowered resistance). (4) The nonunion of the operative wound until after the complete subsidence of the meningitis. (5) The remarkable curative effect of the Flexner serum given persistently, in a case in which, for a number of hours prior to the first dose, the patient appeared moribund.

9. Syphilis of the Stomach.—George M. Niles gives a report of a case in a young man, aged 28, referred to him for regurgitation of gas, nausea, frequent vomiting, distress after eating, a continuous sensation of weight in the epigastrium, and an excruciating gastralgia. These symptoms had begun six months previously, and the past history proved uneventful with one exception, a small sore on the penis when the patient was 21 years of age. This sore, having readily healed under local application, was almost forgotten. The patient was somewhat cachectic in appearance, was losing in weight, and there was fear of cancer of the stomach. Physical examination was negative, gastric analysis showed absence of both free and combined hydrochloric acid, while a trace of lactic acid was present. A roentgenogram disclosed a distorted stomach evidently due to intragastric new growth. Wassermann test was 4+. The patient was put on antisyphilitic treatment, improvement began, and at present a report is given of comfortable and normal digestion. The interesting feature of this case, according to the writer, was the difficulty in differentiating between syphilis of the stomach and cancer of the stomach.

The Lancet.

February 5, 1916.

1. Investigations on Clinical Thermometry: Continuous and Quasicontinuous Temperature Records in Man and Animals in Health and Disease. G. Sims Woodhead and P. C. Varrier-Jones.
2. Preliminary Note on the Use of Gynocardates Orally and Subcutaneously in Leprosy. Leonard Rogers.
3. Two Cases of Fourth Disease with Relapse. Oswald J W. Adamson.
4. Abscess of the Myocardium Resulting in Aortic Leakage into the Right Heart. R. D. Rudolf and V. H. K. Moorhouse.
5. The Examination of the Soldier's Heart. O. Leyton.
6. A New Combined Physical Treatment for Wounded and Disabled Soldiers. (Heat, Massage, Electricity, Movements.) R. Fortescue Fox and J. Campbell McClure.

2. Preliminary Note on the Use of Gynocardates Orally and Subcutaneously in Leprosy.—Leonard Rogers states that chaulmoogra oil has maintained its reputation as the best known remedy for leprosy, although it is so nauseating and interferes with digestion so much that only rarely can it be borne in sufficient doses to be more than a palliative in this obstinate disease. On this account he has used for a number of years and recommends gynocardic acid (also known as chaulmoogric acid, and believed by many to be the active principle of the oil) in place of chaulmoogra oil, which contains a large proportion of almost useless palmitic acid. He gives a report of three patients who, among many, have been able to tolerate large quantities of gynocardic acid by mouth; and in whom was shown remarkable improvement in the course of a year or two. For hypodermic injection the sodium and potassium salts were used, as gynocardic acid was unsuitable on account of its insolubility. While the salts dissolved readily in water, the potassium salt proved to be the more readily dissolvable, but not so convenient, due to its buttery consistence. The gynocardates obtained from the various sources mentioned all gave the typical reaction of chaulmoogra oil with sulphuric acid—namely, a brown color changing to green. The best results were obtained in the nerve cases, one of which improved rapidly under large doses of gynocardic acid internally, and injections of gynocardates of sodium twice a week in from one to two grain doses. This treatment was followed by marked diminution of the anesthesia, and return of heat and cold and tactile sensation, as well as some gain in muscular power within two months, although his condition had been practically stationary for several months previous. In several other cases ulcers have healed, although in one case some new ones developed on the finger during the injections—possibly a local reaction. The considerable degree of success reported after two years' intramuscular injections of the oil makes the outlook hopeful that the less painful injections of the gynocardates may ultimately prove to be a more rapid, effective, and convenient method of treating this most distressing disease.

3. Two Cases of Fourth Disease with Relapse.—Oswald J. W. Adamson reports two cases, both military men, who at about the same time—being in the same unit, but living in different huts—were admitted to the isolation ward of the Lydd Military Hospital suffering from a condition later diagnosed as fourth disease. These cases both experienced a relapse from two to three weeks after the initial attack. In considering these cases the question arises of a satisfactory diag-

nosis between scarlet fever, German measles, and fourth disease. Against scarlet fever may be mentioned the long invasion period (four days instead of one), the fact that the pulse was in proportion to the temperature,—in scarlet fever the pulse is disproportionately high,—the involvement of the inguinal group in the glandular enlargement, the absence of circumoral pallor, albuminuria, and vomiting, and the presence of conjunctivitis in one case, the small degree of faucial inflammation, and the occurrence of pleurodynia as a premonitory symptom. Against German measles may be mentioned the absence of enlargement of the posterior cervical glands, the severity of the malaise, the headache and pains, the degree of desquamation (this being rarely present in appreciable degree in German measules), the seasonal incidence, the strawberry tongue in one case, and the fact that neither case had a rash such as one usually meets with in German measles. Adamson points out the peculiarity of these two cases, which, according to his experience, does not occur either in scarlet fever, German measles, or fourth disease—the relapse and recrudescence of fever. His explanation of these relapses is that both cases were exposed to infection at the same (unknown) time. Both entered the invasion period about the same time, but the first patient showed premonitory symptoms (for which he was admitted to the hospital), whereas the second did not. Both patients had two relapses, the second coming at the same time in both cases, while the first did not. As there was no scarlet fever or German measles in camp, the question of one or both of these relapses being some other disease hardly arises.

5. The Examination of the Soldier's Heart.—O Leyton records some observations based upon a method of investigation which does not appear to be generally recognized, or, if recognized in the past, may have been believed to possess such limited application as to have fallen into disuse. It may prove of great value in determining the extent of disease of the myocardium in cases of "soldier's heart," in assisting in prognosis, and in the detection of malingering. The normal ratio of intensities of the first sound at the apex to the second sound at the base is approximately 2 to 1. Experience has shown that this is altered in myocardial disease. In quite a number of cases, the ratio of intensity is altered before there is any tendency toward alteration in the strength of the beats of the heart. For this purpose the Bock stethoscope is the most practical one. The principle upon which this stethoscope acts depends upon diminishing the size of a hole in a thick diaphragm through which the sound must pass from the chest to the ears of the observer; the size of the hole is altered by screwing a cone-shaped piece of metal into it. The stethoscope is arranged to read 100 when the hole is completely closed, the face of the stethoscope is divided into 100 divisions; in order to use it the pointer is placed at 10, the stethoscope is appled over the heart, and the pointer slowly turned clockwise until the first sound can no longer be heard. The average position, when examining a normal individual, is about 80. The reading is made several times and an average taken. The stethoscope is then placed over the aortic site, and is again opened to 10, then gradually closed until the second sound cannot be heard. In the average individual this will occur about 45, and the ratio of intensity may be represented by 80 to 45. The instrument cannot be used when there are cardiac murmurs. The cases presenting the symptoms of "soldier's heart" following explosions have not shown any evidence of disease of the heart, and they have been considered of nervous origin, as the ratio of the sounds has always been 2:1, *i.e.* normal.

British Medical Journal.

February 5, 1916.

1. Antenatal Clinics and Prematernity Practice at the Edinburgh Royal Maternity Hospital in the Years 1909-1915. J. W. Ballantyne.
2. On the Immediate Treatment of Severe Post-Partum Hemorrhage. R. K. Howat.
3. Caesarean Section in a Pitman's Cottage. R. Gordon Bell.
4. The Influence of Syphilis on the Chances of Progeny. N. Bishop Harman.
5. A Splint for Compound Fracture of the Ankle. M. Sinclair.
6. Bronchopneumonia with Secondary Hemorrhagic Meningitis and Recovery. A. Geoffrey Sher.
7. Traumatic Rupture of the Spleen: Splenectomy: Recovery. Walter H. Cam.
8. Traumatic Rupture of Spleen. With a Few Notes on the Blood. E. H. Jones.
9. A Case of Probable Spontaneous Rupture of the Spleen. W. B. Ogilvie.
10. Ichthyol in Erysipelas. Helen Sexton.
11. Relapsing Beriberi. J. C. M. Walter.

2. On the Immediate Treatment of Severe Post-Partum Hemorrhage.—R. K. Howat classes cases of post-partum hemorrhage into three groups, according to their causes, namely: 1. Laceration of the parturient canal. 2. Retention of the placenta (partial or complete) within the uterus. 3. Inadequate shrinkage of the uterus. These causes in turn indicate the appropriate lines of treatment which may have three successive objects: 1. The immediate arrest of the hemorrhage. 2. The immediately succeeding maintenance of this arrest. 3. The permanent closure of the bleeding vessels. While the general principles of treatment are the same for all cases, the particular means employed for the first and second objects may depend to some extent on the severity of the hemorrhage in the particular case, and the same means can promote both objects. The third object is attained by purely natural means, the formation and growth of new tissue. The first two causes can be handled without great difficulty, the first requiring surgical skill, and the second a careful inspection of the expelled placenta and palpation of the uterine interior. It is the post-partum hemorrhage from uterine flaccidity after expulsion of the placenta which presents the gravest danger. Here is no dramatic violence compelling attention as in the case of surface wounds. There is no pain to enforce complaint, as in ruptured tubal pregnancy, and this hemorrhage, occurring under the bedclothes, is unseen. The patient is at first only aware of a warm discharge, which she has no reason to suppose is not quite natural. She soon feels faint, and almost immediately is beyond the power of speech, perhaps dying. A situation like this demands a simple, direct, efficacious, and easily applied line of treatment which the physician should have thoroughly in hand. Since the majority of confinements take place in modest homes, where assistance is relatively slight, the essentials of treatment must be independent of all but the most primitive accessories. Howat offers the following procedure. The patient's appearance suggests the condition present, and the blood present clinches the diagnosis. With one hand the abdominal aorta is compressed, requiring about three seconds. Meanwhile the nurse is called to the bed. The other hand separates the thighs and is passed into the vagina. The cervix is felt and grasped with moderate firmness in order to steady it and so help the other hand in its next move. Then the abdominal hand, leaving the aorta for the moment, "gathers" the relaxed and blood-filled uterus in its hollow, squeezes it, and presses it down in an anteflexed position against the vaginal hand, which meanwhile has been shut and moved into the anterior vaginal fornix. The anterior and posterior uterine walls are now pressed against each other by the two hands. Pressure can also be made at the same time on the aorta by the back of the wrist of the abdominal hand. While this is being done, a pillow is placed between the

patient's head and the top of the bed. As soon as the uterus is grasped between the hands, the nurse lifts the patient's pelvis to an angle of 60 or 70 degrees with the bed—the patient is put in a low Trendelenburg position. Pillows, inverted chairs, or a towel or sheet hung from the bed-top can maintain this position and the nurse is relieved. No other local treatment is necessary. If low blood-pressure be present, the patient's arms and legs are raised to the vertical and held there by assistants. When the uterus is felt to be firmly contracted the vaginal hand is withdrawn and a wet pad is placed to the vulva. As soon as the general conditions are satisfactory, the pelvis is lowered to an angle of 30 degrees and the abdominal hand removed. A binder is tightly applied, and the patient is kept in this elevated position as long as desirable—never less than several hours. Whatever additional measures may be thought necessary are applied and suitable arrangements made for the patient's general comfort.

4. The Influence of Syphilis on the Chances of Progeny.—N. Bishop Harman in investigating the case-papers of over a thousand children whose blindness was the effect of parental syphilis obtained the family history of 150 families—that is, the history of the mother with relation to the number of her pregnancies and the results of them. In each of these families one or more of the children were undoubted sufferers from inherited syphilis. Besides the bone or joint conditions, Hutchinson's teeth were present in no less than 68.5 per cent. in the blind child of the family. Among eleven families to which only one child was born there were four illegitimate unions and the progeny therefrom; all these eleven were blind children and alive at the time of inquiry. Harman says that the history of these 150 families set out by themselves would provide a characteristic picture; and as compared with the history of 150 healthy families, the contrast is extreme. The comparison was made and the difference between the results of the fertilization of these two sets of women is remarkable; 150 syphilitic mothers had no fewer than 1,001 pregnancies, but of these only 390 resulted in presumably healthy children. On the other hand, 150 healthy mothers had 826 pregnancies, from which resulted 654 healthy children. The syphilitic mothers had about 17 per cent. more pregnancies than the healthy mothers. It is unnecessary to point the moral, the author says, for the figures speak sufficiently of the influence of parental syphilis on the chances of healthy progeny.

11. Relapsing Beriberi.—J. C. McWalter reports the case of a patient, a soldier, about 28 years old, on sick leave. He had contracted beriberi in India. His diet was the regulation army fare—meat, vegetables, milk, bread and butter, tea, and occasionally a bit of rice or sago pudding, but at no time in his life was he ever on an exclusive or continuous rice diet. This rather opposes the accepted view that beriberi is due to lack of vitamines produced through the consumption of quantities of polished rice, which is deficient in vitamines. He had exhibited the usual symptoms of the disease—multiple peripheral neuritis, considerable weakness, cardiac dilatation, and edema of the legs, etc. Under treatment for some months in bed, he improved, but signs of cardiac dilatation with a definite bruit remained. During the periods of remission no physical sign of the disease could be seen, except the evidence of cardiac dilatation. The usual cardiac tonics, as iron and digitalis, apparently afforded some relief to the heart trouble, but nothing that was given, the author said, seemed to have any effect specifically on the beriberi.

Berliner klinische Wochenschrift.

January 10, 1916.

Treatment of Infected Bone and Joint Wounds.—Körte states that these wounds give trouble enough even under the most favorable conditions; since there must be prolonged suppuration and fever, why does infection so frequently occur? Dry, warm summer weather is no preventive, although results are better under favorable climatic conditions. Prolonged warfare with its hardships and lowered resistance favors infections, yet this, too, occurs among young and fresh recruits. Trench fighting and lack of care of the body decidedly facilitate infection. Since the bullet itself is sterile it has to shove dirt, etc., into the body to produce infection. In bullet wounds of bone, the blood shed about the bone fragments supplies a superior culture bed for pathogenic bacteria. Hence whenever the entrance and exit wounds are small and slot-like they should be sealed up in the hope of excluding microorganisms. Of other factors in infection may be mentioned prolonged lying on moist, swampy soil before the dressings can be made; lying on straw after imperfect first aid dressing; improper splinting, or other fixation, and premature transportation, and without proper supporting dressings. On the Eastern battle line, in Poland and Litau, facilities for the first sojourn are very poor and it often happens that the wounded must be bedded on dirty straw for days at a time; *i.e.*, the straw is at first clean, but soon becomes contaminated. This drawback necessitates great care in dressing the wounds and changing the dressings of discharging wounds. In the latter the change must be made promptly. Adhesive dressings are to be avoided in favor of plain gauze strips carefully wound. There must be fixation of any limb which is the seat of a bullet fracture. In regard to prevention and treatment the author in addition to incision and drainage of shrapnel wounds recommends a mixture of phenol and camphor, 1 to 2, in small quantities, talcum containing 10 per cent. calcium chloride and equal parts Peru balsam and spirits. The attempted disinfection of wounds by the use of saline infusion, glucose, hypochlorate of sodium, magnesium chloride, etc., as practiced by English and French surgeons, is mentioned without much comment.

Some Indications for Venesection.—Theilhaber mentions the recent revival of venesection in medical literature, and cites a recently published article on this subject by Engelhorn (he is silent concerning the recent monograph by Heinrich Stern of New York, which has been published in both German and English). The abrogation of this practice conforms closely to the latter half of the nineteenth century, but the rejuvenescence now in evidence appears to show that this negative period represents a gain only through the breaking up of the routine tendency to bleed. The new indications correspond largely to the best of the old. Engelhorn has bled for the climacteric and for dysmenorrhea, and these conditions demand a series of bleedings, or, in other words, phlebotomy is raised to the dignity of a system of treatment. The author finds the letting of a little blood a good remedy for nervous headache in which we may assume the existence of a congestion of some of the sensory nerves. Naturally anemia is a contraindication. Of great interest is the suggestion to bleed those who have recently recovered from cancer operations. Animal experiments show that bleeding causes a marked stimulation of the bloodmaking organs. This was recommended a century ago by Bayle. The author would bleed every six months and combine the resource with the usual physical remedies. There

is reason to believe that the newly formed blood antagonizes the reappearance of the cancer.

Muenchener medizinische Wochenschrift.

January 11, 1916.

On the Fate and the Action of Hot and Cold Drinks in the Stomach.—Egan states the old experience that cold drinks on an empty stomach may cause unpleasant sensations in individuals with affections of the stomach, liver, and gall ducts. Some patients may complain of pain, although others with the same ailments experience nothing unpleasant. In fistula cases whether hot or cold water is swallowed the temperature is said to be soon equalized. The claim has also been made that very cold water causes reflex closure of the pylorus, thus preventing chilling of the entire intestine; but this has not been borne out by animal experiment. The unsatisfactory state of our knowledge of the subject has influenced the writer to study it afresh, with radiographic control. A contrast drink consisting of a barium sulphate suspension in milk and starch, which is unaltered by temperature changes, was employed for the purpose. The extremes used were —2° C. and 55°-57° C. In no case was the temperature a source of harm. For sufficient reasons the fluid was introduced by the duodenal tube, instead of by swallowing. It was possible by this method to withdraw the fluid at any time and substitute another. The amount introduced was invariably 100 c.c. All sorts of clinical material was utilized—young, healthy soldiers and the usual run of walking patients. The olive tip of the duodenal sound appeared in the radiogram, along with the contrast fluid, which was injected through the duodenal sound. After sufficient observation the fluid was siphoned out and the tube withdrawn. The summation of the work and results is as follows: the velocity with which drinks, shortly after their arrival in the completely fasting stomach, are again expelled depends wholly upon the individual kind of initial evacuation possessed by the stomach in question. This is not at all influenced by temperature differences, however notable. Water of the temperature of 0° C. as well as of 57° C. leaves the stomach at the same time. There is no activity on the part of the stomach in moderating the temperature. Again, in both the healthy and those affected with gastric disturbances there are those whose reaction to warm water differs from that to cold water. The latter is seen to cause stomach contractions of deep character, while warm water elicits only a superficial wave-motion. Such cases represent a minority, but are constant in their behavior. No rationale could be made to account for the two types, but the knowledge acquired will be of service in accounting for certain chemical phenomena.

Notable Cases Seen in Pediatric Practice.—Ochsenius, a pediatrist of Chemnitz, states some cases of unusual interest seen by him in the past five years. The first was a case of generalized vaccina in a rachitic child of two years. The four inoculation pustules pursued a normal course, but after vaccination, there was fever and new pustules appeared over most of the surface, with four pustules on the tongue, two of which occupied the tip. The organ became greatly swollen, so that for several days the child lived on liquid nourishment. The author can find no mention in recent classic works of vaccina of the tongue. Another case was one of measles occurring in a six-year-old boy. Not long before the outbreak of the disease, a brother had slapped his face so hard that the print of the hand remained on the surface. When the rash appeared soon afterward it was partly manifested by an area which corresponded exactly to the palm and fingers of the offending hand. The phenomenon was only an illustration of a general law that a measles eruption is often strongly influenced by mechanical factors.

Deutsche medizinische Wochenschrift.

January 6, 1916.

Etiology of Weil's Disease.—Hübener and Reiter contribute the sequel to a paper published on this subject last fall. In the meantime their original findings have been confirmed by Uhlenhuth and Fromme. As it now stands the disease can be transmitted at will to guinea-pigs (the question is not yet settled for rabbits), while mice and rats are refractory; the virus is intensified by passage and the urine is rendered infectious; animals with the disease do not infect one another spontaneously; relapses are probably not infectious; atoxyl and salvarsan have practically no power over the disease; immune bodies are formed during convalescence. The present paper, which is brief, deals with the microorganism of the disease, first described by the authors in September 1, 1915. They have since named it the *Spirocheta nodosa.* Studies of the liver in a disease as characterized by jaundice have, as might have been supposed, proved of the greatest value. Guinea-pigs that have long survived inoculation continue more and more to develop icterus. Smears from the livers of these animals show very delicate spirochetes which stain readily with Giemsa. They show considerable difference in form and grouping, with the nodulation which is commemorated in the name. The nodules appear with especial prominence in a smear stained according to Levaditi, which also shows a coiling of the spirochetes into clumps. The germ has some affinity for the liver cells, and is found only sparsely in the lungs, bones, and spleen. It is present in slight degree in the circulating blood, but hours may be required before a drop of blood will show their presence. The accumulation of the organisms in the liver may be regarded as protective.

Agonal Thrombosis.—Ribbert refers to cardiac thrombosis *in extremis.* He first mentions the so-called postmortem coagulation in the heart and great vessels and the need and methods of distinguishing this clot from a primary cardiac thrombosis. The latter is rounded, circumscribed, adherent to the heart (from which it cannot be detached in mass). The "postmortem" clot is not adherent to the endocardium, save for the trabeculæ and valvular ligaments. The free surfaces of the clot and thrombosis differ notably in appearance. Nevertheless, attention has been recently called to cases in which the free surface could not serve for discrimination. In such cases a diagnosis can be made by tearing apart, for the postmortem clot when torn is tenacious and stringy and yellowish-white. The mystery of coagulation is, of course, bound up in the great individual variations shown in cadavers. In very rare cases the blood is fluid, and as a rule the two forms of the postmortem clot—the red crust and the almost colorless deposit—are present in varying degrees, one kind often greatly predominating. The author now makes an intensive study of the rôle of the red and white cells, platelets, fibrin, etc., in the act of coagulation in connection with the heart and greater vessels and reaches the conclusion that a true postmortem coagulation does not occur, and that what we understand by this term is an intramortem or agonal phenomenon. It is one of the processes of the act of dying. Essentially it lies midway between pure coagulation and thrombosis formation, although it partakes more of the latter than of the former.

Insurance Medicine.

How Shall the Waist Measure Be Taken?—Two measurements taken respectively by two different examiners gave different values on August 4 and August 16. The earlier figure was 110 cm., the later 98 cm. How is this discrepancy to be explained?

The examiner who obtained the larger figure doubtless took a strictly horizontal measurement, which made the tape go around the depressed navel, this depression having been due to accumulated fat. Thereby the tape was made to include the hip bones, so that the figure 110 cm. was obtained. The other examiner, measuring at the level of the lower lumbar vertebra, passed the tape above the navel. It is only in the lean subject that the navel serves as a guide for the waist measure. The tape is passed at the level of the navel in front and lowest lumbar vertebra behind. In the fat applicant the navel is displaced downward, so that two courses are open—either to decline the tape to conform to the navel or measure on the level and include the hip bones.

This question having been referred to the author, he decided that in all cases the tape must rest upon the lower lumbar vertebra, while the two ends must pass directly over the ileum to meet at the navel.

This measurement must be taken during the pause for breath, and the applicant must not attempt to retract his abdomen.

An exception can be made only in a high degree of pendulous abdomen, especially in women. Here, however, special conditions are present which require special mention in the application and cannot be disposed of merely by taking the waist measure. —*Blätter für Vertrauensärzte der Lebensversicherung*, September-October, 1915.

Rara Avis.—Mr. D——. was insured at the age of 43 as a first class risk in all respects. The examiner described him as well-nourished without corpulence. At that period body measurements were not required. The abdomen was described as soft without prominence. The father had died at 38 of "nervous fever," but the mother and several other children were living and well. The applicant had never had but one disease, a "gastric-nervous fever."

Nine years later he made application for more insurance. In the meantime he had become a restaurant keeper. The agent represented him as a risk in no wise inferior to the original status. The medical examiner made a different report. There had been a great increase of girth, which was now 127 cm. (the height was 171 cm.). The chest measure was 109-107 cm. (but 2 cm. expansion). Deep breathing was impossible. Nevertheless the organs appeared to be normal. The simple corpulence had apparently resulted from a greatly increased beer consumption incidental to his occupation. The examiner had scruples about recommending him for increased insurance.

The medical director promptly refused him, stating that it was regrettable that such a risk had obtained insurance in the first place, and that certainly no further risk would be taken with the obese Colossus.

Twenty-seven years have now elapsed. D., who had been living as a successful retired restaurateur, has just died of apoplexy at the age of 79. The family physician reports to the company that for nine years past he had treated the deceased for cardiovascular disease. The patient had also suffered intermittently with digestive disturbances. On the day of his decease he had risen in apparently excellent health and spirits and had eaten his noon meal. Soon after he was stricken with apoplexy to which he succumbed in two hours. —*Blätter für Vertrauensärzte der Lebensversicherung*, September-October, 1915.

"Accident"—Operation for Appendicitis.—An accident policy insured against "bodily injury sustained through accidental means and resulting directly, independently, and exclusively of all other means in death." The assured was operated on for appendicitis, the wound closing in due course. Matters progressed favorably apparently without complication for four or five days, when he had a fit of vomiting, and the wound opened, the assured dying thereafter under an anesthetic while the wound was being closed again. It was held that there could be no recovery for the death.—Stokely v. Fidelity & Casualty Co., Alabama Supreme Court, 69 So. 64.

Mortality of Typhus Fever.—Gottstein marshalls a great body of statistics, old and more recent, on this subject, which should be incidentally of service in showing that the deadliness of the disease is greatly exaggerated in the popular and even medical mind. Only in exceptional cases has the death rate ever reached 50 per cent., and here the material may have been too small for a fair computation, or the milder cases not included. Age incidence is also a factor of great importance, for the death rate, very small in children, increases progressively with age. In the elderly (over 50) it is comparable with that of lobar pneumonia, while in childhood it may be compared in this respect with measles. In troops, at least when not besieged, or exhausted by hardships, the mortality should be in proportion to the age and has been as low as 14 per cent. As a class, however, army mortalities have sometimes been very high, and are ranked as higher than civil mortalities. The death rate in civil hospitals is somewhat below 20. General mortalities involving entire countries have varied greatly—from 6 per cent. (!) to 22.5 per cent.

In attempts to strike an average figure Griesinger reached 15 per cent., while years later Printzing placed it at 10 per cent.

Having made an effort to obtain figures which could be utilized in life insurance calculations, Gottstein admits that these are not worth the time devoted to them. Numbers have been grouped and compared without the least attempt at standardization. With precisely the same material different reporters have sometimes reached quite different conclusions. Virchow's observations on an epidemic in upper Silesia bear out the truth of this argument to a discouraging degree. Worse discord could hardly be imagined. Gottstein nowhere alludes to the great difference between early and late mortalities in the same epidemic, a fact which has been noted in the present European war. The initial mortality has at times been far greater than that of any of the other types, but this does not enter into the statistics.

As matters now stand any man may select his own mortality. We can only discuss from this viewpoint the individual himself. His chance of escaping typhus and of surviving it is in direct proportion to his years, constitution, and social position. —*Blätter für Vertrauensärzte der Lebensversicherung*, September-October, 1915.

Book Reviews.

URGENT SURGERY. By FÉLIX LEJARS, Professor Agrégé à la Faculté de Médicine de Paris; Chirurgien de l'Hôpital Saint-Antoine; Membre de la Société de Chirurgie. Translated from the Seventh French Edition by WILLIAM S. DICKIE, F.R.C.S., Surgeon North Riding Infirmary, Middlesbrough; Consulting Surgeon Eston Hospital, and ERNEST WARD, M.A., M.D., F.R.C.S. Third English impression with 20 full-page plates and 1086 illustrations, of which 729 are drawn by Dr. E. DALEINE and A. LEUBA, and 198 are from original photographs. Volume II, The GENITO-URINARY ORGANS, The RECTUM and ANUS, The STRANGULATED HERNIAS, The EXTREMITIES. Price per volume, cloth, $7.00 net; half morocco, $8.00 net. New York: William Wood & Co., 1915.

A REVIEW of the first volume of this edition, covering the emergency surgery of the head, neck, spine, chest, and abdomen, appeared in the MEDICAL RECORD of May 22, 1915. This second volume covers the emergency surgery of the genito-urinary organs, the rectum and anus, the strangulated herniæ, and the extremities. One who, like the present reviewer, has critically read many books on surgery and waded through the mazes of circumlocution and inconsequential detail so often encountered, cannot fail to be impressed with the clearness and conciseness of diction in Lejars' "Urgent Surgery" and appreciate to the full the author's genius in getting at the crux of the matter and driving home the important points in diagnosis and treatment in the fewest possible words. Diagnosis, differential diagnosis, treatment, often under various assumed conditions and in the presence of various complications, the technique of one or several methods of manipulative or operative treatment—all those and more are covered systematically and well, while the frequent citation of illustrative cases serves to make the subject still more clear and emphasize salient features.

It is hard to single out particular subjects as especially worthy of mention, for there is not an unimportant or uninteresting page in the book. The indications and technique of posterior colpotomy; the handling of urinary extravasation and urinary abscess, traumatic rupture of the urethra, foreign bodies in the urethra and rectum; the various methods employed in the treatment of anorectal imperforation; the proper handling of irreducible or strangulated rectal prolapse, of ischiorectal abscesses, and of an almost endless varety of hernial conditions of urgence; the diagnosis and proper methods of reduction of the various dislocations; the diagnosis and treatment of fractures; the treatment of wounds and ruptures of vessels and tendons—these are but a few of the many subjects of special interest not only to the surgical specialist, but also to the general practitioner, who is often thrown upon his own resources for emergency treatment. The treatment suggested is conservative where conservatism is for the best interests of the patient; but, as is freuently emphasized, delay and half-way measures are not always conservative and where a situation demands radical or even bold surgery such measures are advised.

While this volume covers the emergency surgery of the regions enumerated in the transcription of the title page, the two volumes together constitute the most comprehensive and practical exposition of this branch of surgery in any language. This fact is so well recognized that the work has been translated into at least seven other languages and has long been regarded as a classic. With this revision the work is brought up to date in every way, and with the truly remarkable series of illustrations and plates can hardly fail of securing still greater popularity; for we feel that the man who is entirely conversant with its teachings and who possesses the requisite mechancal skill should be fully prepared to meet any surgical emergency.

DISEASES OF THE SKIN. By HENRY H. HAZEN, M.D., A.B., Professor of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in the Medical Department of Howard University. St. Louis: C. V. Mosby Company, 1915.

THE author has attempted to write a book which, on the one hand is not so voluminous that it is hard for the inexperienced general reader to grasp the essential facts, and on the other hand is not merely an exaggerated quiz compend. He has omitted a discussion of the very rare diseases as a rule, but has described the common ones quite fully and has paid especial attention to the histological pathology of many of the common dermatoses. Illustrations are very numerous and consist chiefly of photographs of cases seen in the author's clinic. Many of the illustrations are microphotographs which show pathological conditions. The work is exceedingly well written and will prove a valuable aid to the general practitioner.

VIEWS ON SOME SOCIAL SUBJECTS. By SIR DYCE DUCKWORTH, Bt., M.D., LL.D.; Fellow and Treasurer of the Royal College of Physicians; Consulting Physician to St. Bartholomew's Hospital. London: George Allen & Unwin, Ltd.; New York: The Macmillan Company, 1915.

AT a time when the cultural aspects and dignity of medical science are somewhat dimmed by the growth of speculation, the commercialization of medical practice, and the tendency to advocate a universal system of state medicine, it is refreshing to turn the pages of this book and see the portrayal of those ideals which have always shed luster upon the medical profession. The distinguished author of this volume has had the rare fortune of a long and active professional life during a period when medicine has undergone a phenomenal growth and a no less phenomenal revolution in its methods and in its attitude to the public at large. In this volume he brings together a series of addresses delivered on various occasions. Some of these deal with the cultural phases of medicine; others with important topics in personal hygiene; others with problems of legislation, and still others with certain popular fads and fallacies pertainng to the treatment of disease. All of these provide interesting reading and food for thought. One may mention particularly the three opening addresses on "Knowledge and Wisdom in Medicine," "Reverence and Hopefulness in Medicine," and "The Dignity of Medicine," and the addresses on "The Modern Attitude of the Sick Towards the Physician," "The Ministry of Healing," and "Science and Christian Faith." The author speaks "of the dignity of medicine as evidenced by its beneficent work as a great social power in any community, and as spreading everywhere a wholesome influence. This is the particular dignity which appears to have declined in recent years, and largely ceased to inspire the respect which is due to it. It rests with us to recover and reconstitute this dignity." This is a worthy ideal for every practitioner.

THE CENTURY OF COLUMBUS. By JAMES J. WALSH, K.C.St.G., M.D., Ph.D., LL.D., Litt. D. (Georgetown), Sc.D. (Notre Dame), Professor of Physiological Psychology at the Cathedral College; Life Member of the New York Historical Society, Member of the New York Academy of Medicine, of the German and French Societies of the History of Medicine, of the Italian Society for the History of the Natural and the Medical Sciences, of the St. Louis Medical History Club, the New Orleans Parish Medical Society, A.M.A., A.A.A.S., etc. With Eighty-Six Illustrations. Price, $3.50. New York: Catholic Summer School Press, 1914.

READERS of the previous volumes written by Dr. Walsh will know what to expect in the present work. It is based on material originally used as lectures delivered before gatherings of the Knights of Columbus. The work is divided into "The Book of the Arts," "The Book of the Deeds," and "The Book of the Words," thus reviewing the chief fields of achievement in the period covered by the Century of Columbus. The book is very readable and is enriched by many illustrations, which add to its value. The author has naturally made "selections" from the material at his command, and some of the omissions are as eloquent as anything contained on the printed pages. Sometimes his statements are extremely difficult to reconcile with the usually accepted state of affairs. In the chapter on Medicine it would appear that in the Century of Columbus the status of medical science was on a par with that existing at the present day. The circulation of the blood, occupational diseases, cretinism and goiter, hydrotherapy, balneotherapy, hemophilia, hygiene and sanitation, transfusion of blood, cesarean section, anesthesia, pure food laws, and health boards are only some of the items which were well known to the people of the fifteenth and sixteenth centuries. Indeed, they seem to have been acquainted with almost everything in modern medicine with the possible exception of turtle serum and twilight sleep.

Society Reports.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held January 24, 1916.

THE PRESIDENT, DR. FREDERIC E. SONDERN, IN THE CHAIR.

Address of the Retiring President. — Dr. HOWARD LILIENTHAL made a brief address in which he expressed his appreciation of the work done by the officers and committees of the Society which had made the past year a successsful one. He thanked more particularly the Committee on Membership and the Committee on Legislation, and reminded the Society that although the battles of the Legislation Committee had resulted in victory for the present they would have to be fought over and over again. Dr. Lilienthal also commended the indefatigable work of the Counsel for the Society. In closing he paid a tribute to the memory of Dr. Edward Peck and Dr. John H. Huddleston, both of whom had died at their posts in the service of the Society.

Inaugural Address of the President.—DR. FREDERIC E. SONDERN said that he appreciated fully the honor and wished to thank the Society in electing him the presiding officer for the year. He assumed the responsibility and he was certain of their undivided support in the favor of justice, and in the condemnation of injustice. He asked what better topic could he select for his inaugural address than "Our Society." Of its growth, of the various interests represented by its membership, and of its democracy in the broad sense, they were all aware. In their search for greater efficiency, they must primarily develop and exercise self-control. The need of weighing their words and controlling their feelings became greater as the Society increased in size and importance, and its problems became more personal and intricate; for they acted not as individuals but as members of a body politic. If they made up their minds deliberately and carefully, the result was good; but if they acted hastily or passionately it was very bad. The ill-considered speech of one member might arouse others to unjust prejudice and intemperate action. One man might state a selfish desire as if it were a fact. A second man accepted it as a fact, and made it the ground for passionate expressions of hate and resentment. Still other men, who had not looked into the facts at all, were caught in this common flame of resentment, and hurried into precipitate action, which did harm to themselves and injustice to others. Such intemperance of speech or written word, while bearing actual weight only in direct ratio to the recognized worth of the individual, was destructive in principle, and justified the condemnation of thinking men in that it lowered the standard. It was their duty as members of this Society representing a respected profession, to foster constructive policies and not destructive ones, and to act at all times in accordance with the dignity they as a class desired and deserved. There had been recently some agitation in the city concerning the economics of medicine. He reminded them of the elaborate investigation of the so-called dispensary abuse. That hospitals and out-patient clinics treated gratuitously patients who could afford a physician's fee was a well known fact. Doubtless the tuberculosis, venereal, whooping-cough, and eye-glass clinics of the Department of Health did the same. While investigations had demonstrated the fact beyond doubt, the cause probably lay with the physicians as a class, and the remedy was still sought. They had all heard more or less concerning the contemplated legislation on Compulsory Health Insurance. The opportunity was offered them to confer with the framers of the proposed law. Here was an occasion for constructive work which merited their closest attention and their keenest sagacity. It was possible that the law would apply to over one-half of the population, and for this reason it was of the greatest importance that they give it serious attention now while it was in the making; it doubtless had a far greater economic weight than any law or custom affecting the physician in force in their country at the present time. Preparedness in this instance was better than watchful waiting. Calamity howling on a grand scale afterward would not bring complete relief from possibly unreasonable measures, the enactment of which could be prevented by proper efficient investigation and alteration now.

Military Preparedness from the Medical Standpoint.—LIEUT. COL. E. L. MUNSON, Medical Corps U. S. Army, made the introductory address, which he prefaced by saying that the officers of the United States Army were not supposed at the present time to express personal opinions on the subject of war and military preparedness and that he would confine his remarks to the work of the medical corps of an army in general and to medical preparedness for campaigns in general. The efficiency of a medical service depended on the work done in advance of actual fighting. An army medical department was not an independent scheme but was subservient to the general plans of the army, and whether these plans worked out to victory or defeat depended largely on the efficiency of the medical corps. The medical officer of the army was not engaged in curing disease but in looking after sanitary conditions in advance of a campaign and in bringing together the various relief agencies so that the sick and wounded could be properly cared for. The sanitary plans formed a part of the general plan of the campaign. When the tactical plans had been made they should be submitted to the medical officer who should go over them carefully and see what sanitary plans could be worked out. In doing this nothing must be left to chance. Every possible detail must be reduced to exactness, and every possible precaution taken to avoid illness and save life. Every source of wastage must be sought out and every tactical contingency prepared for. As soon as tentative sanitary plans had been prepared, they must be submitted to the officer having charge of the tactical plans, and where the tactical plans could be changed to secure better sanitary conditions this was done. After revision these tactical plans were again submitted to the medical corps and it set to work to make a more definite study of every detail. It was quite necessary to know what interference there would be with the efficiency of the fighting force from transmissible disease and in this respect very shrewd estimates could be made. In getting this information the medical officer consulted all available statistics with reference to the health of the locality in question and the incidence of transmissible diseases. He consulted the narratives of travelers to learn what he could of the nature of the diseases most prevalent. He sent medical observers over the ground to learn what they could before the locality was occupied by the army. If the area had been occupied at any previous time by an army, a study was made of the medical history of former campaigns as from this much might be learned as to what might be expected in the future. Attention was given to clothing, climate, and a study of the race living in the locality under consideration. All the climatic conditions, temperature, humidity, rainfall, character of the soil, ground waters, terrain, latitude, altitude, and seasonal influences were taken into consideration in the medical plan for the campaign. Based upon these all the sanitary details for the military community were worked out. Maps of the plans were prepared, all sanitary information collected, and arrangements made for distributing sanitary orders. Estimates were made showing how many men might be counted on as in fighting condition and what provisions might have to be made for reinforcements to make up for those not ready for duty. Arrangements had also to be perfected for caring for the wounded near the line of battle and for transportation facilities for removing the wounded to base hospitals. The medical officer must also be informed of the means of transportation in the vicinity that could be depended upon and of all existing hospitals, and also with reference to all lines of transportation carrying the men home and their medical equipment. A study must be made of the requirements in the way of drugs and dressings and of the amount that would probably be needed. Proper provision must be made for a sufficient sanitary personnel based on the amount of work that it was expected would have to be done. All these things should be prepared in advance of actual hostilities and should be adequate to meet all exigencies, and to this end a sufficient appropriation should be made that should not be governed by business or political interests.

DR. KARL CONNELL, recently in France for the Columbia University Unit, and Observer in Germany and Austro-Hungary, spoke for the civilian. He said that modern war was not merely the clash of swords at the battle front. It was an intense economic struggle that involved every phase of natural activity. Those of them

who had seen the present European war at close range were profoundly impressed by the complex organization which kept the soldier on the firing line, more by the organization than by the work of the firing line itself. A vital unit of this organization behind the soldier was the sanitary department. Dr. Connell said that he had an opportunity last winter to observe certain phases of the surgery and sanitary organization in France, Germany, and Austro-Hungary. He was deeply impressed by what martial efficiency meant, by the slow preliminary preparation necessary for efficiency, by the intensive organization, the mental and physical preparedness in time of peace which alone made for success in time of war. As against infection by disease, so against war, preparedness was the one vital lesson they brought home. He said that his remarks on organization and efficiency might seem to favor a certain belligerent. They were made, however, in a spirit of faithful record of conditions as he saw them. Those of them who had seen the barbarous inhumanity of inefficiency in war became indignant at needless sacrifice, and fanatical attitude toward the soft, pulpy spirit manifested by a certain element in this country, a spirit far removed from the Spartan devotion and willing sacrifice which alone founded and could maintain their nation. It became a duty to impress upon the members of the Medical Society of the County of New York the medical needs in war and sow the seed that would bring this country to physical, social, and military fitness. It hardly needed recapitulation that our own wars had been sanitary disasters. In the Civil War it took over two years to approach efficiency. Through the entire course of the Spanish-American war we paid a fearful toll in needless death and crippling for sanitary unpreparedness. To-day we were scarcely better prepared; although the medical corps of the regular army was highly efficient yet it was scarcely half the strength required for our small army on a peace basis. Our future depended on the training by a small professional army, and the larger army of citizen soldiery, men trained as in Europe, alike a national asset in peace and in war. Correlated with this we must become medically efficient by organizing our civilian surgeons. The professional military surgeon did not do the surgery of the war. He was primarily an officer of sanitary administration. His duty was to keep the health of the troops, getting supplies, and ridding the fighting zone of sick and wounded. Such sanitary duty was essential. It was learned only by long service with troops in the field. Men for such service, America must train; but for the actual surgery of war, the accidents of peace had already trained a great body of civilians. With them, as in Europe, the actual surgery of war would be done by the civilian surgeons, working in the base hospitals of the rear. Dr. Connell then spoke of the surgery of the war which did not differ from the surgery of peace. No day of usefulness for national betterment was lost during the convalescent stage. The wounded were given instructions in arithmetic, geography, conversational French, German grammar, practical illustrations in the pruning and grafting of trees and vines, the dividing of potatoes for planting, etc. The head wounds from the German West front were largely gathered in Cologne under Professor Preysing. The mandible cases were concentrated at Düsseldorf under Professor Bruhn. In this clinic reconstructive surgery, after the terrible face injuries, reached its highest development under a surgeon already trained in the accident service of the Essen Iron Works. In retrospection of all the marvels of intricate organization, the most impressive feature was the economic results. The acute cases were less severe by virtue of prompt treatment. The chronic cases were not backing up, like logs in a jam, to be cleared out after the war; each case was moving smoothly to its final cure with the system and precision of peace. It was the economic, humanitarian, impersonal triumph of organization. The medical corps of our regular army was numerically entirely inadequate and should be strengthened. He said he wished to speak for the civilian surgeon for whom no efficient organization existed. The reserve medical corps was loose, disjointed, and uncontrolled. They should organize through this country, around each great hospital group and medical universities, a base hospital unit, each with full personnel of surgeon, internist, orthopedist, *x*-ray operator, nursing staff, administrative and clerical staff, druggist, mechanic, carpenter, cooks, etc., all ready to establish a hospital in a warehouse, a summer hotel, a village, or a factory at a day's notice. Units of this kind were the only efficient ones the United States had sent abroad. In closing Dr. Connell said that to-night was part of the square issue, *preparedness*. If conflict came should we by lack of organization again condemn our wounded to the horrors of neglect as in previous wars? Should we maim and slaughter them by infections more deadly than the enemies' bullet? Should we strain their natural resources in life, in money, and in pension roll, or should we be prepared?

Major S. H. Wadhams, Medical Corps U. S. Army, said that his remarks were not to be taken as an expression of personal opinion, but simply as a statement of the present position of the country in respect to medical preparedness. It was evident that the present medical organization of the army which was scarcely adequate for times of peace would impose a tremendous burden on the civil profession in the event of war. The result of medical unpreparedness had been amply demonstrated in the past and unless we learned the lessons of former wars the same inefficient provisions for protecting the lives and health of the men from the onslaughts of disease would result in untold suffering, loss of life, and increase in the pension roll. The medical resources in case of war were about 444 medical officers in the United States Army, about 850 in the National Guard, and about 1500 in the National Reserve Corps. As some of these were counted twice, the actual number of available medical officers was less than 2500. Again the position of the medical officer in the army in time of peace was rather peculiar; he was more of a general practitioner of medicine taking care of the officers, their families, and their servants. He had to be a specialist in otology, in obstetrics, in pediatrics. In time of war the duties of a medical officer required quite a different sort of training from that needed for the general practice of medicine. The medical officer himself might be partially responsible for the impression that if one put an army uniform on a medical man one made of that man a medical officer. If a man was merely a doctor he was a very poor medical officer; indeed it was almost inconceivable that a man should be a practitioner and also a competent medical officer. To be thoroughly efficient the medical man must have special training as a medical officer. This being true it was evident that the Act of April 23, 1908, which provided that members of the Medical Reserve Corps give their services only in times of emergency is woefully inadequate. The members of the Reserve Corps could be assembled one week in two years on invitation to which they might or might not respond according to their inclinations. When the medical men of the Reserve Corps were invited to meet they had to pay their own expenses. As to the number of medical officers that were required, the army numbered 2,000,000 and there were only 20,000 medical officers, or 1 per cent., which was not enough. It must be remembered that in time of war we must have medical officers at the front, in the lines of communication to the base hospitals, in the base hospitals, and from the base hospitals to the home territory. For duty at the front a man must be a trained organizer and a sanitarian; his first and most important duty was to keep the men well. He must be able to separate the trivial cases from those needing special treatment. He must be able to tell when a man needed only temporary care and when he should be transported for hospital care and he must be expert in keeping records. None of these duties required a high order of medical or surgical skill but they did require administrative ability. A plan that might be adopted would call for 1 per cent. of medical officers, one-half of these for the front and one-half for the base hospitals. From the time of leaving the base hospital the men would have to be cared for by the Medical Reserve Corps and the civil practitioner. An army might get along with a reduction in its cavalry or in its artillery, but if it lacked sanitation it meant that there would be a great unnecessary loss of life from disease and a large number of pensioners. The experience of the Spanish-American war should teach the necessity of medical preparedness and that we could not depend on a voluntary service that could be accepted or rejected at will. We must be prepared before the emergency arose. Members of the medical profession were always ready to do their part and, if properly prepared, would do their part in winning victory for the country in time of war and in serving humanity in time of peace.

Lieut. Col. William S. Terriberry, Chief Surgeon Division N. G. N. Y., read this paper. He said we must assume a basis of some argument in a discussion

such as this and he would, therefore, assume for the sake of argument that there was a demand throughout the United States for an adequate military and naval preparedness and that this demand had been made by a majority of the people of the country. Following this assumption, the question now arose as to what method of organization and armament was to be carried out. There were three schemes of organization which were now prominently before the public, (1) the scheme proposed by the Staff of the Army; (2) the so-called Continental Army Organization, the plan of the Administration; and (3) the Federalization of the Organized Militia. The General Staff proposed a greatly increased regular army, a short term of enlistment, and a reserve. It provided for a continuation of the soldier's training in the reserve during a period of years and finally enrollment in a reserve without further training. This plan perpetuated a system of highly trained, mercenary, professional armies, a military organization hopelessly out of date. Our army consisted of a select few who volunteered to make the career of arms their chosen profession. Mobilization of the regular army for war would necessitate an infusion of 60 per cent. of green men and probably 40 per cent. of untrained officers and this meant that our present army would not be able to take the field for at least three months after mobilization. The Administration's plan for a peace time volunteer army provided for the enrollment of a force of 400,000 men in annual quotas of 133,000. The force was raised by authority of Congress and was to be under the direct orders of the President in both peace and war. It was to be trained by the regular army, armed, equipped, and paid by the Federal Government. The army was not to be assembled, except for short periods each year. Such a plan assumed that there were 400,000 men of military age and fitness, willing to give up their usual occupations entirely for a month for the compensation of soldiers in the regular army. Even if there were this number of volunteers how could we expect them to become soldiers by this kind and duration of training? A soldier was made by the habit of discipline, the implicit obedience to orders, and by the morale which came from constant contact with disciplined men. The Continental Army left these all-important objects unattainable. The National Guard system was worth perpetuating and developing only upon condition that it could be standardized to a common high level, and that it could be made available to the Federal Government for use at any time, for any purpose, and as long as it was needed. This could be done only by radical changes in the law which probably could be easily made, and of all plans of military preparedness, the regulation of the Organized Militia offered the best prospect of development into a National Army of the 20th Century Model. Whatever the form of organization, a great part would be played by the medical profession. It was not too much to say that the success or failure of future wars might depend upon the care that was given to the organization of this department. The smallest proportion of medical officers that would be needed for service with troops actually in the field was 1 per cent., and probably more would be needed. These men would have to be medical officers and not civilian doctors, improvised into officers. To train these men took years of instruction and practice. Their duties were largely military, based of course on a thorough knowledge of their own profession. The question was how were they to get these men. Would they volunteer in time of peace and make the necessary sacrifice of time and money? In the opinion of the writer they would not. Short periods of annual maneuvers would not go far toward producing competent medical officers. Their specialty must be taught by continuous contact with the troops supplemented by field work with large bodies of troops under service conditions. In addition to these medical officers a vast number of practitioners would be needed for service at the rear. Even this class would need to be organized in time of peace, in order that they might be immediately available upon the onset of war. As yet no steps had been taken to authorize any such organization. The views at present on this subject were hazy, inchoate, unformed. The best organizations seemed to be a civilian base hospital unit, complete with consultants, operating surgeons, assistant surgeons, specialists, laboratory men, and a nursing force. This unit should be organized and its personnel kept up during peace to a full war strength. For the members of this unit military instruction was necessary. The unit would differ in no way from a modern civil hospital. The military knowledge necessary to the conduct of this hospital would be supplied by the commanding officer of the hospital who must be a medical officer of rank and with much military experience. It must be recognized that the public of this country knew well what constituted a good medical service, and would demand that kind of treatment for the army's sick and wounded. If the government wished the support of the people of this nation it must see to it that the sick and wounded got the best possible care. Victory was obtained by having the greatest numbers available for service where they were needed and at the time when they were needed. This meant that every wounded man must be returned to the ranks at the earliest possible moment for duty. Again this implied the best surgical treatment all the way from the spot where the wounded man was hurt to the place where he completed his convalescence. It also implied that the recovered soldier never was out of the hands of military authority, no sick furloughs, and no political favors to cover malingering. In conclusion the writer modestly expressed the opinion that no adequate method of national defense would arise from the present agitation. The nation had never been actually tested in war and it would take a real war with an overwhelming defeat to convince us that a national army based upon universal service in time of peace was our only safety.

Major Edmund P. Fowler, Surgeon 7th Regiment Infantry, N. G. N. Y., read this paper in which he stated that the regimental officer was responsible for the sanitary condition of the regiment. A regular monthly examination was made of every soldier and the records kept. The sanitary detachment was responsible for the sanitary operation of the kitchen, the care of urinals, the collection and disposal of waste, and for the sanitary condition of the public washing and bathing places. Since the very ill were an encumbrance to an army, such men were transferred to the surgical division and provision had to be made for their safe and comfortable transference. The regimental sanitary detachment had to accompany the troops to the front in time of battle and establish a first-aid station near the firing line. Such a station must be prepared to give first aid and to direct wounded soldiers to the rear, or when they were too badly wounded to walk to assist them to the rear; in many instances this aid had to be given after dark. There were many important problems in connection with the various branches of the work of the sanitary detachment which made special training necessary. The medical officer must not only be a trained doctor but a trained soldier. There were two ways to train men for this duty. These were either in the National Guard with the troops or with the Reserves and physicians should avail themselves of these methods since in the event of war the medical profession must not be found wanting. Conditions abroad had shown the results of medical unpreparedness and if in the future they were to avoid such results, training in the medical service required to meet the demands of war must be universal.

Dr. Henry C. Coe said he wished to speak for the Medical Reserve Corps of the Army. There had been several disparaging remarks with reference to the Medical Reserve Corps. In 1908, when Congress provided for a General Medical Reserve Corps, such a corps was regarded as a joke and remained so for a long time. The man who accepted a place in the corps assumed no great obligations. Recently, however, there was a changed condition of affairs in the corps. Five or six years ago Dr. Coe went to Gettysburg with the troops to learn what he could with reference to the possibilities for usefulness of the Medical Reserve Corps. He then made up his mind that he would try to galvanize this dead body into life. The effort had been attended with great success in this State. The Medical Reserve Corps in New York State numbered 230 to-day, and there was not a man in the organization who would not pledge himself to be ready to serve when and where he was wanted. They wanted young, active men. He had asked a young man to join who had replied that he did not want to go to Mexico. They did not want that kind of men, but men who were patriotic and ready to serve their country. The medical man should be under the same necessity of giving his services to the State as of giving them to humanity. He willingly gave his services to humanity, why not to the State and to the flag?

Dr. Samuel J. Meltzer expressed his appreciation of Dr. Connell's paper and the decided way in which he

had called a spade a spade. He had also told them what the men in the United States could do. Their hospitals and universities could be used; the hospital and university units sent abroad gave better service than the foreign countries had been able to provide. There were some statements made with which he could not quite agree, and one of these was with reference to the question of preparedness of the Army Medical Corps; it was astonishing what we had accomplished in the last sixteen or eighteen years. We had learned the cost of not having an efficient medical service in the Spanish-American war and that very able Surgeon-General, Dr. Sternberg, had laid the foundation for an efficient army medical corps in the Philippines and in Cuba, and they had accomplished a great deal in many trying circumstances. Dr. Sternberg had demonstrated that a medical man could be patriotic and would give his utmost service to his country, and that this service was at the same time not in contradiction to his service to humanity.

Dr. Emil Heuel said we had heard much of preparedness from the technical standpoint of the army surgeon; we had listened to an exposition of the situation from the side of the State, and he would like to say a few words for the layman. When the State accepted the services of a soldier, it gave him a uniform and a certain financial compensation, while the man in the Medical Reserve Corps had to furnish his own equipment, and give a great deal of time to preparation for the service, for which he received nothing, excepting at such a time as he might be in active service, when he was allowed $5 a day. The Federal Government should recognize the burden that preparation for military service imposed on the civil practitioner and give him fair treatment.

Demonstration of the Efficiency of Moving Pictures in Surgical Teaching.—Dr. J. Bentley Squier made this presentation. Before giving the demonstration he said that this method of teaching operative surgery had the advantage that operators all over the world might be familiar with the work of other operators, and that the work of any man could thus be made accessible to all. Dr. Squier said that when he had finished his demonstration he wished to have an expression of opinion as to whether it was not possible to see more of the technique of an operation by means of the moving pictures than in the amphitheater. The moving picture of the operative procedure had the additional advantage that if there was any part of the operation which the student did not understand he could stop the reel and repeat. The moving picture demonstration showed the various steps in a suprapubic cystotomy, an operation for the removal of a stone from the pelvic portion of the ureter, and an operation for congenital inguinal hernia with a certain degree of undescended testicle. In ureteral work the patient was put in the extreme Trendelenburg position and the operator learned when operating for a moving picture to keep his hands from obscuring the operative field. It might also be observed that only the operative field was thrown on the screen, never the face of the operator, thus eliminating as far as possible sensationalism or undesirable publicity for the operator. The production of a moving picture of an operation was rather expensive at present; an operation lasting twenty minutes cost about $175 to $200, but the educational value of such a film was untold. The pictures showed all the steps in the operative technique in the operations above mentioned, and since in the operation for enucleation of the prostate the actual work of enucleation could not be seen by the student, models showing the technique of enucleation were introduced into the picture by which every part of the operation could be demonstrated.

NEW YORK ACADEMY OF MEDICINE.

Regular Meeting, Held January 13, 1916.

Dr. Royal S. Haines in the Chair.

This meeting was devoted to the progress in pediatrics during 1915.

Hookworm Disease in a Boy of Eleven and Girl of Ten Years: Microscopical Examination. Dr. Sara Welt-Kakels presented these children who had contracted the disease in the West Indies. She related the histories showing the typical picture of hookworm disease, and gave a microscopical demonstration of the parasites.

Cutaneous Reactions in Cases of Food Idiosyncrasy.—Dr. Oscar M. Schloss read this paper. He said he had had an opportunity to study a number of cases of food idiosyncrasy and that there were a few observations concerning the significance and limitations of such tests which seemed of sufficient importance to warrant a brief summary. The test with food substances might be applied by cutaneous inoculation or by means of an intracutaneous injection. The former was the easier method, and for this test food substances might be used which were too irritating to be injected into the skin. The intradermal method, however, was the more sensitive and at times would prove positive when the cutaneous test was negative. A positive reaction might occur in one of two distinct forms. The most common reaction, especially with the cutaneous test, was the occurrence of an urticaral lesion. This appeared almost immediately after the injection, and disappeared within 15 to 20 minutes. With this form of reaction itching was common but not constant. The second type was analogous to the tuberculin reaction, was inflammatory in character, appeared only at the end of a few hours, and was usually most marked after 12 to 24 hours. This form of reaction was relatively more common after the intracutaneous test but was much less frequent than the urticarial type, at least in the cases with which the writer was familiar. With regard to the materials used for the test, foods that were rich in soluble protein might be used unaltered or simply diluted with salines. It was always preferable, however, to use the proteins in a comparatively pure state as in this form they were better adapted for intracutaneous tests. Hitherto the difficulty of their preparation had been an obstacle to their use, but recently the writer had obtained some preparations from Dr. Harris, who had had a long experience in such with Osborne and Mendel. When a positive reaction was obtained in a given case, the question naturally arose as to what was its exact significance. Practically without exception such a reaction was indicative of an idiosyncrasy to this particular food substance. Dr. Schloss stated that he had never seen a clearly positive reaction to a food protein when such food did not cause a toxic disturbance when ingested. The opposite phase of the question was not so satisfactory, namely, "Does a negative skin reaction exclude the possibility of food idiosyncrasy?" Unfortunately such was not true. There were many cases of food disturbances in which the history was perfectly definite, and yet all the tests were uniformly negative. As a rule a positive reaction might be expected in the patients who reacted to the toxic foods by the development of skin lesions. In the cases with gastroenteric disturbances only, the cutaneous tests were often negative. Another influence mitigating the value of the cutaneous test was the occurrence of temporary desensitization. In three cases of egg idiosyncrasy he had studied this phenomena in detail. In all instances occurrence of food intoxication was followed by a temporary immunity with disappearance of the cutaneous reaction. Although the application of the cutaneous reaction to foods to dietetic problems had considerable limitations, yet in some instances such tests were of distinct value and might serve as a therapeutic guide.

The Interpretation of the von Pirquet Reaction.—Dr. Henry Heiman read this paper. He said that one of the first important diagnostic aids in tuberculosis was the discovery of Koch's tuberculin reaction but on account of certain disadvantages its application was limited. If the proper technique was observed he believed that one could safely rely upon this valuable diagnostic aid. By proper technique was meant the performance of the test in such a manner that only the epidermis was removed by a proper borer. Frequently a needle or scarifier was substituted for the borer; this at once invalidated the test owing to the opening of capillary blood vessels and the consequent rapid absorption of the tuberculin. The chief object of the tuberculin test was to produce merely a local effect by bringing the existing antibodies to the site of the test, thus causing a union of the tuberculosis antibodies and the tuberculin, the so-called lymphocytic and giant celled infiltration. Observations regarding the interpretation of this test had led to the belief that in the case of an acute tuberculous process, a very marked reaction occurred; in subacute or chronic tuberculosis a milder reaction was usually observed; in the last stages of tuberculous meningitis, or in general military tuberculosis, the reaction was usually negative. In the last two instances the system was so overwhelmed by the tuberculous process that the antibodies in the blood had become practically exhausted. An advantage of the von Pirquet

over the subcutaneous or Calmette tests was its almost absolute safety. In the children's service of Dr. Koplik at the Mount Sinai Hospital, in applying the von Pirquet test several times within two or three weeks on the same individual, in a series of 100 patients, it was found that in those in whom the reaction was positive in the first instance, it remained positive as a rule in the subsequent test. In only three of the 100 cases did this observation not hold good. Furthermore, they had noted that in the cases of tuberculous adenitis in which the von Pirquet reaction was markedly positive before operation, there was just as marked reaction after the radical removal of the tuberculous glands. This could only be explained on the theory that the sensitization of the individual had occurred or that possibly there remained some additional glandular or other tuberculous focus. Despite the positive value of the test, Dr. Heiman expressed the opinion that the negative value was of still greater importance in excluding the existence of tuberculosis, with the exception of the last stages of tuberculous meningitis and general miliary tuberculosis, both of which, however, could as a rule be diagnosed at the bedside. The von Pirquet test was of far more value than was generally conceded, and should be more universally employed than at present in cases of doubtful diagnosis in infants and children.

Progress in the Knowledge of Tuberculosis Infection—Fever the Initial Symptoms of Tuberculous Infection in Infancy.—Dr. MARK S. REUBEN presented this paper and offered the following conclusions: (1) The tuberculin reaction was a specific reaction. A positive reaction signified the presence of a tuberculous focus, either active or latent, somewhere in the body. Normal individuals could not be sensitized with tuberclin. (2) All human beings were predisposed to tuberculous infection; children of tuberculous parents were more apt to be tuberculous because they were more exposed to infection than were other children. Before they became infected infants of tuberculous parents showed the same physical development and gain in weight as did average children without tuberculous infection. The importance of separating infants from the tuberculous parents was apparent. Predisposition was easily overcome if exposure to the source of infection was avoided. (3) Fever was the first symptom of tuberculous infection in infants; the fever was low and more or less continuous with exacerbations of high temperature which was remittent; in cases which got well this fever lasted from 12 to 20 weeks. (4) The tuberculous reaction in these cases usually became positive at the onset of the fever or within a few days after the onset. (5) At the onset of the infection no physical signs were present; within the course of a few weeks these cases all developed signs in the chest, which, in those patients who got well, gradually disappeared. (6) The prognosis of tuberculosis in infancy was more favorable than was formerly supposed; 3 to 35 per cent. of these infants survived the infection. (7) From these facts one was led to the conclusion that the pathological lesions even in infancy might be localized and completely healed. (8) Fourteen per cent. of the febrile conditions in infants diagnosed as influenza gave a positive von Pirquet reaction; it was possible that many other fevers of obscure origin in infants, children, and adults, were due to a reaction of the body to tuberculous infection. (9) The tuberculin reaction should be performed in every infant who had an idiopathic fever and presented no physical signs.

Progress in the Treatment of Skin Diseases.—Dr. GEORGE M. MACKEE said that for a full appreciation of the advances made in dermatology it was necessary to broaden their conception of the subject. It was not tenable to-day to consider dermatology as consisting of diseases which were limited to the skin and which should be treated by chemical and physical agents applied externally, and the empirical use of arsenic, iron, and a few other internal remedies. Probably the greatest advance, or at least the most promising evidence of progress that was being made in dermatology, was the recognition that most of the dermatoses were intimately related to internal medicine, that the genesis was only occasionally in the skin, and that the pathology was by no means limited to the integument. They could never hope to treat skin diseases intelligently and successfully until they possessed a reliable knowledge regarding their etiology; therefore, the enormous amount of research work being done by McBride and Scorer, Rosenow, and many others in an attempt to associate the causative factors with the internal secretions, with gastrointestinal disturbances, focal infections, pathological and physiological disturbances in the important viscera, anaphylaxis, etc., must be considered as bearing directly upon the therapeutics of cutaneous medicine. Many of the dermatoses were known to be but external manifestations of more or less grave internal disturbances. So far as present and future real progress in the treatment of diseases falling under the head of dermatology was concerned, they must depend upon the combined efforts of the dermatologist and the internist with the collaboration of the physiological chemist, the bacteriologist, and the pathologist.

Progress in Pediatric Surgery of the Brain.—Dr. WILLIAM SHARPE presented this paper in which he spoke particularly of cerebral spastic paralysis. He said there were four chief neurological surgical conditions found in children: (1) Cerebral tumors a nd cysts, hydrocephalus and spina bifida; (2) brachial birth paralysis due to an injury of the brachial plexus during a difficult labor; (3) cerebral spastic paralysis due to one of three main causes, namely, lack of development of the cerebral cortex or its pyramidal tract, a meningoencephalitis, following an infection, as scarlet fever, measles, etc.; and (4) hemorrhage, especially intracranial hemorrhage occurring at birth. It had always been believed that such hemorrhage caused a destruction of brain tissue and that where there was destruction of cortical nerve tissue there could be no regeneration, and consequently it was believed that nothing could be done to improve this condition. Attempts had been made at different times to improve this condition. Twenty-five years ago operative procedures were undertaken but the osteoplastic bone flaps were not permanently removed, and hence no permanent decompression had resulted. At that time no effort was made to distinguish between cases due to the three different causes and consequently these operations had been very disappointing, as many cases were operated upon which could not possibly be helped by any operation. In regard to his first case, Dr. Sharpe said he was called to see a child who was in status epilepticus, having had 300 convulsions during the preceding four days, and who had a condition of left spastic hemiplegia. Choked disc was present, owing probably, as he then thought, to the convulsions. A right subtemporal decompression was performed to relieve the pressure, and not only did the child make a recovery, but there was a lessened spasticity so that the child could walk with his left heel on the ground, and he began to use his left hand and arm for the first time in his life. It then occurred to him that some of the cases of cerebral spastic paralysis in the different orthopedic clinics might show signs of mild intracranial pressure and that it was most important to distinguish these cases from the ones that might be accounted for by other conditions, such as lack of development and meningoencephalitis. He examined these cases carefully with the ophthalmoscope and also measured the pressure of the cerebrospinal fluid by lumbar puncture, and when he found intracranial pressure he advised a subtemporal decompression. Up to January, 1916, he had examined 832 cases and had advised cranial decompression in 209, these cases showing an increases cranial pressure denoting hemorrhage. He had operated upon 195 cases and had had 14 deaths. Of these deaths seven were extreme diplegias, with marked malnutrition, having difficulty in swallowing; two died from pneumonia; two from shock; two from infections, and one from enlarged thymus with a supracortical hemorrhage disclosed at autopsy. Permission to perform an autopsy had been obtained before operation in all cases. The remainder of the cases had improved both mentally and physically, with the exception of eight patients who had shown little or no improvement. In only seven cases was the hemorrhage subcortical, thereby causing a primary destruction of nerve tissue; in the other cases the high intracranial pressure from the hemorrhage upon the cortex was the cause of the spasticity. It might be said that of the entire number examined one in four showed signs of intracranial pressure. All the cases which were caused by hemorrhage gradually became mentally impaired because of the increased intracranial pressure. In this series of 209 cases due to intracranial hemorrhage all were first children, except 16; all were full term children except 5; only 33 did not have convulsions during the first week after birth. The condition of these children was not recognized because the spasticity was not observed until they were eight or nine months of age. All the children in this series showed definite signs of intracranial pressure by the blurring of the nasal margin or halves of the optic disc and the

cerebral fluid was under high pressure as measured by lumbar puncture. Moving pictures of the patients' gait and contractures were taken before and at regular intervals after operation, and the Simon-Binet tests of the mentality were similarly taken before and after the operation. The operation performed consisted in a subtemporal decompression; the dura was always opened and left open. The operation usually required less than forty-five minutes. It should be done with absolute hemostasis, as this was a point that was very essential in children of this age. It was also essential to prevent a large loss of spinal fluid, as a high rise in temperature due to circulatory disturbance of the basal gangiia might result. In some instances the temperature might rise to 106° or 107° F., and in such instances Dr. William Giles had learned that the head should be lowered to a marked degree, the child being almost stood on his head. This rise in temperature and its rapid fall following the lowering of the head showed that it was due to the loss of spinal fluid. The after treatment of these cases was the same as the preoperative treatment. All the cases were given the routine hospital treatment for spastic paralysis, massage, active and passive, exercises, braces, etc. Of 82 children who were having convulsions before operation, 36 were not having them now; in others the convulsions were less frequent and less violent. In concluding Dr. Sharpe stated that most of these children were derelicts at the time they were operated upon, but if a diagnosis had been early, shortly after birth, and an operation performed, normal children might have resulted. Three of his cases were operated upon on the second day and two on the third day after birth, and normal children were obtained. The older the child the less improvement could be expected. While he did not advocate this procedure as a cure in the older children, it did offer children who were otherwise hopeless a chance of improvement.

Dr. Diaz of Porto Rico described the conditions in Porto Rico before that island was occupied by the United States Army, speaking particularly of the laziness and inactivity of the native population in large part due to the prevalence of hookworm disease. He said that it had been shown that infection took place through the soles of the feet, aad it was also true that it might occur through the skin of the hands as a result of working in the soil with the hands, and through the mouth by the ingestion of contaminated food. They had found treatment with thymol very effective. The method of administering it consisted in giving a capsule of four grains at six o'clock in the morning and following it by a second capsule of the same amount at eight o'clock. Then at ten o'clock a dose of sulphate of soda was administered. Efforts were now being made to teach the people the rudimentary elements of how to live, that they should wear shoes and wash their hands before eating. The speaker stated that he had seen patients who had become insane as a result of uncinariasis cured by the thymol treatment.

Dr. William P. Northrup said the papers of the evening had been interesting in many ways, but the first and last had impressed him most in speaking of progress. A great work had been done all over the country in taking these people who were anemic and derelicts as a result of hookworm disease and making them useful and self-supporting. Likewise the work of Dr. Sharpe was to be commended, since he took these children who were considered hopeless and undertook to improve their condition. If he succeeded in redeeming even one or two cases the work was quite worth while. If these cases could be recognized in the early stage and restored, this certainly was progress.

Dr. Maurice Fishberg said he would like to add to what Dr. Heiman had said that a distinction was always to be made between infection with tubercle bacilli and the disease due to the same virus. Now, there was hardly one who had escaped infection while comparatively few were affected with tuberculosis. All infected persons must react to tuberculin. Moreover the specificity of tuberculin had not been proven conclusively to the satisfaction of all entitled to an opinion. Indeed, tuberculin was not the only substance producing a reaction in a person infected with tuberculosis. Any foreign albumin inoculated into the skin of a person harboring tubercle bacilli produced a reaction indistinguishable from the cutaneous tuberculin reaction; other toxins, especially those of diphtheria, dysentery, cholera, etc., gave skin reactions exactly like that of von Pirquet. The fact that the von Pirquet reaction was negative during the terminal stages of tuberculosis and also in tuberculous meningitis, whooping cough, and diphtheria, militated against its utility as a diagnostic agent in children when it was most needed. Tuberculin was not a simple definite substance, but a mixture of the toxins of the tubercle bacilli and glycerin salts, extractives, etc., contained in the medium in which the tubercle bacill were grown. These substances without the tuberculous toxins produced the same reaction on the skin as the tuberculin. Dr. Fishberg said he was glad Dr. Reuben had followed infants reacting to tuberculin during the first few months of their lives, for several years and had found them thriving. He had reported similar cases some two years ago in the *Archives of Pediatrics*. This proved that the opinion that an infant under one year of age infected with tubercle bacilli invariably perished, was not well founded.

Dr. Abraham L. Goodman said that he saw a great many children during the course of a year and had been struck by the large percentage that were infected by tuberculosis. Many of these infections were not recognized unless the child showed marked physical signs of the disease. They had been making it a practice at the German Hospital during the last four years to take an *x*-ray of the chest whether the child showed pulmonary involvement or not. They had found a large number of children suffering from enlarged mediastinal and peribronchial glands and they placed a great deal more stress on the finding of enlarged mediastinal glands as an indication of tuberculous infection than on other signs. Of the physical signs they had found the signs in Despigne's triangle of most importance. These were the earliest recognizable signs of tuberculosis in infancy. Fever of indefinite origin was in most cases due to tuberculous infection. In the treatment of early tuberculous infection in the mesenteric, mediastinal, or peribronchial glands, or anywhere inside the body, they had been successful with guiacol and arsenic in addition to the usual hygienic measures.

Dr. L. E. LaFetra said he agreed with what had been said in reference to the relative infrequency of the von Pirquet reaction in very young infants, and that not very many young infants had active tuberculous disease. In many cases, especially in older children, it was doubtful whether the signs in the lungs were due to tuberculosis or simple bronchopneumonia. In some of these cases the *x*-ray was of very great assistance, but very often it did not give very much information. The general attitude toward tuberculosis in childhood should be much more hopeful than formerly, and the finding of a positive von Pirquet reaction should not be regarded as diagnostic unless one found physical signs or *x*-ray evidence of active lesion.

Dr. F. L. Wachenheim said that enlarged glands in the neck, as shown by Despigne's sign and the *x*-ray, were not significant of tuberculosis in the presence of a negative von Pirquet reaction. In their clinic they were not getting such large percentages of positive von Pirquet reactions as some others; they were only getting 10 to 15 per cent. positive reactions. One might get the von Pirquet reaction in latent or cured cases. Children givng a positive von Pirquet reaction, even though they showed no physical signs of the disease, should be closely watched. It was to be regretted that institutions did not take children giving a positive von Pirquet reaction, even though they did not show active signs of tuberculosis, since they ought to be kept under observation and given a chance to overcome the infection.

Dr. Brainerd H. Whitbeck said that they had been doing tenotomies, fasciotomies, and cutting the posterior nerve roots in the endeavor to ameliorate the condition of the class of patients which Dr. Sharpe had spoken of, but none of these operations had been followed with any great degree of success, and recurrence of the condition for which the operation was undertaken was frequent. In some of the cases in which Dr. Sharpe had operated there were no longer any convulsions, and the walk was progressively improving, and in some of the cases in which there was only moderate mental impairment, improvement of the mental condition had been observed. The importance of determining whether there was intracranial pressure by examination of the eye grounds, and in cases in which there seemed to be such pressure of checking it up by lumbar puncture, had been emphasized by Dr. Sharpe and he also wished to emphasize it. Another important point was with reference to the bone flap; formerly the bone flap was not removed and the children did not improve on that account as the intracranial pressure was not relieved. Dr. Sharpe had frequently found it necessary to remove a flap from the opposite side at a second operation in or-

der to entirely relieve the intracranial pressure. Dr. Whitbeck cited one case in particular which he had observed in which a child having convulsions and right hemiplegia was greatly improved by the operation of decomposition as Dr. Sharpe performed it, leaving out the bone flap, after a former operation in which the bone flap had been allowed to remain had failed. In all cases the dropfoot of hemiplegias and spastics might be relieved by applying braces. In cases of spina bifida, in which all improvement which could be expected by operation on the spine had been obtained, an astragalectomy and a backward displacement of the feet should be done to make it possible for the child to walk.

Dr. HENRY HEIMAN, in answer to Dr. Fishberg's remarks as to the possibility of confusing the von Pirquet reaction with that due to proteins, said there was no occasion for such a mistake, as the protein reaction disappeared in a short time while a genuine von Pirquet reaction remained for weeks. As the diagnostic value of the tuberculin test, Dr. Heiman said he would not dream of making a positive diagnosis of tuberculosis of the lungs merely from a positive von Pirquet reaction. One could make such a positive diagnosis only when the tubercle bacilli were found in the sputum or when there was a positive von Pirquet reaction plus corroborative evidence furnished by the *x*-ray. Frequently those using the tuberculin to make a von Pirquet test diluted it. When the tuberculin was diluted it decomposed very rapidly, but this did not happen if it remained undiluted. In full strength tuberculin kept for a long time. With the von Pirquet test a negative reaction was of great value, just the opposite of what was true concerning the Wassermann test, in which a negative reaction meant nothing. A negative von Pirquet reaction signified that the individual failing to react had no tuberculosis unless, as mentioned, he was in the terminal stages of tuberculous meningitis or general miliary tuberculosis.

THIRTEENTH RUSH SOCIETY LECTURE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Delivered Friday, January 21, 1916.

Investigative and Scientific Phases of the Diabetic Question, with Their Probable Relations to Practical Problems of Clinical Medicine.—Dr. FREDERICK M. ALLEN of the Rockefeller Institute for Medical Research, New York, began by emphasizing the necessity of keeping in mind the distinction between glycosuria and diabetes. The one was a symptom; the other a disease. One was glucose in the urine; the other a defect in metabolism. Defining diabetes, the author recognized the increasing agreement on the part of investigators that diabetes was deficiency of the internal secretion of the pancreas. This doctrine, it was said, went back to early observations of gross changes in a few cases of clinical diabetes, finally followed by Von Mering and Minkowski's production of acute diabetes by total pancreatectomy. Sandmeyer, by means of atrophy of a pancreatic remnant, produced a type of chronic diabetes comparable to the unusual human cases due to atrophy of the pancreas. A more accurate reproduction of human diabetes was afforded by removal of most of the pancreas, leaving the remnant with its normal blood supply and duct communication with the bowel. DeRenzi and Reale first reported such an experiment in 1892. This form of diabetes was later rediscovered independently in four different places about the same time. The first in point of publication were Thiroloix and Jacob, who observed that when a sufficient portion of a dog's pancreas was removed, leaving the remainder in its normal connections with duct and blood vessels, this remnant retained its normal appearance and supplied enough pancreatic juice to maintain the animal's nutrition, yet diabetes developed and ran a gradual downward course much like the human disease. Their second important observation was that in suitably prepared animals this downward progress could be produced or hastened by over-feeding with carbohydrate. The second in point of publication was Helly, who studied only the glycogen, finding that in this form of diabetes the animals retain more or less glycogen, here resembling human diabetes. The third one in order was Allen, who dealt with various points concerning this type of diabetes, compared it with the normal and with other forms of diabetes and glycosuria, and also, thanks to the co-operation of Prof. F. B. Mallory, described for the first time the specific changes in the islands of Langerhans in experimental diabetes. The fourth in point of publication was Homans, who discovered this form of diabetes in cats, and made the most accurate microscopic studies.

By this method human diabetes, Dr. Allen stated, could be imitated in animals in the following particulars: (1) Mode of onset, sudden or gradual; (2) the influence of diet; (3) some individual idiosyncrasies; (4) the diminished permeability of the kidney for sugar; (5) the effect of nervous influences; (6) the effect of traumatism; (7) a temporary stage during which there was glycosuria with little or no polyuria, thus resembling diabetes decipiens; (8) complications in the cachectic stages, generally not identical with the human complications, but rather an increased tendency to corresponding canine afflictions. There was no evidence that complications were due to increased blood-sugar.

The chief points of alleged difference between clinical and experimental diabetes, it was pointed out, had been the following: (1) The dextrose-nitrogen ratio, which is Lusk's figure of 3.65 in the severest human diabetes, whereas removal of the dog's entire pancreas gave only the Minkowski ratio of 2.8. Total pancreatectomy in the human subject, he said, should theoretically give a 3.65 ratio. It was well known, he observed, that phloridzin gave a 3.65 ratio in some species, and a 2.8 ratio in others; likewise the difference of species might explain the different ratios in diabetes. (2) The marked increase of metabolism in totally depancreatized dogs. To the author it seemed probable that partially depancreatized dogs with severe diabetes would not show such a great increase; it was now known that some severe human diabetics showed an increase of metabolism. (3) Anatomical changes in the diabetic pancreas. Weichselbaum had described so-called hydropic degeneration and other lesions in a series of 186 diabetic autopsies. Other investigators had not been convinced of the existence of any specific alterations in the diabetic pancreas. It was obvious that such advanced and generalized changes as were found in the pancreas in experimental diabetes were seldom if ever present in human cases, because they were too obsious to be missed. The classical work in the microscopic study of experimental diabetes was that of Homans. Using the Lane-Bensley technique, Homans proved that only the beta cells showed the exhaustion and degeneration, while the alpha cells remained intact. Homans had found some similar changes in at least a portion of the islands in human diabetes, and it would seem that the most promising prospect for the microscopic investigation lay in this direction. The functional element in human diabetes was also to be considered, which, it was said, was emphasized by the results of treatment. The rapid clinical changes possible in human diabetes seemed to the author to indicate functional rather than organic alterations in the pancreas. Back of human diabetes might be perhaps a disorder of the abdominal nerves, possibly disturbing not only the function of the pancreas, but to some extent that of other organs. Though the kidneys were generally normal microscopically in diabetes, functional changes were frequent. Further study of the pancreas obtained quickly after death and fixed and stained by the best methods was regarded as important for deciding this question, and physicians who could obtain such material would render a service by sending for study. (4) A fourth difference was that found in ketonuria or acidosis. It was an old statement that the diabetic patient died in coma and the diabetic animal in cachexia; but by stopping the overfeeding of diabetic patients coma might be less frequent. Also, under suitable conditions diabetic animals seemed to be subject to this intoxication. The present status of the theories of ketonuria or acidosis were discussed.

The fact that severe diabetics were cleared up in these respects by fasting, whereas normal persons or milder diabetics developed ketonuria on fasting, along with various other experimental and clinical observations, threw the existing theories into considerable confusion. Ketonuria and acidosis seemed to the author to be not explainable by mere lack of carbohydrate, or even by habituation or individual idiosyncrasy. The fundamental nature of the process was in doubt. Diabetes, Dr. Allen stated, might probably be defined as a specific deficiency of the power of assimilating food. The accumulation of reserves, as when the body gained weight, diminished tolerance and aggravated diabetes, whereas the reducing of the reserve stores by low diet or by exercise increased tolerance and checked diabetes. Also, one kind of food lowered the tolerance for another kind

of food, as adding carbohydrate to a diabetic diet might give rise to ketonuria and adding fat to a diabetic diet might give rise to glycosuria. The history of diabetic therapy consisted essentially in an interweaving or alternation of two principles: (1) The restriction of the sugar-yielding elements of the diet, namely, carbohydrate and protein; (2) diminution of the total caloric value of the diet. The fasting treatment was in harmony with the observed benefits of these methods in the past. This had been previously outlined and details were to be published in monograph form. The principle underlying it was a well-established one in all therapeutics—rest of a weakened function. No positive means of strengthening this function aside from rest had yet been discovered.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

CANCER OF THE STOMACH. By FRANK SMITHIES, M.D. With a Chapter on the Surgical Treatment of Gastric Cancer, by ALBERT J. OCHSNER. Octavo of 522 pages, with 106 illustrations. Published by W. B. Saunders Company, Philadelphia and London. Price, cloth, $5.50 net; half Morocco, $7.00 net.

PHYSICAL DIAGNOSIS. By JOHN C. DACOSTA, JR., M.D. Published by W. B. Saunders Company, Philadelphia and London. Third edition, thoroughly revised. Octavo of 589 pages, with 243 original illustrations. Price, cloth, $3.50 net.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D. Published by W. B. Saunders Company; fifth edition; enlarged; 12mo. of 405 pages. Price, cloth, $2.25 net.

THE CLINICS OF JOHN B. MURPHY, M.D. at Mercy Hospital, Chicago, December, 1915. Vol. IV, No. 6. Published bi-monthly by W. B. Saunders Company, Philadelphia and London. Price, per year, paper, $8.00; cloth, $12.00.

THE PRIMARY LUNG FOCUS OF TUBERCULOSIS IN CHILDREN. By DR. ANTHON GHON, translated by D. BARTY KING. Published by J. & A. Churchill, London, England. With seventy-two text illustrations, one black and one colored plate; 172 pages. Price, 10/6 net.

REPORT OF THE MEDICO-MILITARY ASPECTS OF THE EUROPEAN WAR. By Surgeon A. M. FAUNTLEROY, U. S. Navy. Published by Government Printing Office, Washington; 146 pages.

NERVOUS DISEASES. By ROBERT BING. Only authorized translation by Charles L. Allen, M.D. Published by Rebman Company, New York. 481 pages. 111 illustrations.

SURGICAL OPERATIONS WITH LOCAL ANESTHESIA. By ARTHUR E. HERTZLER, M.D. Published by The Surgery Publishing Company, New York. Second edition. 312 pages. 173 illustrations. Price, $3.00.

THE CHILD—HIS NATURE AND NURTURE. By W. B. DRUMMOND, M.B., C.M., M.R.C.P.E. Published by E. P. Dutton & Company, New York. Enlarged and revised edition. 219 pages. Illustrations. Price, $1.00.

THE TREATMENT OF ACUTE INFECTIOUS DISEASES. By FRANK SHERMAN MEARA, M.D., Ph.D. Published by the Macmillan Company, New York. 540 pages. Price, $3.50.

ANNUAL REPORT—NEW YORK ASSOCIATION FOR IMPROVING THE CONDITIONS OF THE POOR. Published by Douglas C. McMurtrie. 202 pages. Illustrations.

PATHOGENIC BACTERIA AND PROTOZOA. By JOSEPH MCFARLAND, M.C., Sc.D. Published by W. B. Saunders Company, Philadelphia and London. Eighth revised edition. 807 pages. 323 illustrations. Price, $4.00, cloth.

HARVEY'S VIEWS ON THE USE OF THE CIRCULATION OF THE BLOOD. By JOHN G. CURTIS, M.D., LL.D. Published by Columbia University Press, New York. 194 pages. Illustrations. Price, $1.50.

BEAUTY A DUTY. By SUSANNA COCROFT. Published by Rand McNally & Company, Chicago and New York. 379 pages. Illustrations. Price, $2.00.

AN AUTOBIOGRAPHY. By EDWARD L. TRUDEAU, M.D. Published by Lea & Febiger, Philadelphia and New York. 322 pages. Illustrations.

Therapeutic Hints.

Constipation in Children.—Agar-agar cut into very small pieces and eaten like the modern uncooked breakfast food with milk or cream and the addition of malt or sugar, makes a palatable and gentle laxative for children. The ordinary dose is a teaspoonful night and morning.—*Practical Prescribing and Treatment, Diseases of Infants and Children.*

Digitalis in Auricular Fibrillation.—Stewart and Scott employed digitalis with benefit in three cases of auricular fibrillation, the circulation as observed in the hand being noticeably improved. In one case, however, there was no response to a prolonged administration of digitalis, but on stopping the drug the circulation was improved, only to become worse again when the digitalis was again given.—*Journal of Pharmacology.*

Hemoptysis.—

℞ Pulveris ipecacuanhæ et opii, gr. xx
Aluminis, ʒi
Sacchari, ʒss
M. et div. in chart No. VI. Sig.: one powder every two hours.—Skoda.

Muscle Pains.—

℞ Tincturæ opii, ℥ss
Tincturæ aconiti,
Tincturæ iodi, āā ʒij
Linimenti chloroformis, ℥iij
M. Sig.—For external use.

Weak Heart.—

℞ Tincture of strophanthus, ʒss (2.0)
Tincture of nux vomica, ʒij (8.0)
Compound spirit of ether, or anisated solution of ammonia, ʒijss (10.0)
M. et Sig.—10 to 20 drops every two hours.
—*Revista Ibero-Americana de Ciencias Médicas.*

Acute Diarrhea.—D. M. Macdonald offers the following prescription for the control of this condition in an emergency case in a child six months to one year of age:

℞ Glycerin of carbolic acid, ♏ j.
Compound camphor tincture, ♏ v.
Castor oil mixture, ad ʒj.

Solution of strychnine in half minim doses with brandy and normal saline solution injected subcutaneously are worthy of trial.—*Practical Prescribing and Treatment, Diseases of Infants and Children.*

Colic.—For an acute attack in children, ten to fifteen ounces of soap enema, injected slowly and steadily, will usually give prompt relief. Hot flannel fomentations to the abdomen, and a dose of castor oil if the usual cause is offending material in the bowel. If flatulence is the chief feature, give

℞ Tincture of belladonna, ♏ ij.
Aromatic spirit of ammonia, ♏ ij.
Bicarbonate of soda, gr. v.
Peppermint of caraway water to ʒj.

M. Sig.: Every six hours for an infant of six months.—*Practical Prescribing and Treatment, Diseases of Infants and Children.*

Dandruff.—Rub in the following ointment at night:

℞ *B*-Naphthol, gr. xx.
Bergamot oil, ♏ x.
Vaseline, ʒj.

M. Sig.: Wash in the morning with spiritus saponis alkalinus.—*Practical Prescribing and Treatment, Diseases of Infants and Children.*

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Original Articles.

INFLUENZA.

BY ALVAH H. DOTY, M.D.,

NEW YORK.

THE present epidemic of so-called influenza offers practically no new features for consideration. The conditions presented are simply a repetition of what has occurred from the earliest times, for ancient history frequently refers to this affection. There is but little doubt that the name by which it is known was proposed during the seventeenth century by Italians, who believed this disease to be due to an influence exerted by the stars, and therefore called it influenza. The French synonym, la grippe, has also been in use for centuries.

It is claimed that the specific organism of influenza was discovered by Pfeiffer in 1893, and that this disease occurs in every part of the world, at any season of the year, and is unaffected by climatic conditions. It may be stated that this belief is not universally accepted, at least not in all its details.

Whatever may be the theory regarding the origin of influenza, the name is used synonomously with "la grippe" and "cold," and relates to an infection, the local manifestation of which is an acute inflammatory condition of the respiratory tract. It will be observed that these terms have no special or scientific significance. Influenza and la grippe appear to be the more fashionable designations, and are usually applied to cases having pronounced and often urgent symptoms, while colds more commonly refer to the benign types of this affection, although no well-defined line of demarcation is recognized. Furthermore, in the treatment of these cases, bacteriological examinations are rarely made.

Whether or not influenza and colds are but different types of the same affection, and this is not unreasonable to believe, it is evident that their origin and source of infection are similar, for both are due to the presence of certain infectious organisms, and the human being is the usual means of infection, through the medium of the discharges from the mucous membrane of the respiratory tract.

Years ago it was generally believed that influenza was directly caused by certain climatic changes and sometimes by emanations from swamps, the latter theory being similar to the one originally accepted as to the cause of malaria. Although the germ origin of this affection is now accepted, the former belief as to its inciting factors should not be summarily dismissed, but rather given respectful consideration, for some of the early theories concerning the means by which infectious diseases are transmitted, although proven to be erroneous, were supported by reasonable evidence, and in a way have rendered important aid in recent discoveries regarding this subject. For instance, persons living in close proximity to swamps are commonly affected with malaria. This disease is not caused by emanations or miasma arising from these places, as it was formerly supposed; but prevails there because swamps are the favorite breeding places of the variety of mosquito which transmits the infectious organisms of malaria. Therefore while the early investigators were wrong in their opinion as to the origin of malaria, they were right when they believed that swamps favored the propagation of this disease. The same may be said of influenza and colds, for while due to the presence of certain organisms which may be found in throats almost everywhere, it is equally true that extended outbreaks are fostered largely by climatic conditions.

The study of "carriers" offers conclusive evidence that infectious organisms may remain for an indefinite period within the body in a dormant or inactive condition without producing evidence of their presence; therefore a large part of the population is constantly acting as the hosts of these germs. This is particularly true of tuberculosis and typhoid fever, and I believe equally true of influenza. For this reason it is very important to know the exciting causes of these as well as other infectious diseases.

Whatever evidence statistics may present concerning influenza, the truth is that this affection, like other acute respiratory diseases, has its period of greatest prevalence during the cold season, particularly when abrupt changes of temperature occur associated with wet weather. Not only the medical profession but the public are practically familiar with this fact.

We have abundant proof that those who contract certain infectious diseases usually have a low resisting power, and are often enfeebled by ill health, excesses of various kinds, or a disregard of the rules of personal hygiene. It is also true that those who are in robust health do not always escape attacks from these diseases, yet it is largely the protection afforded by the resistance of healthy organs and tissues upon which we must depend for the maintenance of health, or even our existence. However, the public do not realize this, nor do they fully understand the part they should play in carrying out this exceedingly important, and what may be termed natural, preventive measure.

In generally disabled conditions of the body, local tissues, such as the exposed mucous membrane of the respiratory tract, are particularly susceptible to the activity of the infectious organisms which they may harbor. This condition is also invited by local disabling conditions of these membranes.

In dealing with influenza or colds, it is important that every reasonable means should be taken to prevent the transmission of infectious organisms from one person to another. Unfortunately, however, the medium of infection is so very widespread, including

carriers and also mild and unrecognized cases which cannot be guarded against, that the protection thus gained is very limited; besides, the public respond very indifferently to advice in this direction, particularly as it is quite sure to interfere with the ordinary business and social relations of a community.

I believe that far too little information and advice have been given the public concerning the more valuable means of prevention in this affection; that is, a healthy condition of the body, and particularly an avoidance of the more actively favoring causes of this disease, for even healthy persons are more or less susceptible to the latter. This refers to improper exposure, particularly during certain conditions of the weather. For instance, nothing contributes more directly to predisposition to acute inflammatory conditions of the respiratory tract than wet feet. It also applies to improper care of the body in other ways, for a very large per cent. of those who suffer from these affections give a clear and well-defined history of undue exposure.

It is a common practice during the cold weather for persons dressed in heavy garments to remain within doors a large part of the day in superheated apartments, where the temperature frequently reaches 80° or more, and is usually associated with defective ventilation. This is quite sure to render the body less resisting, and certainly not in a condition to withstand a difference of 40° or 50°. This is an offense to nature which carries with it its own penalty.

A careful observation of the means by which the feet and body are commonly protected will go far to explain the presence of "colds" or influenza. Nine-tenths of the footgear worn by women offers no protection whatever against damp or wet streets. If wet shoes were changed immediately upon arriving at a destination, the danger from this source would be greatly diminished; however, this does not often take place, and therefore the feet remain damp or wet for a large part of the day. Even the heavier shoes worn by men offer but little more protection. Besides, so-called waterproof shoes exist chiefly in the imagination. For some reason, rubbers, although an exceedingly valuable means of protection, are not looked upon with favor in this country, whereas they should always be worn in the street during wet weather. There is a fancied objection to them on the ground that they sweat the feet. There is, however, but little annoyance in this direction if they are removed immediately upon entering the house.

Careful attention is not usually given to the ventilation of the interior of buildings during the cold season, nor is the temperature of apartments kept within proper limits; furthermore, the style of dress generally adopted for cold weather can hardly be called reasonable and logical.

It would be difficult to describe all the numerous styles and fabrics recommended and used for underwear, the value of many of them being largely theoretical. There is one material which from a scientific and practical standpoint, and particularly its suitability for all ages and sexes and various conditions of health, appears to be entitled to general approval for underwear during the cold season, and that is wool. Many wear cotton and linen underclothing throughout the year, apparently with comfort and protection, yet this does not prove that it is of equal value with wool for general use, particularly in sections of the world where abrupt climatic changes frequently occur. It should be borne in mind that a good resisting power is often the chief support of erroneous theories concerning food and dress.

Upon the approach of winter, it is also the custom to substitute heavier outer clothing for that worn during the summer. While it is important that serviceable and protecting undergarments which lie next the skin should be provided for the cold season, particularly to guard against abrupt variation of temperature, a change in the weight and material of the outer garments is not necessary, and is often responsible for much discomfort, and sometimes for ill health.

During this time of the year, particularly in cities and large towns, persons usually remain indoors not less than twenty out of the twenty-four hours comprising the day; often where the heat of apartments, work shops, or offices equals or exceeds that of summer, but without the fresh air which is available during the latter season, for the windows are usually kept carefully closed. In these insanitary surroundings a person who is too heavily clad is not only rendered uncomfortable, but the surface of the body becomes moist and tender, and in this condition is far more susceptible to the lowered temperature when the person goes outside.

The fact is that during the cold weather heavy and uncomfortable outer garments are worn within doors in order to be protected against a brief period of outside exposure, whereas, so far as consistent, our dress should be compatible with the interior, and sufficiently heavy wraps added when we go outside; this is the function of an overcoat. It is far more reasonable, and certainly more comfortable and conducive to health, to wear outer garments of practically the same weight and texture throughout the year, except possibly in midsummer, when clothes made of very thin material, known as "tropical" weight, are indicated. Those who have adopted this logical mode of dress are fully convinced of its practical value, particularly within doors.

I believe that improper ventilation, over-heating of apartments, carelessness in dress, and direct exposure in the way of wet feet and the like, particularly when they are associated with a weakened resisting power of the body; constitute the most common predisposing factors in the propagation of influenza or "colds," and if care is taken to prevent these unfavorable conditions, it will secure greater prevention than efforts which may be made to avoid infectious organisms, although the latter should be given careful attention.

So much time has been devoted to the study of the various organisms, and the means of antagonizing them and their effect, that we have largely overlooked the importance of natural preventive measures.

Public instruction throughout the country relating to the care and prevention of influenza dwells very lightly upon these valuable means of protection, whereas special effort should be made to educate the public in this direction, for such information is of equal importance in the prevention of other diseases.

265 West Fifty-seventh Street.

Prevalence of Smallpox.—The United States Public Health Service states that smallpox is now prevalent in Vermont, New Jersey, South Carolina, Idaho, Minnesota, Illinois, Montana, Ohio, Iowa, Michigan, Indiana, Nebraska, Pennsylvania, Louisiana, Oklahoma, and Oregon.

THE TREATMENT OF GASTRIC ULCER,

WITH ESPECIAL REFERENCE TO ITS ETIOLOGY AS AN INFECTIVE PROCESS.

By ALBERT F. R. ANDRESEN, M.D.

BROOKLYN, NEW YORK.

ATTENDING GASTROENTEROLOGIST, BROOKLYN HOSPITAL, E. SHERWICK HOSPITAL, AND BROOKLYN HOSPITAL DISPENSARY.

For the past five years or more, medical literature the world over has abounded in articles relating to gastric and duodenal ulcer. The reason for this is not hard to find. Gastric ulcer is now recognized to be of very common occurrence and, until the past year or two, knowledge regarding its etiology and therefore its rational, specific treatment has been lacking. As is always the case under such circumstances, as many different methods of treatment have been recommended as there have been articles written, internists and surgeons have been disputing each other's statistics of cure, and patients have been drifting from one practitioner to another with little improvement, and often with considerable aggravation of their disease.

It must have occurred to anyone noting the points of similarity between the attacks of typical chronic gastric ulcer and chronic recurring appendicitis, rheumatic arthritis, and other infectious conditions, that gastric ulcer must be an infective process. This has been partly borne out by the fact that, in rare instances, typical ulcers have been shown to be tuberculous or syphilitic. Until recently, however, no experimental proof of the infective theory has been at hand. During the past two years, Rosenow and his followers, with reports of the artificial production of typical gastric ulcer in animals by intravenous injections of living cultures of streptococci resembling those found in rheumatic fever (the *Streptococcus viridans*) have given us a knowledge of the etiology of gastric ulcer that should do much to establish a rational, specific therapy. They have demonstrated that the conditions formerly considered essential to the production of ulcer, namely, trauma and hypersecretion of hyperacid gastric juice, are not necessary, their experiments consisting merely of injecting the cultures into normal animals. The ulcers were usually single, small, and deep, and with a marked tendency to hemorrhage and perforation. They were not sloughs such as occur in anaphylactic shock or overwhelming bacteriemic or toxemic states. Most of them were near the pyloric end of the stomach, the fundus and duodenum being less frequently attacked. Streptococci of the kind injected were found in the affected tissues at autopsy, and occasionally other infections, such as arthritis, myositis, ascending nephritis, cholecystitis, and appendicitis, were found coexistent. The streptococci used were identical with those found in small numbers in many apparently healthy mouths, and which are usually the causative factor in oral and nasopharyngeal infections.

In the light of these and subsequent confirmatory experiments, it may with reason be concluded that gastric ulcer is an infective process. Any treatment, therefore, which fails to take cognizance of this fact, will be incomplete and inefficient. We have thus a simple explanation of the inefficiency *per se* of the various standard methods of treatment, such as the operative, von Leube, and Lennhartz treatments.

A discussion of the treatment of gastric ulcer resolves itself naturally into two parts—the treatment of simple uncomplicated ulcer, and the treatment of the complications.

In *simple ulcer*, acute or chronic, the indications for treatment, as in any infective process, are: (1) to remove the cause of the infection; (2) to procure rest of the infected part; and (3) to aid nature in its efforts at overcoming the infection and repairing the damage done.

1. *Removal of the cause of the infection* should include the correction or alleviation of the various conditions which might have been contributing causes of the infection by having produced a locus minoris resistentiæ in the gastric mucosa, such as gastric atony, gastroptosis, intestinal kinks and ptoses, improper habits of diet, and occupations causing continued pressure against the epigastrium.

The most important point, however, is the search for, and complete removal of septic foci in the mouth, nose, throat, and accessory sinuses, rectum, appendix, gall-bladder, pelvis, or any other part of the body. It is the neglect of this very important part of the treatment of gastric ulcer which, in the writer's opinion, accounts for the frequent recurrence of the ulcer symptoms after apparent medical or surgical cures. Most reports of cures are too optimistic, probably more than half of the cases reported as cured by either method having subsequent recurrences of which the physician or surgeon had no knowledge. Cases showing a recurrence of ulcers after apparently complete healing, either at the same point as before or at some other point in the gastroduodenal mucosa, such as the occurrence of gastric or esophageal ulcers after operation for duodenal ulcer, or vice versa, are too frequently seen to require more than mention. It is the writer's belief that no ulcers are cured unless the primary focus of infection is removed. In a recent series of 96 consecutive cases observed by the writer, infections of the teeth and gums were found in 78 or 81 per cent., infections of the nasopharynx and accessory sinuses in 15, or 15.6 per cent., and other infections, such as boils and carbuncles, fistula in ano, and pelvic infections, preceding the onset of ulcer symptoms, in 3, or 3.4 per cent. In many instances two or more of these infections were found in the same case, but only the most marked are included in the above figures. In practically all cases the *Streptococcus viridans* was isolated in pure culture. Occasionally the focus of infection has been removed before the cases apply for treatment for the ulcer, as in cases where all the teeth have been removed for pyorrhea, superficial infections, or pelvic diseases cured by surgery. In such cases a careful systematic search for secondary infective foci should, however, always be conducted.

It would seem at first glance that the *removal of the infected area*—that is, excision of the ulcer—would be a most rational procedure, but the disturbances of motility from this operation alone, and the high mortality from combined excision and gastroenterostomy, make it desirable, in uncomplicated ulcer at least, to resort to operation only after prolonged and adequate medical treatment has done no good, or has been followed by frequent exacerbations. When operation is resorted to, the operation of choice should, of course, include excision of the ulcer. In ulcer at the pylorus, a Finney pyloroplasty, the Kocher operation, or some similar procedure is preferable, but where none of these procedures is practicable, excision with gastrojejunostomy must be done. While many cases of gastric

ulcer have been reported cured by simple gastro-enterostomy, with or without artificial closure of the pylorus, it is extremely doubtful whether this operation is more than a palliative measure, accomplishing no more than merely neutralization of the hyperacidity. It must not be forgotten that the careful postoperative treatment, upon which the success of operation so largely depends, and which must be continued for at least six months to a year, should be the same treatment given for an ulcer not operated upon.

2. *Rest of the affected part* may be procured in a number of ways. Of these, proper diet is probably the most important. The food taken, while nourishing, should be concentrated, unirritating, and easily and completely digestible. In the beginning, feeding every three hours of milk, with the addition of raw eggs (three or four a day), cereals, gelatin, simple crackers or stale bread, with plenty of butter and olive oil, will be sufficient. After a couple of weeks of this diet, gradually other foodstuffs may be added, beginning with vegetables and fruits. Meat should not be allowed for six or eight weeks at the earliest, and then only with extreme caution. Condiments and rich soups must always be avoided. Throughout the treatment the patient should get enough nourishment to gain weight steadily.

Rest in bed is always beneficial and may be necessary in many severer cases for the first week or two. As much rest as possible should be taken throughout the treatment, and long hours of sleep should be insisted upon. Rest of the ulcer will also be aided by coating the gastric mucosa and the ulcer surface with a demulcent, protective substance like bismuth subcarbonate in suspension in liquid petrolatum, ten grains to one dram. This should be given about twenty minutes before each feeding, and will be found soothing and slightly laxative in its action.

Neutralization of the hyperacidity is helpful early in the treatment, and is most simply accomplished by giving sodium bicarbonate or milk of magnesia one-half to one hour after feeding, and by a diet rich in albumin, able to combine quickly with large amounts of hydrochloric acid and still not stimulating to gastric secretion, such as the diet outlined above.

Quieting of the gastric hyperexcitability, by means of atropine, given to physiological effect, is also of considerable value. Laxatives are usually necessary, and the encouragement of proper evacuations will help to eliminate reflex irritation from intestinal toxemia. Mineral oil, properly administered, not only acts as an efficient laxative and intestinal antiseptic, but also, in common with other oils, acts as a sedative to the gastric mucosa, tending to diminish the hypersecretion.

Duodenal feeding must be condemned, because the presence of the tube acts as a foreign body in the stomach, and will cause greater excitability of this organ.

3. *To aid nature* in its efforts at overcoming the infection and instituting repair of the injured tissues, the use of tonics may be recommended. The patients are usually anemic and at least somewhat emaciated, and iron and calcium in some form are useful. The most valuable aid, however, is the use of autogenous bacterial vaccines prepared from cultures obtained from the foci of infection, which, in addition to aiding in the clearing up of these foci, has been found by the writer to have often a distinctly beneficent action on the ulcer symptoms. Vaccines have been tried out by the writer in 38 cases of gastric and duodenal ulcer with fairly constant results. As a rule, a more or less distinct general reaction, with mild chill, feverishness, languor, and general bodily pains, has occurred in from six to twenty-four hours after the injection, together with an exacerbation of the ulcer symptoms. After this a marked improvement has been noted, which improvement was particularly striking when we first began using this treatment, when several cases, which had been very refractory to the usual treatment, began to show immediate alleviation of all symptoms, and went on to apparent cure. A few typical case histories follow:

Case I. J. M., sixty years of age, Irish, married. Family history negative. Had had typhoid fever twenty-five years before. For twenty years before applying at the Brooklyn Hospital Dispensary he had been troubled with his stomach. Attacks of increasing severity and frequency had finally rendered him unfit for work. He was suffering from severe sharp pain in the epigastrium, coming on shortly after meals, worse after heavy food, and very severe at night. He had sour regurgitation and occasional vomiting of sour material. His bowels were constipated. Examination showed a well-nourished man, skin and mucosæ pale, tongue tremulous, teeth markedly pyorrheic, heart moderately hypertrophied, abdomen soft, with marked tenderness at the epigastrium. No masses discernible. The urine was negative, the stool contained occult blood, and the test meal showed evidence of a hypersecretion, with free HCl 60, total acidity 70. After three weeks of the usual dietetic and medicinal treatment the patient still had some pain and soreness in the epigastrium, and considerable belching. A vaccine was then prepared from cultures of the *Streptococcus viridans* obtained from the pyorrhea pockets, and after an initial dose of 100 million bacteria, there occurred a systemic reaction, together with more epigastric pain than he had had in weeks. After gradually increasing doses for two months, and treatment of the pyorrheic teeth, the pain and soreness entirely disappeared, and five months later the patient was eating everything, having no pain, and steadily gaining weight and strength. At that time a test meal examination showed free HCl 13, and total acidity 26, with no evidence of a hypersecretion.

Case II. J. S., 26 years of age, a conductor, unmarried. Family history negative. Had had an attack of fever, headache, and belching six years before. He was a moderate smoker and beer drinker. For eighteen months before applying for treatment the patient had been belching and regurgitating sour water one to two hours after meals, and for eight months had had burning epigastric pain, worse about five hours after his heaviest meal in the evening. This pain was relieved by vomiting, which occurred frequently, and was sour and burning. He had less pain after light food than heavy. His bowels had been obstinately constipated for six months, and he had lost about fifteen pounds in that time. Examination showed a somewhat emaciated youth, with pale skin and acne. His teeth were moderately pyorrheic, and his nose showed an old sinus infection. Examination of the chest was negative. His abdomen was retracted, very tender in the epigastric region, and showed some rigidity of the upper right rectus. The urine was negative, the stool showed the presence of occult blood, the test meal showed free HCl 37, total acidity 65. After ten days of the usual dietetic and medicinal treatment, the patient's symptoms persisted. After an initial dose of 75 million streptococci there was a slight reaction in the form of an exacerbation of the pain and belching twelve hours later, and then the patient began to improve. The vaccine injections were given weekly for three and one-half months, at the end of which time the pain and tenderness had disappeared, the bowels were regular, and a test meal showed free HCl 35, total acidity 50. He subsequently neglected treatment of his nasal infection, and after one year had a recurrence of his ulcer symptoms in a mild degree. He was then more carefully treated, and did not have a recurrence.

Case III. H. H., 51 years old, female, housewife, married. Family history negative. Had had abscess

of arm eighteen years before. Eleven years before had had a hysterectomy and an ovarectomy, followed by cessation of menses, but no nervous symptoms. Seven years previously had had an attack like the one for which she was applying for treatment. Five years previously had had three attacks of pain in the appendix region, but none since. One year previously had been in bed twelve weeks with an attack called gastric ulcer, from which time she had had constant soreness in the epigastrium, with frequent attacks of burning epigastric pain four to six hours after meals, sooner and more severe after heavy food, relieved by food or kümmel, and very bad at night. She was very nervous, and afraid to eat. Examination showed a well-nourished woman. Her teeth were normal, her nasal sinuses chronically infected. Her chest was negative. The abdomen was flabby, hypersensitive, and very tender in the epigastric and appendix regions. Otherwise negative. Urine examination was negative, stool contained no occult blood, test meal showed free HCl 32, total acidity 52. After three months of the usual treatment, there was some relief, but frequent recurrence of the pains, worse at night. An autogenous streptococcus vaccine from the nasal infection was then given, the first dose of 100 million causing general bodily pains, and an exacerbation of the stomach pain. After two days improvement was noted, and continued thereafter. The vaccine was continued thereafter at weekly and later biweekly intervals for four months. Since then the stomach has not given much trouble, but the patient has been seen at intervals suffering from nervous symptoms resembling those of the menopause.

Complications.—The complications of gastric ulcer which must be considered are hemorrhage, perforation, disturbances of motility, and carcinomatous degeneration. Hemorrhage, whether manifest, as in the presence of hematemesis and melena, or concealed, as where only occult blood is found in the feces or stomach contents, requires rest in bed until it has disappeared. In severe cases, rest in bed, with ice-bag over the epigastrium, the withholding of all food by mouth, and enough morphine to insure quiet, will usually result in checking the hemorrhage. The use of horse serum subcutaneously may be necessary to check a severe hemorrhage. Gelatin by mouth and calcium by mouth or rectum, are about the safest of the many agents recommended to be used in this way. When feedings are begun, small quantities of iced milk, frequently repeated, should be given at first, and the diet then gradually and cautiously increased. Rest in bed should continue until occult blood has permanently disappeared from the stools. Rectal feeding is of doubtful value, but may be tried where the patient must be kept without food by mouth for a long time. Dextrose or lactose solution is probably the best nutrient. Profuse hemorrhages, which recur and threaten the life of the patient, require opening of the stomach and suture, or better, excision of the ulcer and gastroenterostomy. It is often very difficult to find the bleeding point, even in large hemorrhages, so that operation during the continuance of the bleeding should be undertaken only as a last resort. It is usually necessary to accompany this operation by a saline venous infusion, or transfusion of blood.

Perforation, whether acute or chronic, requires operation as soon as the diagnosis is made. The extent of the operation must, of course, be guided by the patient's condition, the ideal operation being excision or infolding of the ulcer, combined with gastroenterostomy.

Severe disturbances of motility, as in pyloric stenosis or hour-glass stomach, whether caused by internal cicatrices or external adhesions, require suitable operation. Even here excision of the ulcer, with pyloroplasty in pyloric stenosis, and gastrogastrostomy in hour-glass stomach, should be done if possible, as gastroenterostomy alone, in a large proportion of cases, has been shown to result in a return of the ulcer symptoms. Where operation is refused, much may often be done to alleviate the vomiting and distress by means of lavage, the ingestion of oil before eating, the eating of small amounts of highly nutritious food at short intervals, and the administration of antispasmodics, demulcents, and antacids.

Carcinomatous degeneration requires operation as early as recognized, or even when only suspected, but not definitely determined. When found to be inoperable, palliative measures such as mentioned in the previous paragraph should be followed out.

Summary.—1. The newer knowledge of the etiology of gastric and duodenal ulcer requires a revised rationale of treatment. It also points out the way to efficient prophylactic treatment.

2. The removal of all infective foci constitutes the most important and practically indispensable procedure in the cure of gastric ulcer.

3. The use of autogenous bacterial vaccines is of value.

4. The early diagnosis of the complications of gastric ulcer is important, so that proper treatment may be promptly instituted.

889 Union Street.

A STUDY OF THE INFLUENCE OF ELECTRICITY ON METABOLISM.

By MATTHEW STEEL, Ph.D.,

BROOKLYN, NEW YORK.

(From the Chemical Laboratory of the Long Island College Hospital.)

I. Introduction.—Probably no department of medical science is less clearly understood by most physicians than the influence of electricity on physiological processes. There is a small group of men who are devoting their lives to this interesting field of science and they are discovering many important facts and are applying their knowledge in the treatment of disease with considerable success. The majority of the medical profession, however, do not seem willing to accept the statements made by these enthusiastic workers. This probably is due partly to insufficient training in "physicochemical physiology" and "physicochemical pathology" among medical men, and partly to the fact that many of the electrotherapeutists fail to appreciate the necessity of substantiating their statements with carefully conducted researches. To use the words of Thomas Renton Elliott, "Medicine owes no debt of gratitude to those who teach to her theories without proof."

In reviewing electrotherapeutic literature, one repeatedly finds statements in regard to the influence of a particular electric current on metabolism, yet the statement is rarely accompanied by convincing figures to substantiate the statement. In the French literature one finds a few very carefully performed researches, especially on the influence produced by the high-frequency and static currents.

Influence of High-frequency Currents on the Urinary Secretion.—The three d'Arsonval currents (the autocondensation, the autoconduction, and the direct d'Arsonval) have been used for a number of years for their stimulating influence on metabolism, and their effect on the urinary secretion has been studied by several investigators on patients, on normal people, and, in a few cases, on animals.

The results chronologically cited are as follows:

Apostoli and Berlioz[1] tested the urine of 280 patients who were under treatment by autoconduction, testing in all 781 specimens. They found an increased elimination of total solids, volume of urine, urea, uric acid, and phosphates.

Reale and Renzi[20] repeatedly obtained a decrease in the neutral sulphur, and an increase in uric acid and phosphates. They claim that this simultaneous increase of excretion of uric acid and phosphoric acid in the same proportion seems to point to some action of the high-frequency currents on nuclein. In the type of cases which they studied they think the nuclein is probably the original source of the sugar in the urine, and therefore that it is to this action on the nuclein that the favorable results obtained in the use of high-frequency currents in diabetic cases may be explained.

Vinai and Vietti[27] performed experiments on two normal adults with the autocondensation type of high-frequency current (periods, three days, treatment, fifteen minutes). They obtained the following results: (*a*) The volume of urine did not appreciably change with one subject, whereas there was a falling off with the other. (*b*) In both cases the total nitrogen, urea and phosphoric acid were much increased during the period of treatment, returning to normal in the third period.

Denoyes, Martre, and Rouviere[10] also studied the effect of the autocondensation current on normal individuals. In general, they substantiated the results of Vinai and Vietti.[27] They found that this current caused an increase in the volume of urine, total solids, total nitrogen, urea, uric acid, sulphates, phosphates, and chlorides.

Lecomte[15] performed experiments on himself and on rabbits with autocondensation and autoconduction currents. With both types of these high-frequency currents he obtained a rise in body temperature and an increase in the volume of urine, the total nitrogen, urea, uric acid, and phosphates. The increase is more marked on using the autocondensation than after using the autoconduction current.

Static Electricity.—The metabolic effects of the electrostatic bath were studied by Truchot.[26] In the electrostatic bath the subject is insulated and placed in connection with one pole of a static machine, the other pole being usually earthed. The electricity escapes from all points of the integument, giving a slight tickling sensation as if the skin were rubbed with gauze. The body is thus traversed by a constant electric current of high tension. Truchot found that the electrostatic bath caused an increase in the elimination of total nitrogen, urea, uric acid, phosphates, and chlorides.

The influence of the negative bath (an electrostatic bath in which the subject is connected with the negative pole) on metabolism was carefully studied by Yvon.[31] He used a Wimshurst machine and carried out his experiments on normal adults. Yvon failed to substantiate the results of Truchot.[26] He (Yvon) obtained a lowering of the volume of urine and a decrease in the urea, uric acid, and phosphate output. Later Martre and Florence[17] repeated the work of Yvon on the effects of the negative bath on the urinary secretion. They likewise found a diminution of phosphates and uric acid, but they obtained an increase in the volume of urine, total nitrogen, urea, total sulphur, and chlorides. No reliable data were found regarding the influence of the constant currents on metabolism as indicated by the urinary secretion.

By carefully studying these and several other less authentic observations, one is impressed with the fact that two or more totally different types of electrical currents may apparently have practically the same effect on metabolism. For example, the high-frequency type of current, whose action is largely thermic, causes an increase of practically the same urinary constituents as the static type of current whose action is largely mechanical. However, as the data were obtained by different investigators, working under different conditions and living on different diets, our comparison may be too hasty. A careful review of the literature indicated that no extensive comparative metabolic study of this kind had ever been attempted before this work was inaugurated.

II. *General Description of the Experiments.*—This investigation consists of seven metabolism experiments, varying from nine to twelve days each. Five types of electrical modalities were employed.

Subject and environment. All the experiments were performed on the author, who is a normal, healthy man, of medium height and weight. During the experiments his life was extremely uniform.

Food. The daily food was practically non-purin, and consisted of bread, milk, cereal, eggs, bacon, potatoes, lettuce, olive oil, vinegar, cheese, fruit, sugar and water. The total calorific value of the diet amounted to 2,850 calories.

Analysis. The urine was kept in sterile bottles and was preserved with thymol. The urinary nitrogen was determined as follows: ammonia, each day; total nitrogen, urea, creatinin, uric acid, and purin bases, at the end of each period on composite samples.

In experiments III, IV, V, VI and VII, the total sulphur, the inorganic sulphates, the ethereal sulphates, and the neutral sulphur were also determined at the end of each period on composite samples.

Analytic methods. Total nitrogen was determined by the Kjeldahl process. Urea was determined by the Benedict method.[7] Creatinin and uric acid were determined by the methods devised by Folin.[11] The purin base nitrogen was determined by Welker's modification of the methods of Arnstein and Salkowski.[29] The ammonia was determined by Steel's[25] modification of the Folin process. The total sulphur was determined by Benedict's[6] method. The inorganic sulphates, the ethereal sulphates, and the neutral sulphur were determined by Folin's methods.[12]

Apparatus employed. The faradic sinusoidal current used in experiments I and II was administered with the Wappler Wall Plate apparatus with provisions for galvanic and faradic sinusoidal currents. The autocondensation current used in experiments III and IV was administered with the Meyerowitz unipulsator, which gives a directional current passing into the condensors in series with a solenoid (No. 8 B. and S. gauge copper wire used) 12 inches in diameter, with a discharging spark gap approximately 2 inches in length.

The combined direct d'Arsonval current and autocondensation current with thin dielectric used in experiment V was administered with the Wappler 2 kilowatt transformer of the King model type. The static wave current used in experiment VI was administered with a Van Houten and Ten Broeck Holtz machine. The galvanic sinusoidal current used in experiment VII was administered with the Victor galvanic sinusoidal apparatus.

III. *First and Second Experiments.—The Faradic Sinusoidal Current.* This current is an alternating faradic current in which the coil revolves with uniform velocity in the magnetic field. During half of each revolution of the coil, the current is reversed in direction. The intensity of such a current is proportional to the size of the angle between the plane of the coil and the line of commutation.

Physiological Action. The faradic sinusoidal current produces muscular contractions without producing the disagreeable sensations which accompany the simple faradic. It also possesses some electrolytic action and a mild thermic effect.

First metabolism experiment. Influence of the faradic sinusoidal current with moderate frequencies of interruption. The general conditions of this experiment were as follows:

Preparatory period. Three days. During this period no urine was saved. The three days on the selected low-purin diet sufficed to accustom the subject to the food, and it gave ample time for the alimentary tract to get rid of previously eaten food.

Fore period. Three days. Normal conditions.

Treatment period. Three days. Each day during this period the faradic sinusoidal current was administered at a uniform strength for 30 minutes. The secondary coil was placed over the primary at the tenth division of the Wappler scale. The frequencies of interruption were 45 per minute. One metal plate was placed at the back of the neck and the other one on the leg.

After period. Three days. During this period any lingering effects of the treatment were noted.

Analytic results. The more important data of the experiment are given in table I. The discussion of the results will be taken up in connection with those of the second metabolism experiment.

Second metabolism experiment. Influence of the faradic sinusoidal current with rapid frequencies of interruption. The details of this experiment are almost identical with those of the first experiment, and are briefly as follows:

Preparatory period. Three days. Standard diet commenced. No urine kept.

Fore period. Three days. Normal conditions.

Treatment period. Three days. Each day during this period the faradic sinusoidal current was administered for 30 minutes at a uniform strength. The secondary coil was placed over the primary at the tenth division of the Wappler scale. The frequencies of the interruption were 90 per minute. One metal plate was placed at the back of the neck and the other on a leg.

After period. Three days.

Analytic results. The essential data of this experiment are presented in Table II.

Discussion of the Results Obtained in the First and Second Experiments. Fluctuations in the daily volume of urine. The amount of water in the food remained the same each day, yet, as an examination of Tables I and II will show, there was a much higher elimination of urine during the periods of treatment than in the fore periods; the average increase in the volume of urine was 180 c.c. per day in the first experiment and 120 c.c. in the second experiment. The after periods showed a rapid recovery from the diuresis.

Effects on the total solids. In both experiments there was an average daily increase of about four grams of total solids during the periods of treatment. The increase in total solids still continued in the after periods although to a lesser degree. This increase in total solids shows that the faradic sinusoidal current apparently augments cellular metabolism.

Effects on the elimination of total nitrogen of the urine. As one might expect, after noting the increase in total solids, there was an increase in the output of total nitrogen in the urine voided during the periods of treatment. The increase was on an average about 0.2 gram per day.

Effects on the partition of the total urinary nitrogen. The most noticeable effect on the distribution of the urinary nitrogen was the absolute and relative increase in the creatinin nitrogen during the periods of treatment. This was probably the result of muscular contraction rather than the result of electrolysis. The urea nitrogen was slightly increased in absolute amount, but there was a small relative decrease during the periods of treatment. The absolute and relative excretions of nitrogen in the forms of uric acid, purin bases, ammonia, and undetermined products were remarkably constant through all the periods. There was a very slight increase during the periods of treatment.

Comparison of the first and second experiments. On comparing the data presented in Tables I and II, one is impressed with the uniformity of the results. It would, therefore, seem that within certain limits variations in the frequency of interruption of a faradic sinusoidal current of uniform strength do not appreciably modify its metabolic effects.

Production of ururosein and nitrites. During the course of determinations of urea by the Benedict method[7] ururosein developed in the specimens voided during the period of the electrical treatment. Herter[13] has shown a relationship between the development of nitrites in urine and the appearance of ururosein. The specimens which gave the ururosein reaction, apparently as a result of the electrical treatment, responded strongly to tests for nitrites, whereas the normal specimens (which did not contain ururosein) were free from nitrites.

IV. *Third and Fourth Experiments. Directional and Autocondensation Current with Thick Dielectric.* The high-frequency currents of d'Arsonval and Tesla are alternating currents whose direction is reversed over a million times per second. The special physiological properties of these currents were first published by d'Arsonval in 1891.[2] D'Arsonval distinguishes between an indirect and a direct application of the currents. The indirect method is again subdivided into two methods of administration, the autoconduction and the autocondensation methods. A brief description of administration of these methods is as follows:

Autoconduction. In the autoconduction method the subject is surrounded by a large spiral which is connected with the apparatus, but he is not in actual contact with the conductor. As the currents pass through the spiral, a similar current is induced in the body of the subject.

The spiral or cage solenoid are made large enough to cover the entire body, and are arranged so that the subject can stand or lie down. Strong currents may be made to pass through the body by this method and the subject becomes so charged with electricity that sparks can be drawn from any part of his anatomy.

Autocondensation. When treated by this method the subject becomes one of the two armatures of a condenser. This is accomplished by having the subject lie on a couch, which consists of a long metal sheet covered with an insulating material of suffi-

cient thickness to prevent the passage of sparks. The metal sheet is connected with one end of a d'Arsonval helix. The subject holds in his hands a pair of electrodes which are connected to the other end of the helix. A condenser is thus formed, in which the insulating material is the dielectric and the metal sheet and the subject form the two armatures. This condenser is charged and discharged with every alternation of the current.

I. There is usually very little muscular contraction and the nervous system does not register any impression. This phenomenon is not thoroughly understood, but the usually accepted theory is that motor and sensory nerves respond only to stimuli whose rate of oscillation is less than 10,000 per second, whereas, high frequency currents are alternating currents whose direction is reversed over a million times per second.

TABLE I.—TREATMENT WITH THE FARADIC SINUSOIDAL CURRENT. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT—THE SECONDARY COIL WAS PLACED OVER THE PRIMARY AT THE TENTH DIVISION OF THE WAPPLER SCALE. THE FREQUENCIES OF INTERRUPTION WERE 45 PER MINUTE

Daily Averages

PERIOD		URINE									
					NITROGEN IN THE FORM OF						
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram
Normal	3	910	46.2	8.25	6.16	0.52	0.13	0.06	0.55	0.83
Electrical treatment	3	1090	50.2	8.46	6.19	0.55	0.14	0.07	0.69	0.82
After	3	980	48.4	8.24	6.17	0.53	0.13	0.06	0.54	0.81
Relation to Total Nitrogen										
					Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Normal					74.5	6.3	1.6	0.7	6.6	10.1
Electrical treatment					74.1	6.5	1.7	0.8	8.1	9.7
After					74.9	6.4	1.6	0.7	6.5	9.8

TABLE II.—TREATMENT WITH THE FARADIC SINUSOIDAL CURRENT. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT—THE SECONDARY COIL WAS PLACED OVER THE PRIMARY AT THE TENTH DIVISION OF THE WAPPLER SCALE. THE FREQUENCIES OF INTERRUPTION WERE 90 PER MINUTE

Daily Averages

PERIOD		URINE								
					NITROGEN IN THE FORM OF					
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram
Normal	3	990	47.2	8.31	6.33	0.47	0.14	0.04	0.51	0.82
Electrical treatment	3	1110	51.3	8.50	6.39	0.50	0.15	0.06	0.63	0.77
After	3	975	48.1	8.27	6.30	0.48	0.14	0.05	0.50	0.80
Relation to the Total Nitrogen										
					Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
Normal					76.2	5.7	1.7	0.5	6.1	9.9
Electrical treatment					75.2	5.9	1.8	0.7	7.4	9.1
After					76.2	5.8	1.7	0.6	6.0	9.7

The direct d'Arsonval current. This is the simplest method and consists in connecting the subject to the opposite ends of the solenoid by suitable electrodes. The subject's body is thus placed in shunt or derivation, and as the solenoid offers great resistance to the passage of the current, by reason of its property of self-induction, the current passes via the derived circuit of which the subject's body is a part. When currents of large amperage with this type of apparatus are used, the subject's body will soon become unbearably warm, and yet there will be no sensation of muscular contraction.

Résumé of the physiological effects of the high frequency currents. The various investigators of the high frequency currents have established by physiological experiments on men and animals that: See Weiss,[30] also Nernst,[19] Hill,[14] and Keith Lucas.[16]

II. They have a pronounced thermic effect, especially the direct d'Arsonval current. In fact, it appears that what physiological effects are produced by these currents are due to the heat into which they are converted in tissues through which they travel. The thermic effect of the d'Arsonval current is rather distinctive in that it comes from within. For example, if we apply the current by means of a pair of metallic electrodes to the opposite ends of a potato, it will be found that the center of the potato will be cooked long before the exterior portion, thereby showing that the greatest heat is midway between the poles. See Nagelschmidt,[18] Zimmern and Turchini,[33] von Zeinek,[32] Schittenhelm,[31] Bordier, and Lecomte,[15] Bonnoit,[3] and Somerville.[22]

III. The number and amplitude of the respiratory movements are increased. This fact was first observed by d'Arsonval,[3] and was further confirmed by Lecomte,[4] also Baedeker,[5] and others.

IV. The high frequency currents have a pronounced effect on the blood pressure. The autocondensation current is especially valuable from a therapeutic standpoint, owing to the fact that it is remarkably active in lowering the arterial tension. d'Arsonval[3] was the first to demonstrate this property. His statements were all reexamined and verified by Baedeker.[5] Their findings have been corroborated by many others.

V. Metabolism is considerably increased.

VI. There is no electrolytic action. This fact is easily demonstrated by passing the current through an aqueous solution. No electric decomposition takes place.

Third and Fourth Experiments. The general conditions of the third and fourth experiments were the same, and, briefly, were as follows:

Preparatory period. Three days. The diet was commenced, but no urine was collected.

Fore period. Two days. Normal conditions.

Treatment period. Two days. On each of these days the subject received the autocondensation current for 30 minutes. The strength of the current used was 500 mille amp. The blood pressure and pulse rate were noted just before and at the end of each treatment.

After period. Two days.

Analytic results. The essential data of the metabolic effects of the third experiment are presented in Table III, and those of the fourth experiment in Table IV.

Discussion of the Results Obtained in the Third and Fourth Experiments. Effects on the blood pressure and pulse rate. Each treatment caused a fall in blood pressure of 4 to 10 mm., and a rise in pulse rate of 2 to 8 beats per minute. The effect on the blood pressure was comparatively permanent. At the beginning of the treatment the subject's blood pressure was a little above normal for a person of his age (34 years), being 135 mm. At the end of the experiments it was 120 mm. and three months later it was 122 mm.

Effect on the volume of urine. In both the third and fourth experiments there was an average daily increase in quantity of urine voided during the periods of treatment of about 300 c.c. over that voided during the fore periods. The quantity voided during the after periods was somewhat less than that voided during the fore periods.

Effects on the total solids. In each experiment the treatment caused an increase of 5 to 6 grams of total solids, as can be seen by a glance at Tables III and IV. During the after periods the total solids were still a few grams more than the amounts eliminated during the fore periods, thereby showing that the improved cellular metabolism continued some days after the treatment had stopped.

Effects on the elimination of total nitrogen in the urine. In both metabolism experiments there was a comparative increase in the excretion of urinary total nitrogen during the periods of electrical treatment. This increase amounted to 0.3 to 0.4 grams per day.

Effects on the partition of the total urinary nitrogen. The absolute excretion of *urea nitrogen* ran parallel with the *total nitrogen*, but the relative amounts did not show the same harmony. During the periods of electrical treatment in both the third and fourth metabolism experiments, there was an absolute increase in the excretion of total nitrogen and likewise of urea; whereas, in the third experiment, there was no increase in the percentage of the total nitrogen eliminated as urea. In the fourth experiment there was an actual decrease in the percentage of the total nitrogen eliminated as urea. *Ammonia, uric acid, purin bases,* and *creatinin* were relatively and absolutely increased during the periods of electrical treatment in both the third and fourth metabolism experiments. Of these the creatinin showed the greatest absolute and relative increase. The nitrogen in *undetermined products* fluctuated in absolute amounts, but the percentage values were always lowest during the periods of electrical treatment.

Effects on the total sulphur in the urine. The excretion of *total sulphur* was lowest during the fore periods and highest during the periods of electrical treatment. The trend of the total sulphur elimination was practically the same as that of the total nitrogen elimination. The only period in which there was a relative variance was the after period of the third metabolism experiment. In each of the other periods the amounts of total sulphur rose or fell in perfect accord with the rise or fall of the total nitrogen.

Effects on the partition of the total urinary sulphur. During the periods of electrical treatment, in both experiments, the *inorganic sulphates* were increased absolutely and relatively, the *ethereal sulphates* were slightly increased, absolutely and relatively, and the *neutral sulphur* was slightly increased in absolute amounts but relatively decreased. The variations between the fore periods and the after periods were not pronounced enough to acquire special mention.

Production of urorosein and nitrites. The same phenomenon of the appearance of urorosein and nitrites in the urine voided during the periods of electrical treatment, noted in the experiments with the faradic sinusoidal current, was obtained with the autocondensation current. Neither urorosein nor nitrites were obtained in the fore periods and only slight amounts appeared in the after periods.

V. *Fifth Experiment. Combination of the Direct d'Arsonval Current and the Autocondensation Current with Thin Dielectric.*—The electrical modality used in this experiment is a combination of the direct d'Arsonval and the autocondensation currents.

A brief description of the method of applying the current used in this experiment is as follows: The subject is seated in a reclining chair, upon which is placed a thin dielectric (a cushion of compressed fiber), under which is placed a metal sheet similar to that used in the autocondensation couch. This metal sheet is connected to one end of the solenoid, and the subject is connected to the other end of the solenoid by a pair of metal handles which he holds in his hands. This arrangement completes the autocondensation part of the apparatus. By having a metal plate, upon which the subject places his bare feet, which is also connected to the solenoid, the direct d'Arsonval current may be applied at the same time.

The general physiological effects. The only factor that differentiates this current from the autocondensation current is its more pronounced thermic effect. This may be attributed partly to the use of a thin dielectric and partly to the combined direct d'Arsonval current.

TABLE III—TREATMENT WITH THE AUTOCONDENSATION CURRENT WITH THICK DIELECTRIC. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT 500 MILLE AMPERES

Daily Averages

PERIOD		URINE												
					NITROGEN IN THE FORM OF							SULPHUR IN THE FORM OF		
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products	Total Sulphur*	Inorganic Sulphates	Ethereal Sulphates	Neutral Sulphur
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram	Grams	Grams	Gram	Gram
Normal	2	1085	48.8	8.47	6.47	0.49	0.14	0.06	0.42	0.88	1.53	1.14	0.15	0.24
Electrical treatment...	2	1400	51.1	8.86	6.78	0.54	0.16	0.07	0.50	0.83	1.76	1.31	0.19	0.26
After	2	900	51.3	8.40	6.43	0.47	0.15	0.05	0.48	0.80	1.63	1.21	0.14	0.28
		Relation to the Total Nitrogen									*Relation to the Total Sulphur*			
					Per. Cent	Per. Cent	Per. Cent	Per. Cent	Per. Cent	Per. Cent		Per. Cent	Per. Cent	Per. Cent
Normal					76.5	5.8	1.7	0.7	5.0	10.4		74.5	9.8	15.7
Electrical treatment...					76.5	6.1	1.9	0.8	5.7	9.4		74.4	10.8	14.8
After					76.6	5.8	1.8	0.6	5.7	9.5		74.2	8.6	17.2

*All the sulphur compounds are reported as SO_3.

TABLE IV—TREATMENT WITH THE AUTOCONDENSATION CURRENT WITH A THICK DIELECTRIC. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT 500 MILLE AMPERES

Daily Averages

PERIOD		URINE												
					NITROGEN IN THE FORM OF							SULPHUR IN THE FORM OF		
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products	Total Sulphur*	Inorganic Sulphates	Ethereal Sulphates	Neutral Sulphur
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram	Grams	Grams	Gram	Gram
Normal	3	1030	50.4	8.38	6.40	0.49	0.15	0.07	0.47	0.80	1.67	1.23	0.15	0.29
Electrical treatment...	3	1330	55.2	8.65	6.51	0.51	0.17	0.08	0.57	0.81	1.90	1.41	0.19	0.30
After	3	940	54.5	8.53	6.48	0.50	0.15	0.07	0.50	0.83	1.70	1.22	0.17	0.31
		Relation to the Total Nitrogen									*Relation to the Total Sulphur*			
					Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent		Per Cent	Per Cent	Per Cent
Normal					76.4	5.8	1.8	0.8	5.6	9.5		73.7	9.0	17.3
Electrical treatment..					75.3	5.9	2.0	0.9	6.6	9.4		74.2	10.0	15.8
After					75.9	5.9	1.8	0.8	5.9	9.7		71.8	10.0	18.2

*All the sulphur compounds are reported as SO_3.

The fifth metabolism experiment. The general conditions of the previous experiments were followed in this experiment, and were as follows:

Preparatory period. Three days. The diet was strictly adhered to, but no urine was collected.

Fore period. Two days. Normal conditions. This experiment was conducted during a very cold spell in the month of February, 1914, which, perhaps, accounts for the fact that more urine was voided during the fore period of this experiment than during the fore periods of the previous experiments. However, it only tended to make the effects of the experiment more pronounced.

Treatment period. Two days. The total length of the electrical treatment taken on each of the two days of this period was 30 minutes and the current was applied as follows: for 5 minutes, 1500 m. amperes were sent through the feet alone; under this method of application the subject's body acted as a condenser; for 15 minutes, 1,750 m. amperes were sent through the hands and feet. When applied in this manner the combination of autocondensation and the direct d'Arsonval was effected; for 6 minutes, 1,960 m. amperes were sent through the hands and feet; during this part of the treatment the subject's body became uncomfortably warm and the flushing of the capillaries of the wrists become so pronounced that he could scarcely endure the pain in the wrists. For the last 4 minutes, 1,600 m. amperes were sent through the hands and feet.

The blood pressure before the treatment was 124 mm., and after the treatment 118 mm. The temperature was 98° Fahr. before the treatment and 99° Fahr. after the treatment. During the latter part of the treatment the perspiration became visible. After the treatment the visible perspiration soon stopped, but the sensation of unusual warmth lasted for over an hour. Before the end of the first day of treatment the subject became very thirsty, due to the abnormally large amount of water lost through the skin. The amount of urine voided on this day was 905 c.c., which was 305 c.c. less than the average amount voided during the fore period. On the second day of treatment the sensation of thirst was greater than on the previous day, so it was thought advisable to drink an extra quantity of water, about equal to the decrease in urine voided on the first day of treatment. Consequently 300 c.c. extra of water were drunk.

After period. Three days. During this period the extra 300 c.c. of water were still consumed.

Analytic results. The principal data of the fifth metabolism experiment are presented in Table V.

Discussion of the Results.—Effect on the volume of urine. If one were skeptical as to whether electricity has any effect on metabolism, a study of this experiment would convince him that certain types of currents do have a profound effect. In experiments III and IV, in which the autocondensation current was used with a moderate strength of 500 m. amperes and a thick dielectric, the quantity of urine voided during the period of treatment was about 300 c.c. per day more than that voided during the fore period. In this experiment, as was pointed out in the protocol, due to the thermic effects produced by the higher amperage, the thin dielectric and the direct d'Arsonval current, the volume of urine was 305 c.c. less on the first day of the treatment than the average daily volume voided during the fore period. On the second day of treatment, although 300 c.c. extra of water were drunk, the quantity voided was still only 965 c.c., which was 235 c.c. less than the daily average of the fore period. During the three days following the treatment, although the 300 c.c. extra water were consumed, the quantities of urine voided were respectively as follows: 950 c.c., 1,030 c.c., and 1,320 c.c. This gives a daily average for the post-treatment period of 1,100 c.c. If we take into account the fact that 300 c.c. more water per day were consumed during this period than during the fore period, it means that an average of 410 c.c. less water per day was voided as urine during these three days than during the fore period. From this data it is apparent that the d'Arsonval current, if administered in a form that will raise the temperature of the body, will greatly increase the amount of moisture eliminated through the skin and mucous membranes, and that the effect lasts for several days after the treatment has been stopped.

Effect of the total solids. The amount of total solids did not vary like the volume of urine. The greatest quantity was voided during the period of treatment, which was the period in which the volume of urine was lowest. The increase was about 2 grams per day. The amount voided in the after period was just a trifle more than that voided in the fore period.

Effects on the elimination of total nitrogen in the urine. There was an average daily increase in the total urinary nitrogen of 0.45 grams during the *period of electrical treatment.* During the after period there was a falling off of 0.09 grams daily as compared with the amount eliminated during the *fore period.*

Effects on the partition of the total urinary nitrogen. The *urea nitrogen* was relatively and absolutely increased during the period of electrical treatment, the average daily increase during this period being 0.4 grams. Outside of a slight general increase during the period of treatment, there was very little difference in the output of *ammonia, uric acid, purin bases* or *creatinin* in any of the periods. The *undetermined nitrogen* was both relatively and absolutely lowest during the period of treatment. This fact is all the more singular as it was during this period that the *total nitrogen* was highest.

Effects on the elimination of the sulphur compounds. A glance at Table V shows one that the sulphur metabolism was in accord with the nitrogen metabolism. During the period of electrical treatment there was an increase in the elimination of *total sulphur* and the bulk of the increase was in the form of inorganic *sulphates.* The *ethereal sulphates* did not vary much in any of the periods. The *neutral sulphur* was lowest, both relatively and absolutely, during the period of treatment, notwithstanding the increased elimination of *total sulphur* during this period.

Urorosein and nitrites. As in the previous experiments there was a development of urorosein and nitrites in the urine voided during the period of electrical treatment. This phenomenon was apparent, though less pronounced, in the post-treatment period.

VI. *Sixth Experiment. Static Wave Current.* The static wave current, perhaps better known as the Morton wave current, is administered as follows: the subject is placed upon an insulated platform; a metal electrode, having been placed upon some part of the subject's body, is connected by wire to the positive pole of a static machine, and

TABLE V—TREATMENT WITH THE COMBINED DIRECT D'ARSONVAL CURRENT AND AUTOCONDENSATION CURRENT WITH A THIN DIELECTRIC. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT: THROUGH THE FEET 1500 M. AMP. FOR 5 MIN.; THROUGH THE HANDS AND FEET 1750 M. AMP. FOR 15 MIN.; DITTO 1960 M. AMP. FOR 7 MIN.; DITTO 1600 M. AMP. for 4 MIN.

Daily Averages

PERIOD		URINE												
					NITROGEN IN THE FORM OF							SULPHUR IN THE FORM OF		
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products	Total Sulphur*	Inorganic Sulphates	Ethereal Sulphates	Neutral Sulphur
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram	Grams	Grams	Gram	Gram
Normal	2	1210	51.2	8 32	6.22	0.51	0.13	0 06	0.40	1 00	1 65	1 22	0 17	0 28
Electrical treatment	2	935	53.4	8 77	6.62	0.55	0 14	0 06	0.49	0 91	1.74	1.32	0 18	0 24
After	2	1100	51.8	8.23	6.14	0.50	0.13	0.05	0 46	0.95	1 66	1 20	0 19	0 27
					Relation to the Total Nitrogen						*Relation to the Total Sulphur*			
Normal					Per Cent 74.8	Per Cent 6.1	Per Cent 1 6	Per Cent 0.7	Per Cent 5.6	Per Cent 12 0		Per Cent 73 9	Per Cent 10.2	Per Cent 16 9
Electrical treatment					75.5	6.2	1.6	0.7	5.5	10 4		75 8	10 3	13 9
After					74.6	6.1	1.5	0.6	5 6	11.5		72 3	11 4	16 3

*All the sulphur compounds are reported as SO_3.

the negative pole is grounded. The intensity of the current is controlled by the length of the spark gap and the size of the terminal balls.

The effect of such a current is local to a marked degree, *i.e.* there will be great muscular contraction immediately under the electrode. The static wave current is essentially a current of high potential. The amperage is very low. Its virtue lies in its ability to cause profound muscular contraction without the pain that would be produced by the galvanic or faradic currents.

Sixth metabolism experiment. The general conditions of this experiment, being similar to those previously cited, were as follows:

Preparatory period. Three days. No urine collected.

Fore period. Three days. Normal conditions. There is nothing special to note about this period.

Treatment period. Three days. Each day during this period the static wave current was administered as follows: a large electrode was placed over the liver and a strong current applied for 15 minutes; then the metal electrode was placed over the kidneys and the current applied for 15 minutes. In both instances the spark gap was 8 inches and the terminal balls 1¼ inches in diameter.

The only sensations observed were the violent muscular contractions beneath the electrode, especially when the electrode was placed over the liver, and the sensation of having the hair of the head standing on end.

After period. Three days.

Analytic results. The essential data of the sixth metabolism experiment are presented in Table VI.

Discussion of the results. Effect on the volume of urine. The total volume of urine voided during the three-day period of treatment with the static wave current was 3,870 c.c., as compared to 3,240 c.c. voided during the three-day fore period, and 3,120 c.c. voided during the three-day after period. This shows a relative increase of over 200 c.c. per day during the period of electrical treatment.

Effect on the elimination of total solids. The total solids were very markedly increased on the days in which the static wave current was administered. There was a total of 21 grams more total solids eliminated during the period of electrical treatment than during the fore period; this means an average daily increase of 7 grams. The effect of the electrical treatment on the total solids was still apparent in the after period, as there was still an average of 3.5 grams per day more eliminated during this period than during the fore period.

Effects on the elimination of total urinary nitrogen. There was an average daily increase of 0.82 grams of total nitrogen eliminated during the period of treatment. This is a greater increase than was obtained by any other modality.

Effects on the partition of the total urinary nitrogen. The urea was both absolutely and relatively increased during the treatment period. The average daily increase for this period was 0.79 grams of urea nitrogen which is equivalent to a daily increase of 1.69 grams of urea. *Ammonia nitrogen,* absolutely, was slightly increased during the period of electrical treatment, but relatively there was little change in all three periods. *Uric acid* was much the same in amount in each period. Absolutely, it was increased very slightly during the period of treatment, but relatively there was no change. *Purin bases,* both absolutely and relatively, were practically the same in each period. *Creatinin* was increased, both absolutely and relatively, during the period of treatment. The nitrogen in undetermined products was eliminated in greatest amounts in the fore period, and in smallest quantities, both absolutely and relatively, during the period of treatment.

Effects on the elimination of sulphur compounds. The *total sulphur* was eliminated in greatest amounts during the period of electrical treatment. The increase was entirely in the form of *inorganic sulphates,* for there was a slight decrease in the elimination of both *ethereal sulphates* and in *neutral sulphur* in this period. (See Table VI.) From the above data one would infer that the static wave current when applied directly over the liver and kidneys, at any rate, markedly increases metabolic function. There is considerable evidence of increased oxidation.

Elimination of urorosein and nitrites. As in the previous experiments urorosein and nitrites were found in the urine voided during treatment and after periods only.

VII. *Seventh Experiment. Galvanosinusoidal Current.* This current combines all the physiological effects of the other currents. It has marked electrolytic and thermic effects. It causes contrac-

TABLE VI—TREATMENT WITH THE STATIC WAVE CURRENT. LENGTH OF TREATMENT 15 MINUTES OVER THE LIVER FOLLOWED BY 15 MINUTES OVER THE KIDNEYS

Daily Averages

PERIOD		URINE												
					NITROGEN IN THE FORM OF							SULPHUR IN THE FORM OF		
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products	Total Sulphur*	Inorganic Sulphates	Ethereal Sulphates	Neutral Sulphur
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram	Grams	Grams	Gram	Gram
Normal....	3	1080	52 1	8 42	6 41	0 47	0.14	0 05	0.50	0.85	1 79	1 38	0.15	0 28
Electrical treatment...	3	1290	59 1	9 34	7 20	0 53	0 16	0 06	0.59	0 70	1.96	1.57	0.14	0 25
After...	3	1040	55 6	8 47	6 47	0 49	0 14	0 06	0.52	0 79	1 82	1 39	0.16	0.27
					Relation to the Total Nitrogen							*Relation to the Total Sulphur*		
					Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent		Per Cent	Per Cent	Per Cent
Normal					76 1	5.6	1.7	0 6	5 9	10.1		76.0	8.4	15.6
Electrical treatment...					77.9	5 7	1.7	0.7	6.3	7.5		80.1	7.1	12.8
After.					76 5	5.8	1.7	0.7	6.1	9 3		76.3	8.8	14.9

All the sulphur compounds are reported as SO_3

tions of both striated and unstriated muscles. It has strong polar action, and it appears to have a special action on the sensory nerves.

Seventh metabolism experiment. The conditions of this experiment are quite similar to those previously cited. The periods were as follows:

Preparatory period. Three days. No urine collected.

Fore period. Three days. Normal conditions. Urine collected.

Treatment period. Three days.

Each day during this period the galvanosinusoidal current was applied as follows: large felt covered plates, 5 x 8 inches, moistened in salt solution, were placed over the middle of the back and over the abdomen. The strength of the current used was 70 m. ampere, with slow interruptions. The length of the treatment was 30 minutes.

The sensations of heat, pain and muscular contractions were quite marked with this current.

After period. Three days.

Analytic results. The more important data of the seventh metabolism experiment are presented in Table VII.

Discussion of the Results.—Effects on the volume of urine. The total volume of urine voided during the fore period was 3,240 c.c., whereas the total volume voided during the period of treatment (same number of days) was 2,010 c.c. This is an average daily decrease of 410 c.c. for the period of treatment. During the after period there was a total of 2,895 c.c. voided, which is 345 c.c. less than the quantity voided during the fore period.

During this experiment the subject was weighed night and morning and the average of these weighings per period was as follows: fore period, 162 lbs.; treatment period, 161 lbs.; after period, 161 lbs.

Comparing the quantities of urine voided in each period of this experiment with the weight of the subject, one must conclude that the decrease in the amount of urine voided during the periods of treatment and the after period was due to increased perspiration, most probably due directly to the thermic effects of the current.

Effects on the total solids. It is interesting to note that the quantity of total solids eliminated in each period varies inversely with the volume of urine voided. Especially noteworthy is the fact that notwithstanding the small quantity of urine voided during the treatment period, the total solids were 2 grams per day above the normal.

Effects on the elimination of total urinary nitrogen. The quantities of total nitrogen excreted in the normal period and in the post-treatment period were almost identical. The amount excreted during the treatment period was 0.26 gram per day above normal.

Effects on the partition of the total nitrogen. There was 0.21 grams more of urea nitrogen, equal to 0.45 gram of urea, eliminated per day during the treatment period than during the fore period. However, the relative percentage of the total nitrogen eliminated in both periods was practically the same. There was a slight increase, both absolutely and relatively, in the nitrogen eliminated as ammonia, uric acid, purin bases, and creatinin during the treatment period, whereas the nitrogen in the undetermined products was decreased, both absolutely and relatively, during this period.

Effects on the elimination of the urinary sulphur compounds. There was an increase in the total sulphur during the period of electrical treatment, the partition of which was as follows: an increase in the total sulphates, a very slight increase in the ethereal sulphates, and a decrease in the neutral sulphur.

Effect on the elimination of urorosein and nitrites. Positive tests for *urorosein* and nitrites were obtained in the urines voided during the treatment period and the after period. Neither urorosein nor nitrites were found in the urine voided in the fore period.

TABLE VII—TREATMENT WITH THE GALVANO-SINUSOIDAL CURRENT. LENGTH OF TREATMENT 30 MINUTES. STRENGTH OF CURRENT 70 MILLE AMPERES

Daily Averages

PERIOD		URINE												
					NITROGEN IN THE FORM OF						SULPHUR IN THE FORM OF			
Conditions	Number of Days	Volume of Urine	Total Solids	Total Nitrogen	Urea	Ammonia	Uric Acid	Purin Bases	Creatinin	Undetermined Products	Total Sulphur*	Inorganic Sulphates	Ethereal Sulphates	Neutral Sulphur
		C.C.	Grams	Grams	Grams	Gram	Gram	Gram	Gram	Gram	Grams	Grams	Gram	Gram
Normal	3	1080	52.6	8 42	6 41	0 47	0 14	0 05	0 50	0 85	1.79	1 36	0.15	0 28
Electrical treatment	3	670	54.6	8 68	6 62	0 50	0 16	0 06	0 61	0 73	1.85	1 48	0.16	0 21
After	3	965	53.8	8 41	6 39	0 48	0 14	0.05	0.54	0 81	1.75	1 34	0 15	0 26
					Relation to the Total Nitrogen						*Relation to the Total Sulphur*			
Normal					Per Cent 76 1	Per Cent 5.6	Per Cent 1 7	Per Cent 0 6	Per Cent 5 9	Per Cent 10 1		Per Cent 76 0	Per Cent 8 4	Per Cent 15 6
Electrical treatment					76 2	5 8	1 8	0 7	7 0	8 4		80.1	8 6	11.3
After					76 0	5 7	1.7	0 6	6.4	9 6		76 6	8 5	14 9

*All the Sulphur compounds are reported as SO_3.

VIII. *General Comparison and Discussion of the Results.* A comparative examination of the data of all our experiments warrants the following condensed summary of the results of the treatments with the various electrical currents.

Volume of the urine. Disregarding normal variations in quantity, the volume of urine was generally increased by treatment with the faradic sinusoidal current, the autocondensation current with thick dielectric, and the static wave current. The volume was generally decreased by treatment with the combined direct d'Arsonval current and autocondensation current with thin dielectric, and with the galvanosinusoidal current, evidently due to the thermic effect of these currents.

Total solids in the urine. In each of the several metabolism experiments the total solids were relatively high during the periods of electrical treatment. The greatest increase in total solids was obtained by the static wave current, probably due to direct stimulation of the liver and kidneys, as the metal electrodes were placed immediately over these organs. That the increase in total solids is not a direct result of the diuretic effect produced by certain currents is proven by the results obtained with the galvanosinusoidal current and the direct d'Arsonval and autocondensation currents with thin dielectric, for with these currents the volume of urine was subnormal during the treatment period; yet the total solids were higher than in the fore periods.

Total urinary nitrogen. In all the treatment periods the total amount of urinary nitrogen was above that of the normal periods. The daily average for all the normal periods was 8.37 grams and the daily average of all the treatment periods was 8.74 grams. The greatest increase of the total nitrogen was obtained with the static wave current, the smallest with the faradic sinusoidal current.

Partition of the total urinary nitrogen. Urea. In a general way the urea nitrogen ran parallel with the total nitrogen. In all of the experiments, during the periods of treatment, the absolute amounts of urea were appreciably above normal, but it was only in the fifth and sixth experiments that there was a relative increase. The greatest absolute and relative increase was obtained in the sixth experiment, *i.e.* with the static wave current. The eliminations of urea in the post-treatment periods did not vary very much from normal in any of the experiments.

Ammonia. The tables show that ammonia was slightly increased, both absolutely and relatively, in every treatment period. The average daily amounts of ammonia nitrogen for all the normal periods was 0.49 gram, for all the treatment periods, 0.53 gram; for all the post-treatment periods, 0.49 gram.

Uric acid and *purin bases* were remarkably constant in all of the periods. None of the electrical modalities seemed to affect the excretion of these constituents to an appreciable extent in the normal individual.

Creatinin was essentially the same as urea in appearing in larger absolute amounts than the normal in all treatment periods. The greatest absolute and relative increase was obtained with the faradic sinusoidal current.

Undetermined. In all of the experiments, except the fourth, the nitrogen of the undetermined products was subnormal in absolute amounts during the treatment periods. Relatively it was subnormal in all of the experiments during this period.

Total urinary sulphur. The sulphur compounds were estimated in the third, fourth, fifth, sixth, and seventh experiments only.

In all of these experiments the amounts of total urinary sulphur were above normal in all the treatment periods, and in all the post-treatment periods with one exception (the seventh experiment).

Partition of the total urinary sulphur. Inorganic sulphates. The absolute amounts of inorganic sulphates were appreciably above normal in every electrical treatment period, although the relative excretion was slightly subnormal in the third experiment.

Ethereal sulphates did not show pronounced periodic variations in any of the experiments. During the treatment periods their elimination was slightly supernormal, both absolutely and relatively, in the third, fourth, fifth, and seventh experiments. It was subnormal in the sixth experiment.

Neutral sulphur. In general the neutral sulphur exhibited diametrically opposite tendencies to the inorganic sulphates. During the treatment periods there was an appreciable increase in both the total sulphur and inorganic sulphates, whereas the neutral sulphur was relatively lower than normal.

Production of urorosein and nitrites. In each of the experiments urorosein and nitrites developed in the specimens of urine voided during the periods of electrical treatment. None of the specimens voided during the normal periods responded to tests either for urorosein or nitrites. Most of the specimens voided during the post-treatment periods gave mild positive tests for both these constituents.

IX. *Conclusions.* Disregarding matters of detail that have been referred to in connection with the discussion of the data of each experiment, the following conclusions sum up the main results of the research:

In these experiments, in which relatively strong electrical currents of various types were administered to the same healthy adult, a stimulation of the metabolic processes always followed the electrical treatment.

The volume of urine was increased by those currents which do not have a pronounced thermic effect, and decreased by those currents which do have a strong thermic effect. This latter type causes large quantities of moisture to be eliminated through the skin.

All the currents caused an increase in the quantity of solid matter in the urine. The same may be said of the contents of the nitrogen and sulphur in the urine.

The most striking and consistent effects on the partition of the urinary nitrogen were the increase in urea and creatinin elimination during the treatment periods. The greatest increase of urea was obtained with the static wave current and the greatest increase of creatinin with the faradic sinusoidal current. The increased elimination of urea may be attributed, in large part at least, to quickened cellular metabolism, and the increased elimination of creatinin to muscular contractions. The observations pertaining to the remaining nitrogenous constituents of the urine have been summarized above.

The absolute increase of urinary sulphur observed was registered in the form of inorganic sulphates, although the relative excretion of the latter was slightly below normal in Experiment III.

It is especially noteworthy that recovery from the effects of the electrical treatment was always prompt and apparently complete so far as our data indicated. Usually after two days no effects could be detected.

In conclusion it gives me great pleasure to acknowledge my sincere gratitude to Dr. Elias H. Bartley, at whose suggestion these experiments were begun, also to Dr. William Benham Snow, who was kind enough to administer the treatments with his own apparatus in four of the experiments. Dr. Snow's constant advice from an electrotherapeutic standpoint was of incalculable value.

The author likewise wishes to extend his thanks to Dr. Frederick de Kraft, who was kind enough to lend the use of his apparatus and to administer the treatment in Experiment V.

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CAN WE DIAGNOSE APPENDICITIS?*

By P. I. NIXON, M.D.,

SAN ANTONIO, TEXAS.

When I was invited to read a paper before this society I at once began to cast about as to what subject I should bring to your notice. My first thought was of several unusual conditions which I have recently met, but further thought induced me to forsake the unusual and to choose the time-old but ever-present subject of appendicitis, for appendicitis, like the poor, we always have with us.

The subject of my paper is "Can We Diagnose Appendicitis?" Our first impulse is to reply most emphatically in the affirmative. On second thought we are a little less hasty in our answer, for we each of us can recall cases of appendicitis (and by appendicitis I mean acute appendicitis) that went begging for a diagnosis, and other cases that we hastened to diagnose appendicitis in which operation or subsequent developments controverted this opinion. Because of these and other similar experiences it seems wise for us to reason together, to take stock of our diagnostic ability and to see whether we should not study all cases with symptoms referable to the right iliac fossa a little more thoroughly or at least a little more intensively.

We are all familiar with the classic picture of a young individual who suffers from abdominal pain —generalized at first, localized later—nausea, vomiting, constipation and fever, and who, on examination, shows tenderness and rigidity over McBurney's point. It is granted without cavil that such a case is readily diagnosed. But as one or more of these symptoms or signs is lacking the diagnosis becomes correspondingly more difficult.

The pain is not always of the characteristic, cramplike variety, or in the characteristic location; a pelvic, retrocecal, or left-sided appendix, may lead one into many a deep diagnostic pitfall. And certainly no one is so narrow in his perspective as to believe that every pain in the right iliac fossa points to inflammation of the appendix. Tuberculosis of the cecum, tuberculous peritonitis, stone in the ureter, pyosalpinx, extrauterine pregnancy, pyelitis, typhoid fever, pneumonia, intestinal obstruction, intussusception, and right hip-joint disease (notably in children) are some of the conditions that may produce pain in the right lower abdomen. Nausea and vomiting are sometimes absent, and constipation can no longer be regarded as a very important symptom since the laity are so prone to administer a laxative on all occasions and without rhyme or reason. And while fever is usually to be expected, one is not infrequently surprised to find the course of a gangrenous appendicitis to be afebrile and with a normal pulse.

What has been said regarding pain is more or less true in considering tenderness and rigidity; these two very important signs, though well localized, are not always indicative of acute appendicitis. There is one point in eliciting tenderness which I would like to bring out: I refer to Rovsing's sign, which may possibly be unknown to some of you. Rovsing's method consists in making pressure over the left

*Read before the Caldwell County (Texas) Medical Society.

side of the abdomen in an upward direction, following the course of the colon. The sign is positive when the patient complains of pain in the region of the appendix. This sign, when present, is a great diagnostic help, but it is not always present. Personally I have not seen it in any disease other than appendicitis.

No mention has been made of the value of a blood examination; while its value is not to be doubted, it is not always practicable to have it made. Likewise the presence of a tumor has not been mentioned because it is essential that we do not allow our cases to go on to abscess formation, for only the results of the combination of early diagnosis and early operation can rid the lay mind of the dangers of this disease and the operation for its relief.

It is human nature to make much of our successes; but what of our failures and our mistakes? It has been well said that we learn more from our mistakes than from our successes. It is in this belief that I expose to your criticism some of my own personal mistakes.

Case I—S. K., merchant, aged thirty-eight, presented the typical symptoms of appendicitis: colicky pain in the right iliac fossa of five days' duration, nausea, vomiting, and fever. He gave a history of several attacks similar to the present illness. On examining the abdomen, one encountered tenderness and rigidity over McBurney's point. The temperature was 99°, the pulse 90. So positive were we of the diagnosis that a gridiron incision was made. To our dismay, the appendix was free from acute inflammation; it was chronically inflamed and densely adherent back of the cecum. The gall-bladder reached below the navel and was very tense. When opened, an acutely inflamed mucosa and several large stones—one of which was wedged in the cystic duct—were found. This is a lesson, written in stone, on the diagnosis of appendicitis.

Case II.—S. F., girl, aged 15, suffered for twenty-four hours from nausea, vomiting, fever, and pain in the region of McBurney's point. Tenderness and muscle spasm over the right lower abdomen were the outspoken physical findings. A catheterized specimen of urine contained a few pus cells. This case was so definitely one of appendicitis that an immediate operation was done. The appendix was absolutely normal, even the proverbial "few adhesions" being absent. This was a case of right-sided pyelitis.

Case III.—M. R., boy, aged 5, during the second week of an attack of measles, was seized with sudden, severe pain in the right lower abdomen. Pallor and nausea were accompanying symptoms. The pain recurred at short intervals and finally morphine was used to control it. The child's face had an anxious expression. On examination of the abdomen one could feel a rounded, only slightly tender mass in the right iliac fossa. Muscles not rigid. Rovsing's sign negative. Pulse 110, temperature 101. At operation a double intussusception was discovered. The ileum had become invaginated into itself and this in turn was inverted into the cecum. (See illustration.) At the apex was found the primary cause of the condition; a Meckel's diverticulum which projected as a sessile growth into the lumen of the intestine.

This case was diagnosed appendicitis. It was thought that an abscess had developed slowly so that the child complained little or not at all. As we look back it is questionable whether such a diagnosis should have been made even tentatively. It at least illustrates that a close, intensive study of every doubtful case is much to be desired even if we know the case to be surgical.

Case IV.—Mrs H., aged 34, was sent to me with a diagnosis of appendicitis. She gave a history of having had several attacks of pain in the right iliac region associated with nausea and vomiting. The present attack was perhaps excusably considered one of recurring appendicitis. It began two weeks before with rather sudden pain in the region of the appendix. She had a recurrence on two succeeding days and on these days she vomited. She had several attacks afterwards and a constant soreness was present. The pain was located definitely in the appendix region and was similar in character and location to the pain of previous attacks. This patient had had a disturbance of menstruation: she menstruated normally 25 days before she was seen and had had a slight flow at intervals since. Her temperature was 101°, pulse 120. Anemia was not noticeable. Tenderness over the appendix was definite. Vaginal examination did not reveal any palpable disease. At operation we found a chronically inflamed appendix. The presence of free blood led us to a ruptured and bleeding right tube the size of a small hen's egg.

The slight menstrual disturbances and the rapid pulse should have put us on our guard. We are thus once more reminded that pain at McBurney's point is not pathognomonic of a diseased appendix.

Case V.—W. K., laborer, aged 60, had had "stomach trouble" for twenty years. Several weeks before he was seen he had a gastric hemorrhage. Two days before, generalized abdominal pain ensued and the next day vomiting and hiccough began. The patient was acutely ill. Pulse 110, temperature 102°. A leucocytosis of 22,000 was present. The abdomen was moderatly distended and everywhere there was marked tenderness and a board-like rigidity of the muscles. The rigidity was most extreme on the left side low down. No masses were felt. The area of liver dullness was completely obliterated. There was no dullness in the flanks.

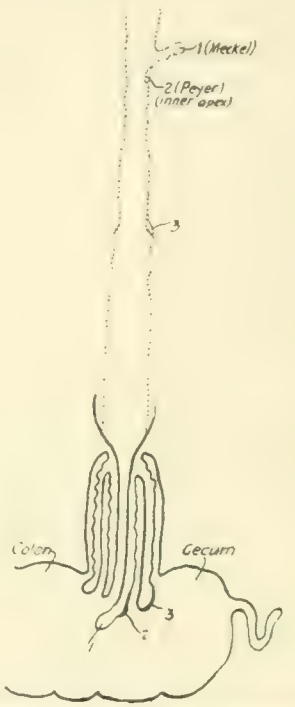

Diagram of double intussusception, originating in Meckel's diverticulum, at the ileocecal valve. (After Kelly & Noble.)

A right rectus incision was made—the incision of choice when in doubt. The cecum was found in the hypogastrium. The appendix lay in the true pelvis on the left side; its perforated tip lay in a pocket of pus, about which there was a beginning local peritonitis.

This case gave a history of gastric ulcer. It was not unnatural to suppose that the fulminant symptoms were due to a perforated ulcer. Certainly the signs on the left side were more suggestive of diverticulitis than appendicitis.

Other cases could be cited, but these will suffice to show that some of us at least cannot always diagnose appendicitis. We are reminded by them of the necessity of weighing every bit of evidence for and against this diagnosis. The man who diagnoses appendicitis in every case in which symptoms and

signs are present in the right iliac fossa will be right more often than he will be wrong, but should he be satisfied with any such rule of thumb? There is an old adage that we find that for which we look, and it has a particularly happy application to the subject of diagnosis; if we are to recognize the occasional case of pyelitis or intussusception which simulates appendicitis it is essential to keep in mind the existence of such conditions and to use all possible means to eliminate them. It is needless to expect every case to present a typical text-book picture; one case may be lacking a symptom here or a sign there, and another may present an array of facts altogether superfluous in forming a composite whole. No one has given expression to this thought more forcefully than Richard Cabot when he wrote, "It should be said with emphasis that in almost every carefully studied case there are one or two facts which stray across the clinical field quite wild and untamed, and never submit to any rational explanation. If a case does not manifest some such symptom, but reels itself off like a text-book account, I always suspect that it is carelessly reported."

If it were permissible to draw any definite conclusions from this informal paper they would be about as follows:

1. We learn much from failures.
2. Every pain in the right iliac fossa does not originate in the appendix.
3. Other local conditions and general diseases may simulate appendicitis.
4. Every case deserves close study, including a careful history and a thorough examination.
5. When all is said and done, we shall occasionally fail to diagnose a case of appendicitis, and more frequently the diagnosis of appendicitis will be made when operation reveals a normal appendix.

205 Hicks Building.

THE NON-SURGICAL TREATMENT OF TUBERCULOUS GLANDS.

By ARTHUR FENWICK HOLDING, M.D.,

NEW YORK.

Having observed the good effects of Roentgen rays on tuberculous glands during the past fifteen years it is with some surprise that I have found that this method is little known and seldom advised by the medical profession. The efficacy of *x*-ray treatment in this condition has been demonstrated in surgical clinics, and the literature contains over 1,500 cases successfully treated by this method. Modern text books and the medical profession at large still advise the radical operations that were considered orthodox before the discovery of the therapeutic worth of Roentgen rays. Non-surgical methods, including the *x*-rays should be tried first in the hopes of avoiding operations.

Keen's,[1] Brewer's,[2] and Chayne-Burghard's[3] works in surgery make no mention of the *x*-rays in the treatment of tuberculous adenitis. Choyce's[4] Surgery mentions the *x*-ray with faint praise. Johnson's[5] Surgery devotes considerable space to *x*-rays—tuberculin and helio therapy, but advises surgery. Osler and McCrae[6] advise against the use of *x*-rays on account of skin dangers and possible peripheral spreading of miliary tubercles, from which it would appear that they are not familiar with measurement of *x*-rays for skin tolerance and histological studies of tuberculous lesions under *x*-ray treatment. The *Journal of the American Medical Association*[7] editorially sanctions non-operative treatment of tuberculous adenitis in children, but does not mention the Roentgen rays.

As early as 1905, Bullett[8] had collected reports in 226 cases of tuberculous adenitis treated by *x*-rays, 35 per cent. were cured, 40 per cent. improved, 25 per cent. unimproved. In 1907 Crane[9] called attention to the fact that the opsonic index in cases suffering from tuberculous adenitis who were treated by *x*-rays gave similar reactions to those given by similar cases when given vaccines. He advanced the theory that *x*-ray treatment was a process of autogenous vaccination.

In 1907 von Mutschenbacher[10] published his results in a series of 1,344 cases of tuberculous adenitis treated by *x*-rays, of which number he found it necessary to operate in only 9 per cent.

In 1913 Blaisch[11] reported 50 cases treated by *x*-rays in which 50 per cent. were cured, and the same year Fritsch[12] reported 33 cases treated by the same means, in which it was necessary to operate in only 4 per cent.

In 1915 Krecke[13] reported on 36 cases of tuberculous adenitis treated by *x*-rays in his clinic during the last two years, and stated that since Roentgen ray treatment had been substituted for surgical procedures no radical extirpation of glands had been necessary, the surgical measures being limited to punctures when abscesses formed. The cosmetic results were better, and there were fewer recurrences under *x*-ray treatment than there had been previously under surgical treatment.

Pathology.—That the *x*-rays exert the greatest influence on the lymphatic system of the body was established by Heineke[14] and has been repeatedly verified by other observers. The ultimate effect on lymphatic structures is to replace the lymph tissue with fibrous tissue. The rays also increase the number of lymphocytes present in the circulating blood, and microscopical examination of excised glands that have been treated with *x*-rays show an encapsulating area of lymphocytes surrounding the lesion.

Kuepferle[15] has shown in animals that tuberculous granulations have been controlled by Roentgen treatment inducing a peripheral round celled infiltration and the substitution of fibrosis in place of the active tuberculous lesions. In caseaus glands or those that have begun to break down in the center, pus formation as hastened by the Roentgenization so that the lesion rapidly increases in size. Unless forewarned the patient usually becomes frightened at this, thinking that the glands are being made worse by the treatment. They soon "point," and after an incision and evacuation of the pus these cases usually progress uninterruptedly to cures.

The best results from Roentgen therapy are obtained in the advanced caseous lesions or those in which sinuses have formed. That is, in cases in which external drainage obtains.

In the early hyperplastic form of the disease, slower and less brilliant results follow *x*-ray treatment. Patients in whom the periphery of the lesion is ill-defined, edematous, and actively advancing are much less favorable operative risks than when the glands have no periadenitis, are discrete and not active. In cases with and without periadenitis a tentative course of *x*-ray treatment is advisable even if subsequent operation is contemplated. This will reduce the activity of the process, stop peripheral extension and reduce the lesion in size. When the lesion becomes circumscribed it can be removed

surgically if the element of time is a factor. If surgical removal is to be done after the active process has been controlled by Roentgen therapy the operation should be performed before sufficient time has elapsed to allow post Roentgen fibrosis to develop.

If the hyperplastic lesions without periadenitis do not promptly diminish in size under Roentgen treatment surgical removal may be considered. In this class of cases, however, operation will seldom be indicated if thermopenetration and high frequency vacuum electrode treatment are employed as synergists to the Roentgen therapy.

Patients having enlarged tonsils should have the tonsils removed.

The following illustrative cases may be cited:

CASE I.—Mrs. R., aged 26. Patient rather below par physically and extremely nervous. In 1904 developed a chain of enlarged glands on the left side of neck. Consulted surgeon and a radical operation was performed. Within six weeks there were recurrences at the site of operation with sinus formation and also rapid enlargements of the glands on the other side of the neck. Realizing that the patient could not stand a second operation, she was assured by the surgeon that the "swelling was sympathetic" and the patient's relatives were told that there was no hope for the patient's recovery. At this stage I saw the case and urged the surgeon in charge to let me try Roentgen rays. To this he consented. Treatment was started and the patient immediately began to improve. Within three months she was symptomatically well and has never had a recurrence of the trouble. She is alive at the present time—eleven years since being treated.

CASE II.—Mr. S., aged 50. Entered hospital 1905 with a walnut-sized tumor in the left side of the neck which clinically was diagnosed as a round-celled sarcoma in a very active condition of growth. At operation it was impossible to remove all of the tumor, but sufficient was obtained to make a microscopical examination, and the diagnosis of tuberculous adenitis was established. Very rapid enlargements of the glands on both sides of the neck followed the operation. These glands encroached upon the trachea, the patient became cyanosed, the glands enlarged the neck so that the skin line bulged from the jaw to the clavicles and a plunge tracheotomy was contemplated. At my earnest solicitation the surgeon consented to *x*-ray treatment with the remark that "it can do him no harm, he'll die anyway." Under *x*-ray treatment the glands gradually reduced in size, the patient became symptomatically well and remained so for 5 years, dying of nephritis.

CASE III.—Master K., aged 6 years, was considered a case of Hodgkins' disease, having the cervical glands on both sides of the neck involved. Under medical treatment the glands enlarged steadily and it was necessary to do an emergency tracheotomy. At this time some of the glands were also obtained for microscopic examination and the laboratory reported them as tuberculous. This patient was put under *x*-ray treatment and the condition completely cleared up.

These three cases occurring during my early years of practice were dramatic enough to convince the most sceptical observer, and I have treated several cases since that were equally convincing because they were all considered hopeless when the *x*-ray treatment was begun and were restored to perfect health. Seven cases of tuberculous adenitis have come under my observation classified, according to Blaisch, as follows:

I. Hyperplastic type, 16; II. Caseous or purulent type, 23; III. Ulcerated or fistulous type, 30.

Class I.—Three became symptomatically well; 2 were improved and relapsed later and were symptomatically cured by a second course of treatment; 5 disappeared from observation; 5 were improved and later submitted to an operation; 1 unimproved.

Class II.—Nineteen became symptomatically well; 10 disappeared from observation (dispensary cases); 3 were improved.

Class III.—Twenty-five became symptomatically well; 5 disappeared from observation (dispensary cases).

Technique.—The technique employed is that known as Roentgen deep therapy, which has been amply described.[16, 17] The essentials of deep Roentgen therapy are the use of the Coolidge tube, high voltage, measured maximum skin dosage, cross-firing, and filtration of the rays, given in three to ten series of treatments. If the dose to each skin area is limited to 15 x Kienbock, no disagreeable skin symptoms will follow.

General antituberculosis treatment may be carried on as well as the *x*-ray treatment. In cases failing to respond promptly, hyperemia may be induced by Bier's method or even more effectively by thermopenetration and high frequency vacuum electrode discharges.

Conclusions.—1. The efficacy of *x*-ray treatment in tuberculous adenitis has been demonstrated in surgical clinics, over 1,500 successful cases having been reported.

2. The surgical treatment which was orthodox before the discovery of the *x*-rays and their therapeutic value is still advised by large numbers of the medical profession.

3. Non-surgical methods, including the *x*-rays, deep hyperemia and tuberculin, should be tried before any case is submitted to radical operation.

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53 WEST FIFTIETH STREET.

Total Occlusion of the Right External Auditory Meatus.—L. A. Lawrence reports this condition in a woman, aged 31, who was sent to the hospital for pain in the right ear, in all probability due to a carious tooth. Examination revealed occlusion of the right meatus by a smooth partition stretching completely across the space about a third of the depth from the surface. No moisture or discharge was present, and no other deformity was found. The Eustachian tubes were both patent, and râles were heard on both sides through a passed Eustachian catheter. The left ear was normal. The patient could hear an acoumeter two inches from the right ear. The condition, the reporter said, was evidently congenital.—*Proceedings of the Royal Society of Medicine.*

INTRAMUSCULAR INJECTIONS OF MERCURY SALICYLATE IN THE TREATMENT OF SYPHILIS.

By WILLIAM H. BEST, M.D.

BROOKLYN, N. Y.

ASSISTANT VISITING PHYSICIAN, DEPARTMENT OF CUTANEOUS DISEASE AND SYPHILIS, KINGS COUNTY HOSPITAL; ATTENDING DERMATOLOGIST, BRADFORD STREET HOPITAL CLINIC; CONSULTING DERMATOLOGIST, BROOKLYN INDUSTRIAL SCHOOL.

In a recent article on the use of mercury salicylate in syphilis, Nelson and Anderson conclude from the effects of this drug upon the Wassermann reaction that it is improbable that the salicylate alone and unaided possesses any real curative value in this disease, and that its value is so slight as to make it unworthy of the time spent in its administration. To substantiate these conclusions they offer a record of fifty cases, in which the Wassermann was influenced in only a few cases, and in some instances the Wassermann returned to positive after having once been negative. They started the treatment by giving doses of 1½ gr. at weekly intervals, but finding this interval too short gave it every two weeks, and in some cases at even longer intervals. They claim that the patients were kept up to the limit of tolerance, but that none of them was salivated.

My aim has always been to keep the patient up to the point of saturation, and I have accepted as an indication of this an occasional slight salivation, a metallic taste, and a slight sense of tenderness in the gums when the patient bites hard upon the teeth; never, however, permitting this condition to progress to any uncomfortable degree. The patients are instructed previously as to the care of the mouth and teeth, to take a heaping teaspoonful (or even more) of sodium phosphate in a cup of hot water each morning upon arising, and to drink copiously of water. As an extra precaution they are given triturates of atropine sulphate gr. 1/150, and instructed, should salivation at any time become uncomfortable after an injection, to take one and repeat it in eight hours if necessary; and immediately take a liberal dose of epsom salts. This last instruction, I might add, is rarely resorted to.

I have found that, on account of the varying tolerance for mercury in different individuals and the varying tolerance in the same individual at different times, the dose must be frequently changed. It is, however, not an uncommon thing to give as much as three grains of mercury salicylate at one injection. My practice is to start the patient on one grain and increase one-half grain at each injection, until the point of tolerance is reached. The dose at each injection, however, is never decided upon until all the facts following the previous injection that may pertain to the treatment are elicited. From a review of my histories, I find that the dose from time to time, for the same patient, fluctuates from two to three grains according to existing conditions.

As regards the intervals between injections, this also has been a variable quantity; but in my experience patients tolerate their injections very well indeed at weekly intervals. Occasionally it has been necessary to omit a treatment in an individual case, for one or more of several reasons—such as retardation of absorption, induration at the seat of injection, ptyalism, excessive sensitiveness of the gums, or kidney irritation. If however the excretions are properly attended to, and a hot sitz bath with massage is frequently indulged in, this rarely becomes necessary.

The amount of mercury salicylate administered according to this scheme is decidedly larger than the quantity given by Nelson and Anderson, and since the results obtained by me are so favorable I am forced to the conclusion that their failures were due not to the drug but to the mode of its administration. Naturally, with such intensive treatment, close observation of the patient must be maintained. On account of the known toxic effects of mercury upon the kidneys, the urine should be examined frequently. I make it a routine to examine the urine for albumin at each visit (this requires but a few moments), and if it is present in more than a trace I make a subsequent microscopic examination for casts. Eliciting the urinary findings of a nephritis is indication for a temporary cessation in treatment, with a prompt and vigorous increase in the activity of all the eliminating pathways.

In all latent and active tertiary cases I make it a practice to give potassium iodide in ascending doses, some of the patients taking as high as fifty grains daily. While I do not believe that potassium iodide has any influence upon the spirochete, it is a valuable adjunct to mercury in the treatment of syphilis. I believe, through clinical observation, that it promotes the absorption of the mercury salicylate and lessens the tendency to induration at the seat of injection; and it does that which is even more important, reduces glandular enlargement and induration, thereby continually liberating locked-up spirochetes and permitting the mercury to bring about their destruction more readily.

I offer a résumé of a few cases for the purpose of showing the results obtained by this routine of treatment. The number of cases must necessarily be small, because most patients now are treated with salvarsan and mercury combined.

Case No.	Stage of Disease	Number of Injections	Quantity of Mercury Salicylate	Period of Treatment	Wassermann Before Treatment	Wassermann 3 or 4 Weeks After Treatment	Wassermann 3 Months After Treatment	Remarks
1	Lat.	20	46 gr.	5 mo.	++		−	
2	Tert.	25	56 gr.	1 yr.	++++	++	+++	Ulcerations on leg healed readily.
3	Sec.	20	48 gr.	5 mo.	++++	++++		Mucous patches and condylomata disappeared
4	Lat.	20	44 gr.	6 mo.	++	±	−	Patient took Sherwell's mixture between second and third Wassermann.
5	Lat.	20	37 gr.	5 mo.	+++	++		Two months' rest following course with Sherwell's mixture
5	Continued	20	43 gr.	6 mo.	++	±	±	
6	Lat.	20	48 gr.	7 mo.	+ +	−	−	
7	Sec.	10	25 gr.	9 wks.	++++	−+		Mucous patches on buccal mucosa were [illegible]
8	Lat.	20	37 gr.	8 mo.	++	++		Took treatment irregularly.
9	Tert.	25	55 gr.	7 mo.	++++	− −		Irregular upon that on forehead entirely healed
10	Lat.	2	45 gr.	5 mo.	+		−	

Cases 1, 2, 4, 5, 6, 8, 10 had received one or more injections of salvarsan before coming to me for treatment. In Case 2 the patient took a voluntary vacation of several months during the course of the treatment, which accounts for the extended period of his treatment. The patient in Case 3 could not be induced to take salvarsan, therefore mercury treatment was instituted. One could hardly expect the Wassermann reaction to be influenced by such

a short course of treatment; the clinical symptoms, however, yielded with pleasing rapidity. In Case 5, it will be noted, there was but little progress after the first course of twenty injections. The patient was given two months' rest, during which time a teaspoonful of Sherwell's mixture (Hydrarg. chloridi corros. gr. 1/24, liquoris potassii arsenitis 2½, liquoris arseni et hydrargyri iodidi ♏ 2½, syrupi ferri iodidi ♏ 10, potassii iodidi gr. 5 ad 10, syrupi sarsaparillæ comp., q. s. ad fl. dr. 1) was taken after meals. The treatment was then resumed, with the result as tabulated. Case 7 was that of a young woman in pitiable condition, a physical wreck, mouth full of mucous patches, condylomata about the rectum and vulva, extremely jaundiced, with enlarged and tender liver. Under the prevailing circumstances, I was timid about giving salvarsan, for fear of precipitating an acute yellow atrophy of the liver; so preceded the salvarsan with an intensive course of mercury salicylate. Within two months the clinical symptoms disappeared, and the patient's general condition was markedly improved, with a gain in weight of eight pounds. Combined mercury and salvarsan treatment was then instituted, and I have since had the pleasure of getting a negative Wassermann on this patient.

In reference to the vagaries of the serum reaction in syphilis, I want to call attention to the fact that this same phenomenon has been observed with salvarsan as well as with mercury treatment. Is it not possible in certain cases to change a negative to a positive Wassermann by the administration of a small dose of salvarsan? The Wassermann reaction depends upon the presence of specific amboceptor in the serum. If by treatment all the spirochetes that are lodged in accessible places are destroyed, the amboceptor will soon thereafter disappear from the blood serum. If, however, spirochetes are locked up in the enlarged and indurated lymph glands, where the blood supply is not rich enough to bring a sufficient quantity of the particular drug used to destroy all the organisms, then is it not possible that at some time, either during treatment or after treatment has been stopped, spirocheta are liberated and thrown into the blood, and carried to various parts of the body? This causes renewed sensitization and renewed amboceptor production, with a return of those factors in the serum which give a positive Wassermann reaction. I do not think that anyone has maintained that one negative Wassermann is indicative of syphilis cured. Granting, though, that all the cases I report should return to a four plus Wassermann, it cannot be argued that the mercury salicylate injections were not instrumental in bringing about the improvement noted in these patients. All that could be said is that we had not continued our treatment long enough. It is therefore advisable to make repeated Wassermann tests over a period of at least two years, and at the first sign of a positive serum reaction vigorous treatment should again be instituted.

As to the inconvenience to the patient from the intramuscular injections of mercury salicylate, I think this is largely a matter of technique. While it is impossible to make the injections absolutely painless, the soreness experienced and the induration produced can be reduced to a minimum by being certain that none of the suspension of the drug is permitted to enter the adipose tissue. I noted when I first used this method of treatment that women are more inclined to suffer soreness and induration than are men. After some pondering of this, I concluded that it was probably due to the fact that women as a rule have larger deposits of adipose tissue about the buttocks, and that in all probability my injections were being made into the fat rather than into the muscle. That there was some basis of fact in this conclusion was proven when subsequently I used a longer needle (2½ inches), and much of this soreness and induration was obviated. As a further precaution I withdraw the needle quickly, immediately put pressure over the site of the injection, and massage deeply but gently for a few moments. This prevents the suspension from leaking back along the track of the needle and thereby getting into the adipose tissue. The patient is instructed should any undue tenderness or induration occur to take a hot sitz bath for ten or fifteen minutes each night before retiring, and massage the area gently all the while; this to be continued until the soreness remits. That this technique is fairly satisfactory is proven by the fact that I number among my patients men who earn a living by driving trucks about the city streets, and I should think with them the soreness incident to the injections would be most felt. Yet these patients have complained of but little inconvenience, and have not found it necessary to lose any time from their work.

Taking into consideration all the factors pro and con in the various forms of mercury treatment, I think the intramuscular injection of mercury salicylate offers the most convenient, most easily controlled, most efficient, and most satisfactory of any of them.

1198 Bushwick Avenue.

Medicolegal Notes.

Degree of Care and Skill Required. — The Georgia Civil Code, 1910, section 4427, lays down the rule that: "A person professing to practise surgery or the administering of medicine for a compensation must bring to the exercise of his profession a reasonable degree of care and skill. Any injury resulting from a want of such care and skill will be a tort for which a recovery may be had." The Georgia Supreme Court says that this briefly states the standard by which the conduct of a person claimed to have been guilty of malpractice may be tested. In determining the question of reasonable care and skill by a surgeon the jury may consider the place of operation, the circumstances surrounding it, the situation of the defendant with respect to the operation, and all the facts and circumstances which may be shown by the evidence and which may throw light on the ultimate question: Did the defendant, or did he not, use reasonable care and skill in the performance of the operation? If expert evidence is introduced tending to show the recognized method of performing an operation, or the manner in which it should be performed, it may be considered along with other evidence throwing light on the question. The court preferred the standard required by the code to comparison with an "average" surgeon. And in formulating a charge to the jury it thought it best not to state that the skill of a surgeon includes an ability to perform the operation in an "approved" way. It might raise a question in the minds of the jury as to the meaning of the word "approved" and as to by whom the approval should be made. The court referred to an excerpt from an opinion in a prior case, copied from Taylor's Medical Jurisprudence, to the effect that surgeons should keep up with the latest advances in medical science, and use the latest and most approved methods and appliances, having regard to the general practice of the profession in the locality where they practise. The court thought this quotation was more suited to the reasoning of an opinion than to a charge to a jury, especially in the absence of evidence as to any late advances in medical science, or late and improved methods and appliances in such use.—Pace v. Cochran, Georgia Supreme Court, 86 S. E. 934.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE TREATMENT OF WOUNDS OF THE ABDOMEN CAUSED BY PROJECTILES.

BY combining all the statistics presented before the Paris Société de Chirurgie from the commencement of the war up to a certain time, Quénu (*Revue de Chirurgie*, August, 1914-November, 1915) obtained a total of 217 cases of abdominal wounds, not operated upon, with 171 deaths, a mortality of 78 per cent. Later, he combined the results of abstention at the hands of a number of surgeons, and of 53 cases not operated upon there were 29 deaths, a mortality of 54 per cent. Borrowing the figures from the *Lyon Chirurgical* for September 1, he finds one series of 100 abstentions from operation with 100 deaths; another of five cases with five deaths, a mortality in both series of cases of 100 per cent. Adding the figures of these three series of cases together he obtains 375 cases with 305 deaths, a mortality of 80 per cent. We may add here that in the same journal Dupont and Kendirdjy report 40 cases of penetrating wounds of the abdomen treated medically with 40 deaths.

Since he had already shown that certain cases presented as penetrating wounds of the abdomen and cured spontaneously were, in all probability only parietal wounds, Quénu now took up the subject in another way. Instead of further analyzing reports of other observers he got together as many cases as possible catalogued as wounds of the abdomen, examined them all himself, and upon this investigation his paper is based. At Cochin and at Val-de-Grâce he saw 59 such cases, and to these he adds three reported in detail to him by Walther, making 62 cases ticketed as wounds of the abdomen. He found that a good number of the cards which accompanied the wounded bore as the designation of the injury not merely "wound of the abdomen" but "penetrating wound" or "perforating wound," sometimes "transfixing wound"—terms often not justified, as he shows later. In fact, in one series of 25 cases, which had been tagged as penetrating wounds of the abdomen, 13 of the diagnoses were erroneous, 10 being simple parietal injuries and three being thoracic wounds. Quénu recognizes the fact that there may be a great deal of difficulty in many cases in determining whether a bullet has or has not penetrated the peritoneal cavity; consequently he states that it is necessary to be circumspect in affirming that there is a peritoneal penetration, and that here is where the interventionists have the worst of it in the matter of statistics, for "their operative findings leave no doubt as to the perforation of a viscus while the abstentionists profit by all the errors of diagnosis, and God knows how numerous they are."

In considering the 62 cases he divides them into two main classes: (1) Non-penetrating, where the peritoneal cavity is not invaded and the wound is in the parietes only or passes through the colon outside of the peritoneal reflection, and (2) Penetrating, these being subdivided into (*a*) simple, where the peritoneum was penetrated but with no perforation of the viscera, (*b*) with univisceral, and (*c*) with multivisceral perforations. Of the 62 cases he found that in 25 the wound was in the parietes only and in three the colon had been injured extraperitoneally; there were 5 doubtful cases, in one of which he considered penetration probable, while in four it was very doubtful; there were 29 cases where the peritoneum was penetrated, these being divided into eight of simple penetration, one of probable penetration of the stomach, three of small intestine, five of large intestine, two of intestine without its being possible to determine what portion, eight of the liver, and in two cases visceral penetration was doubtful. Putting aside the non-penetrating cases, the five doubtful cases, and those that had been operated upon before coming under Quénu's supervision, there remained 18 who had received penetrating wounds of the abdomen which had been treated expectantly. Of these, one died on the route and three soon after arrival, thus leaving 14 patients, three of whom soon needed urgent operation. We now have as the result of abstention only 11 cases with penetrating wounds, five of simple peritoneal penetration and six visceral, of which latter one was probably of the stomach, two of the large intestine, and three of the liver. Of the five with simple penetration, four had to be operated upon because of complicating omental hernia. As to the six with visceral wounds he says that the cured wound of the stomach was only a hypothetical wound of that viscus. As for the three wounds of the liver, one resulted later in an abscess in the lumbar region, the two others, both of which were occasioned by bullets, were of slight depth, one evidently being the result of a spent bullet, as this was easily extracted, and the other had its two orifices of entrance and exit close together so that the course of its passage through the liver was short and far from the hilum. Of the two remaining cases involving the large intestine, one was partially eviscerated by the traumatism and the herniated and gangrenous gut was resected, while in the final case the wound of entrance was situated in the right hypochondrium and that of exit under the costal border of the same side and far posteriorly. It is thus seen that but very few of these carefully analyzed cases where penetration was actually determined were cured without ultimate operation. Also in view of Quénu's findings as regards errors in diagnosis—28 non-penetrating wounds out of 62 labeled as such—the validity of the claims for percentage of cures in other series of non-operated cases may be considered as open to serious ques-

tion, without at all impugning the sincerity of the reporter.

As a result of his study Quénu believes that he is justified in drawing the following conclusions: (1) Those wounded in the abdomen who were cured without operation, had in nearly half the cases at least (28 out of 62) non-penetrating wounds. (2) The majority of those who had a simple penetrating wound presented an omental hernia through the wound. (3) The penetrating visceral wounds cured spontaneously are reduced to six, of which one was an hypothetical wound of the stomach, three of the liver with trajectory far from the hilum, and two of the large intestine with trajectory of the projectile homolateral and posterior. (4) These special conditions as to wounds of the liver and wounds of the large intestine spontaneously cured are perhaps to be remembered when one has to determine the indications for operative intervention or abstention. (5) The study appears to bring out evidence, indirect but important, in support of the theory of intervention.

THE MYSTERIES OF MENSTRUATION.

In spite of a procession of centuries filled with the ingenious theories of scientists, the wild surmises of pseudo-scientists, and the dogmatic utterances of religious cults, the exact nature and function of menstruation is almost as much a debatable question as ever. It was inevitable that such a common phenomenon, the explanation for which was not forthcoming to the laity, even by application to the usual sources of enlightenment, should be a fruitful occasion of superstition. This is true almost universally among the uncultured, but is by no means confined to them; surprising is the incidence of such fancies even among the highly educated.

The most popular conception has always been that this process represented some sort of purification. Whether or not this is due to a masculine readiness to accept a theory that the other sex might be the better for an occasional renovation we do not know. Perhaps the theory had its origin in the fact that even the most devoted cave-husband cherished an unconfessed longing for a little freedom now and then and found it by prescribing that the women of the tribe keep apart during catamenial periods. The modern reverberation of the purification idea is found in the description of menstruation as a shedding of the uterine mucosa so as to leave an untainted field for the ovum.

Dr. Raymond Crawfurd, in the *Lancet* for December 18, has compiled a number of the superstitions associated with this function. Most of these are founded upon the belief that the menstruating woman is being acted upon by some malign influence and must therefore refrain from coming into contact with those about her or with the sources of food supply. In the South African tribes she cannot drink milk, for if she does the cows will die. Even in the rural communities of Europe and America there is a widespread belief that women during their periods cannot make butter from milk. According to Pliny, seeds which she touches become sterile, vines wither, and other plants turn yellow; pregnant animals, if touched by her, are likely to miscarry; dogs go mad on tasting the catamenial fluid. Intercourse with a menstruating woman is supposed to have a baneful effect upon the man, and should it coincide with an eclipse of the sun by the moon the result is almost sure to be fatal. In Galela these women cannot enter the tobacco fields, in Sumatra they are barred from the rice fields, in Saigon they employ no women in the opium factories. In Syria they cannot help to salt or pickle, and in Brunswick they may not assist in the killing of a pig. Formerly in the north of France no woman was allowed to come into a sugar factory during certain stages of the refining process for fear of turning the sugar black.

A few of these superstitions allude to some benign effects of the menstrual flow, *e.g.* Pliny says, "If a woman strips herself naked while she is menstruating and walks round a field of wheat, the caterpillars, worms, beetles, and other vermin will fall off from the ears of corn." The North American Indians also believed this. Menstrual blood is alleged to have certain therapeutic effects; the negroes make use of it both as a love-potion and an abortifacient; it has been variously prescribed for carbuncles, plague, leprosy, erysipelas, quartan fever, and gout.

The old savage idea of the malign influence of menstruation and the scrupulous avoidance of women in this state are of course examples of the taboo, that is the interdiction of the unknown and the peculiar. The horror of human blood itself seems to have something to do with these superstitions, for in some cases men who had been wounded were subjected to the same restrictions as the menstruating woman.

THE PRESERVATION OF RED BLOOD CELLS.

Red blood cells are used for so many purposes at the present time, both in the laboratory and for therapeutic reasons, that a good method for their preservation would have a practical value as well as theoretical interest. It is well known that they are very sensitive to changes in their environment, and emulsions can be kept in the cold in isotonic solutions for only a very short time. Rous and Turner (*Jour. Exper. Med.*, 1916, xxiii, 219) have been investigating the subject and have shown that the primary injury is suffered by the cells during the washing which is to separate them from the plasma. The act of centrifugation injures them to such an extent that they break down much sooner than cells that are not submitted to this procedure. For protection during washing they found that one-eighth to one-quarter per cent. of gelatin in Locke's solution protected the cells absolutely against injury not only during washing but even after shaking. During the course of this part of the work they determined that human red cells are much more resistant to shaking than sheep cells, while the cells of the rabbit and the dog, especially the latter, are very sensitive to such trauma. There was also great individual difference in the animals of one species. There was no relation between the resistance to shaking and that to hypotonic salt solutions.

The cells having been washed successfully it was found that the optimum preserving fluid varied with the animal. Since the red cells are almost totally impermeable to sugars it was thought that the addition of some sugar to the solution would be of help in keeping the cells intact. For sheep's cells sufficient isotonic aqueous saccharose was added to Locke's solution to make a 2.8 per cent. solution. Cells kept for three and four weeks in this solution were used for Wassermann reactions and were found to give the same hemolytic titer and same results as fresh cells. Dog's cells were kept for from five to twelve days in a saccharose-dextrin-Locke's fluid containing 1.6 to 2.7 per cent. of the sugar and 2 per cent. of dextrin. Human cells were kept in Locke's solution containing 4.9 per cent. of saccharose.

The authors then tried to see if they could not devise a mixture which would keep the blood without washing the cells and found that when three parts of blood were drawn directly into a mixture of two parts of isotonic (3.8 per cent.) sodium citrate and five parts of isotonic (5.4 per cent.) dextrose solution, the red cells could be kept intact for four weeks. The blood and solutions should of course be sterile. In order to determine the ability of these cells to functionate they used them for transfusion experiments in rabbits and found that blood preserved in mixtures of sodium citrate, saccharose, and water for fourteen days functionated so well that the animals showed no disturbance. Cells kept for longer periods, though intact and apparently unchanged when transfused, soon leave the circulation. Animals in which this disappearance of cells is taking place on a large scale, remain healthy save for the anemia due to the bleeding.

FOR NATIONAL QUARANTINE.

THE belief has gone abroad that the quarantine at this port has been transferred to national control and much satisfaction has been expressed thereat. Unfortunately this is not yet the case and the transfer is even now being vigorously opposed by certain politicians who are loath to see $300,000 worth of patronage, for that is about what it costs the State to maintain the quarantine service, taken away. Governor Whitman, who is loyally endeavoring to bring about this most desirable change, recently appointed Dr. L. E. Cofer of the U. S. Public Health Service quarantine officer of the port, that being as near as he could come to putting the station under national control without action by the State Legislature. At his recommendation a bill known as the Mills Bill, Introductory No. 332, has been introduced into the State Senate and will probably be voted upon before long. The MEDICAL RECORD has repeatedly urged the desirability and even necessity of the control of quarantine of the entire country by the Federal Government and this can now be brought about if the medical men of the State, and especially of this city, will make their influence felt in the matter.

The transfer would be rational, for the New York quarantine is not for local protection only, but exists in the interest of the nation even more than of the city or State, since of the eight or ten hundred thousand immigrants who normally enter at this port every year the great majority does not stay here, but is distributed throughout the Union. It is manifestly unjust, therefore, that the State should be burdened with the expense of this national work. Moreover there are certain international quarantine regulations which can be effected only by officers of the general government, and the United States government cannot promise that these regulations will be enforced if it has no control over health matters at its largest port of entry. Another manifest advantage of national control is that it would always be possible to reinforce the quarantine staff here with an army of experienced health officers in case of emergency, as when there was danger of an epidemic of cholera, typhus fever, plague, or other infectious diseases being introduced.

The opposition to this transfer is, however, active as well as powerful, and those in favor of it must bestir themselves if they would carry their point. They should write in support of the measure to Senator Henry M. Sage, chairman of the Finance Committee, and also to Governor Whitman, and should write in such numbers that there can be no doubt of the will of the medical profession of the State. The time to write is now.

ADDISON'S DISEASE.

IT is admitted at present that while this affection is due to an insufficiency of adrenalin, it cannot be cured by feeding with adrenal substance. Some unknown component is doubtless involved, so that it will be necessary to combine other internal secretions, either synergists or antagonists of adrenalin before we can hope to effect cures. The occasional familial incidence of Addison's disease points to some deep-seated organic substratum. At a recent session of the Aerztlicher Verein of Hamburg (*Deutsche medizinische Wochenschrift,* December 16) Neumann reported the third case in a single family. The malady was primary and not due to tuberculosis of the adrenals. The skin and mucosæ showed the characteristic melanosis, there was asthenia, with increased tolerance for grape sugar and absence of adrenalin glycosuria. Adrenalin was present in the blood serum, but in diminished percentage, as shown by the frog's eye test. The patient is still living, but one of the brothers who came to autopsy was found to have primary atrophy of the adrenals.

GASEOUS GANGRENE.

GASEOUS gangrene has been a condition prevalent in trench warfare and one by no means easy to treat successfully. Dr. Kenneth Taylor, pathologist to the American Ambulance, Neuilly, Paris, has conducted a series of experiments in order to find out which are the factors responsible for gaseous gangrene (*Lancet,* January 15, 1916) and has concluded as follows: (1) The gas produced by *B. aerogenes capsulatus* is of little or no importance as a toxic factor. (2) The mechanical action of the pressure produced is usually, if not always, the most important part of the infection. To it may be charged the development of highly pathogenic possibilities in a usually rather innocent infection. It

brings about (*a*) the death of the tissues from the resulting anemia produced by a pressure much higher than that of the circulating blood; (*b*) the actual mechanical fragmentation of the tissues, especially muscle; and (*c*) the mechanical scattering of the infection. (3) One of the chief problems in the treatment of the infection is that of establishing drainage for the escape of the gas before the pressure has resulted in the death of the tissue.

News of the Week.

City Death Rate.—For the week ending February 26, the death rate in New York City was 15.20 per 1,000 population, as compared with 14.52 for the same month of last year, the actual number of deaths being 1,628 and 1,518 respectively. The number of deaths during the week was exactly the same as during the previous week. Fewer persons died of contagious diseases, as compared with the same week of last year, but the deaths from influenza and respiratory diseases were slightly increased. Organic heart disease and nephritis caused 407 deaths, as compared with 356 during the same period of 1915, while the deaths due to tuberculosis were increased by 11; this increase, however, was entirely due to the increase of population. During the first nine weeks of 1916 the death rate was 16.03, as compared with 14.77 for the corresponding period of 1915.

Health of the Canal Zone.—The report of the Chief Health Officer of the Panama Canal states that during the month of December, 1915, the total number of deaths from all causes among employees was 17, of which 14 were due to disease, giving a death rate from disease of 5.01 per 1,000, as compared with 5.96 for the preceding month and 3.64 for the corresponding month of last year. Among the white employees only one death occurred, and this was due to cirrhosis of the liver; among the colored employees, pneumonia was the chief cause of mortality. The constantly noneffective rate among employees was 10.31, compared with 9.79 for the preceding month and 10.57 for the corresponding month of 1914; 9 per cent. of the total noneffective rate was due to malaria. The admission rate to hospitals and the death rate for disease for black employees were 135.18 and 5.37 per 1,000, as compared with 283.88 and 2.65 for white employees. Among the population of the Canal Zone, amounting to 31,598, there was a total of 38 deaths, of which 35 were due to disease, giving a death rate per 1,000 of 13.29, as compared with 11.14 for the preceding month, and 12.37 for December, 1914. In Panama City, with a population of 60,373, there were 156 deaths due to disease, a rate of 31.01 per 1,000, and in Colon, which has a population of 29,331, the deaths from disease numbered 59, giving a rate of 24.13. The work of sanitation was carried on as usual through the month. On December 10, 1915, two cases of yellow fever were found at Balboa quarantine on a vessel from Buenaventura, Colombia. One patient died in Ancon Hospital four days later, and the other was discharged well.

Two Medical Jubilees.—Dr. Lewis Stephen Pilcher of Brooklyn was graduated from the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1866, and it is purposed by a number of his friends and colleagues to celebrate the occasion in a fitting manner. During the second week of May the physicians of Brooklyn will, in honor of Dr. Pilcher, hold a series of clinics, lectures, etc., the full program of which will be announced later. The celebration is in charge of a committee of which Dr. W. F. Campbell of Brooklyn is chairman, and Dr. W. A. Sherwood, secretary.

Dr. Charles H. Rice of Fitchburg, Mass., was the guest of honor at a banquet given by his colleagues on February 26 to celebrate his fiftieth year in the practice of medicine. Dr. Rice was graduated from the Harvard University Medical School in 1866, and has practised in Fitchburg continuously since then.

Harvey Society Lecture.—The eighth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-third Street, on Saturday evening, March 11, 1916, at 8.30 P. M., by Prof. Henry A. Christian, Harvard University. Subject: "Some Phases of the Nephritis Problem."

Women in the Columbia Medical Department.—The trustees of Columbia University, at a meeting on Monday of this week, voted to admit women as students in the College of Physicians and Surgeons as soon as the medical school buildings can be altered to adapt them for that purpose.

Memorial Tablets at Beth Israel Hospital.—On Sunday, March 12, ceremonies will be held of the unveiling and dedication of memorial tablets to Dr. Abram Brothers and Dr. Archibald Isaacs, lately members of the medical staff of Beth Israel Hospital.

Nurses Graduate.—Thirty-eight nurses were graduated from the Training School of the New York Hospital on March 1, after completing a two years course of training.

Fewer Street Accidents.—During January, 1916, 1,368 street accidents were reported by the Police Department, a considerable decrease when compared with the same month of last year, when the number was 1,580. During December, 1915, 1,541 deaths were reported. The fatal accidents numbered 41, and 1,420 persons were injured more or less seriously.

Hospital to Raise Funds.—The Manhattan Eye, Ear, and Throat Hospital, New York, has issued an appeal to the public for help in raising $290,000 before December 1, to be used in extending the facilities of the institution. The sum of $125,000 has already been promised contingent on the collection of the remainder of the amount needed. Because of the lack of room hundreds of patients are turned away from the hospital each month, and an increase of at least 30 per cent. in the capacity of the institution is needed.

Hospital Ship Sunk.—The Italian hospital ship *Marechiaro* is reported to have been sunk by an Austrian mine off the coast of Albania recently, with great loss of life.

Club House for Nurses.—Through the generosity of Mr. Vincent Astor, it is announced, the graduate nurses of the New York Hospital are soon to have a new clubhouse situated at 317 and 319 West Forty-fifth Street. The building will be eight stories high, and will contain 150 sleeping rooms, a dining room 42 feet long and 29 feet wide, separated from a clubroom of the same size by a folding partition which can be rolled back so as to throw the two into one for social occasions, a library, offices, etc. It is estimated that the cost will be at least $160,000.

Gifts to Charities.—The Servants for the Re-

lief of Incurable Cancer and the New York Skin and Cancer Hospital receive bequests of $3,000 each under the will of the late Mrs. Mary C. Archibald of New York.

Dr. Abraham Mayer of New York, who died last summer, left his medical library and the sum of $1,000 to the Lebanon Hospital, where he was an attending physician.

By the will of the late Mary E. Flaherty of Atlantic City, N. J., the sum of $5,000 each is bequeathed to St. Mary's, St. Joseph's, and St. Agnes' Hospitals, Philadelphia, and the sum of $2,000 to St. Vincent's Home and Maternity Hospital in the same city.

Better Baby Week.—Montclair, N. J., recently finished the observance of a Better Baby Week. Lectures were given in the schools, an exhibition of nurseries, dairies, foods, and methods of caring for infants was held, and the pastors of many of the churches cooperated by speaking on the subject from their pulpits. The week just closing has been observed as Baby Week in New York.

Fertig-Hamilton Bill Endorsed.—The Department of Health of New York City is giving hearty support to the bill introduced into the Legislature simultaneously by Assemblyman Fertig and Senator Hamilton, which aims to compel the patent medicine manufacturers to inform the public as to the exact contents of their nostrums; that is, the proposed measure follows exactly the provisions of the Health Department ordinance and regulations on the same subject. The passage of this bill should do much to suppress the traffic in fraudulent, worthless, and dangerous preparations. There is reason, the department states in urging every citizen to write to his senator and assemblyman to ask for favorable action on the bill, to believe that the indiscriminate use of patent medicines in this country is responsible for at least 150,000 deaths a year.

Journals Combine.—Announcement is made of the merger of the *American Journal of Gastroenterology* and the *Proctologist*, the combined journal to be known as *The Proctologist and Gastroenterologist*. The editorial staff consists of Dr. Rollin H. Barnes, St. Louis, proctology; Dr. Anthony Bassler, New York, and Dr. Lewis Brinton, Philadelphia, gastroenterology, and Dr. A. L. Benedict, Buffalo, dietetics. The new journal will be issued monthly.

Therapeutics of the Zeppelin.—The following is an extract from a letter received by a member of the editorial staff from Norfolk, England: "The Zeppelin raids here have caused no panic; they are regarded in the same light as a thunder storm, for their bombs may strike where you are but probably will not. A clerk in the village chemist's shop remarked recently to a customer: 'It is quite funny how these Zeppelin raids take the people. We notice we never sell Epsom salts for a long time after, not even to old Mrs. H., our most regular customer.' "

Belgian Scholarship Committee.—The Belgian Scholarship Committee, which is a subcommittee of the Central Belgium Relief Fund, appeals to all who are interested in the development and diffusion of knowledge and art to contribute to a fund to be used in assisting the scholars, research workers, literary men, and artists of Belgium. All scientific, literary, and artistic work is stopped in Belgium; the libraries, universities, and other educational institutions have been devastated or transformed into barracks; and the stoppage of work means not only a great private loss but also a serious delay in the advancement of knowledge. In order to give to these workers a chance to resume, the Belgian Scholarship Committee is collecting money which will be expended for their assistance in England, Holland, France, or wherever they may happen to be, in a few instances bringing them to this country. Belgian professors have already been temporarily engaged at Princeton, Harvard, Yale, George Washington University, the University of Pennsylvania, Western Reserve University, and the University of Chicago. In one case the honorarium has been partly paid by the Belgian Scholarship Committee, and it is hoped that subscriptions will be sufficiently liberal to permit of the offering of a similar chance to many others. Contributions may be sent to the Belgian Scholarship Committee, John Joy Edson, treasurer, 309 Wilkins Building, Washington, D. C., and in order that the work may be satisfactorily carried on annual subscriptions during the continuance of the war and for two years after are particularly solicited. The committee will also act as a clearing house between American educational institutions and the Belgian scholars.

San Mateo County (Cal.) Medical Society.—At the annual meeting of this society held on February 18 the following offcers were elected: *President*, Dr. Wood C. Baker, San Mateo; *Vice-President*, Dr. Joseph Louis Ross, Redwood City; *Secretary-Treasurer*, Dr. Russell A. Moodie, Redwood City.

Helena Leeming Jelliffe, the wife of Dr. Smith Ely Jelliffe, who died on Friday of last week of cerebral hemorrhage, was a woman of unusual ability in many lines of human endeavor. Although not a physician herself much of her literary work was in medicine. She was the translator of a number of works in neurology and psychiatry and was also the writer of many editorial contributions appearing in various medical periodicals, especially in the *Medical News* during the years that her husband was editor of that journal.

Obituary Notes.—Dr. GEORGE D. DRESSER of New York, a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1874, died suddenly at his home on February 23, aged 49 years.

Dr. HENRY WARD GREGORY died at Philadelphia on February 11 at the age of 42 years. He was graduated from the Medico-Chirurgical College of Philadelphia in the class of 1899, and later served for one year as assistant surgeon in the State Hospital at Hazleton, Penn. He was a member of the Philadelphia Medical Club, the Philadelphia County Medical Society, and the Medical Society of the State of Pennsylvania, and was a Fellow of the American Medical Association.

Dr. CHARLES WHEELER MORSE of Salem, Mass., a graduate of Boston University School of Medicine, Boston, in 1889, died at Westboro, on February 14, after a long illness, aged 49 years.

Dr. FRANK WILMONT MORSE of Thorndike, Me., a graduate of the University of the South, medical department, Sewanee, Tenn., in 1903, died at his home, from pleurisy, on February 6, aged 36 years.

Dr. RALPH C. APTED of Grand Rapids, Mich., a graduate of the University of Michigan, department of medicine and surgery, Ann Arbor, in 1902, died at his home, after a long illness, on February

13, aged 40 years. Dr. Apted was a member of the American Medical Association, the Michigan State Medical Society, and the Kent County Medical Society. He was for many years the head of the Grand Rapids Health Department and was senior medical officer of the Michigan National Guard.

Dr. THEODORE KEUNE of New York, a graduate of the College of Physicians and Surgeons, New York, in 1878, visiting physician to the Harlem Hospital and a member of the American Medical Association and the New York State and County Medical Societies, died at his home, on February 26, aged 63 years.

Obituary.

WILLIAM LOUIS RODMAN, M.D.

PHILADELPHIA.

DR. WILLIAM L. RODMAN, president of the American Medical Association, died of pneumonia at his home in Philadelphia on Wednesday of this week. He was born in Frankfort, Ky., September 7, 1858, and was graduated from the Jefferson Medical College in 1879. After a term of service at the Jefferson College Hospital he entered the medical corps of the U. S. Army, where he remained two years. He then began practice in Louisville, where he was demonstrator of surgery in the medical department of the University of Louisville from 1885 to 1893, and professor of surgery in the Kentucky School of Medicine from 1893 to 1898. The latter year he was called to the chair of surgery in the Medico-Chirurgical College of Philadelphia; he was also professor of surgery and clinical surgery at the Woman's Medical College of Pennsylvania since 1900. He was a member of the American Surgical Association, the Pennsylvania State Medical Association, the Kentucky State Medical Society, the Philadelphia Academy of Surgery, the Philadelphia Pathological Society, and the International Surgical Society. He was elected to the presidency of the American Medical Association in 1914, assuming office at the San Francisco meeting last June. He was also in 1902 president of the American Medical College Association. .

Dr. Rodman was a surgeon of unusual ability, especially interested in the subject of the early diagnosis and treatment of cancer, upon which he had written much. He was also active in advancing the interests of his profession both ethically and materially, and was one of the most energetic promoters of the movement for a national medical license examining board. He was a man of sterling integrity, strong in friendship, a ready writer, an agreeable speaker, and of pleasing manner. In his death the medical profession of America suffers a grievous loss.

Correspondence.

OPPOSITION TO THE HEALTH INSURANCE BILL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Your editorial in the issue of March 4, on the Health Insurance Bill, known as the Mills Bill, is so unjust that I feel that I must take exception to it. Your statement that the action of the Committee on Legislation of the County Society was an affront to the special committee appointed to study the subject is hardly in accord with the facts. Certainly no affront was intended and apparently the members of the special committee did not so consider it for more than a majority were present at the meeting which you criticise. If they did not vote in favor of the report they did not express themselves as opposed to it, for it was unanimously approved by those present.

You say that the action was "ill-timed and ill-advised" that there is "no need for hasty action" and that "every one knows it has little chance of enactment at the present session of the legislature." Our information is that the present sponsors of the bill are making every effort possible to secure its enactment and are on record as saying that they will get it through if they can.

It is my personal opinion that this bill is one of the most iniquitous and unjust efforts that have as yet been made to place class legislation on the statute books, but, be that as it may, it is a measure that, in the present form, is calculated to work harm to the medical profession, and as such is one that the Committee on Legislation should bring every effort to bear, to defeat. The profession has a right to expect that its representative medical society shall be on the alert to protect its interest, and it also has a right to expect that one of the representative medical periodicals shall at least be just in its criticism of the profession.

FRANK VAN FLEET, M.D.

[There was no criticism of the medical profession in the article to which our correspondent takes exception.—ED.]

OUR LONDON LETTER.

(From Our Regular Correspondent.)

WOUNDS OF CHEST—SURGERY—HEMOTHORAX—FLUID OR CLOTTED—STERILE OR INFECTED—DRY PLEURISY — ADHESIONS — COMPLICATIONS — SEPSIS —TREATMENT—OBITUARY.

LONDON, Feb. 12, 1916.

ON the conclusion of Sir J. Rose Bradford's address on "Gunshot Wounds of the Chest," reported in my last, Capt H. G. M. Henry spoke on the pathology and bacteriology of these injuries as they had come under his observation at a base hospital. He had made 100 post-mortem examinations besides experiments on animals and the usual routine laboratory investigations of the specimens. In six cases death was due to injury of the vertebræ and spinal cord. Of the 94 other cases 78 had hemorthorax; in only eight of these last death was due to simple bleeding; the other 70 were complicated in 26 by damage to viscera and in 44 by sepsis. The typical post-mortem appearances were next described by Dr. Henry. In a few hours primary coagulation of the effused blood and deposition of fibrin occurred, followed by exudation and a secondary clotting caused thereby. The lung submerged in extravasated blood collapsed, the stages of this collapse being more rapid and its degree more complete than is met with in pleuritic effusion. The part of the lung which was not submerged was highly emphysematous. The line of demarcation between this part and the hemothorax below it varied much in obliquity. In septic hemothorax the pleura and the lung become covered with fibrin—a secondary point—and this may spread throughout the pool of blood. In anaerobic infection the hemothorax often but not always has a foul smell. Anaerobic organisms and streptococci account for the great majority of infections.

Capt. Morriston Davies of University College Hospital next read a paper on the surgical aspects of these injuries, dealing with them in certain groups which had given him some satisfactory results. Blood in the pleural cavity, he found, may remain fluid, or may form a clot, or may be mixed with serum or gas through infection. In wounds by shell the accumulation may be the result of extensive laceration of tissue as in fractures of the ribs. The clot generally adheres along one side at the point of entry, or of exit, or to broken bits of rib, or to the diaphragm or detached bits of metal. But if a penetrating bullet has caused the wound the blood will very likely remain fluid. In such cases there is a deposit of fibrin accumulating mostly in the costovertebral sulcus and over the diaphragm. Clinical examination will not show whether the blood is clotted or still fluid, though if clotted it will hardly give the horizontal shifting upper level of fluid, nor will it pulsate synchronously with the heart. But this aid to diagnosis is available only before a secondary effusion has taken place or considerable separation of serum from the clot. When air is present it is probably derived from a wound of the lung. If small in quantity it is not of great prognostic import, but a large amount may be serious on account of complications, such as displacement of the heart, compression of lung, or development of infection from bronchial secretion, or from gas-forming organisms. Captain Davies passed on to the treatment of hemothorax—fluid or clotted—sterile, or infected, and so to pneumothorax, on each of which he made some practical remarks. He then referred to the acute pain which often persists for days, due to dry pleurisy set up by a bullet passing through the chest wall and which, he said, can be immediately relieved by separating the two pleural layers by gas—either air, oxygen, or nitrogen, no matter which, as it is only required for a few days. Some 200 c.c. more than needed to abolish the pain should be used so as to allow for absorption. The parietal pleura being acutely inflamed, it is more than usually necessary to carefully anesthetize the track of the needle.

Some discussion followed, in the course of which Lieut.-Col. Hale White, who had seen about 50 cases, none of them fatal, said many cases of bullet wounds of the chest caused little suffering. The dyspnea was often out of proportion with the physical signs; in some cases it seemed partly functional only. Hemoptysis was uncommon. It had not recurred except in one case. Aspiration was required whenever the fluid amounted to 20 oz. The chief trouble was collapse of lung, and patients should be taught to re-expand it by breathing exercises and short walks uphill. Dr. Murray Leslie endorsed this view and spoke of the advance made by the extension of aspiration. Dr. C. MacMahon said the points of treatment were (1) to prevent pleural adhesion and break down any existing by gradual movements; (2) to enable any collapsed lung to regain its normal condition; (3) to reduce hemothorax or pneumothorax; (4) to restore shape of chest walls; (5) to assist discharge of pus by increasing inflation; (6) to improve the general condition by tonic exercises and overcome breathlessness on exertion. He strongly advised bending the body laterally away from the affected side, thus partially collapsing the sound lung and compelling the other to inflate to some degree. Dr. Poynton spoke of cases with some fever perhaps rather obscure, and said caution was important, as they often cleared up with a little patience and operation was spared.

Sir Francis H. Lovell, dean of the London School of Tropical Medicine, died on the 28th ult. in his seventy-second year. He qualified in 1866, was appointed colonial surgeon at Sierra Leone in 1873, became P.M.O. and president of the General Board of Health of Mauritius, where also he was a member of the Legislative Council. Later he was surgeon-general and member of the Executive Councils of Trinidad and Tobago. He was knighted in 1900 and retired from the colonial service in the following year. The University of Birmingham made him Hon. LL.D. in 1911.

The death of Sir Clements Markham is yet another sad warning of the danger of reading in bed. Yet I suppose many will persist in the habit, confident that they will be too careful to become victims. It is stated that Sir Clements had the electric light in his room so there was really no need for a lamp or candle.

Sir George A. Pilkington died on January 28 at Southport, where he practised for some years and was twice elected mayor. He entered Parliament in 1885, but was defeated in the next year's election, but again returned in 1899. He was J. P. and deputy lieutenant for Lancashire, of which county he had been high sheriff.

Progress of Medical Science.

Boston Medical and Surgical Journal.

February 24, 1916.

1. How May You Assist the Medical Department of the United States Army? Major William O. Owen, M.C., U.S.A.
2. Classification of Reformatory Prisoners. Guy G. Fernald.
3. Venesection as a Therapeutic Measure. Charles H. Lawrence, Jr.
4. A Brief History of Gastric Intubation. Fielding H. Garrison.
5. Ringworm of the Hands and Feet. J. E. Lane.
6. What Goiters Demand Operation. Frank H. Lahey.
7. The Treatment of Psoriasis with Horse Serum. Arthur P. Perry.
8. Physiological Considerations in the Differential Diagnosis of Neurasthenic, Hysterical, and Psychotic Symptoms. Donald Gregg.

1. How May You Assist the Medical Department of the United States Army?—William O. Owen in an address to the Society of Clinical Surgery of Boston pointed out to the members the difference in the requirements between the army medical officer's training and the surgeon's civilian life in order to show them how they could assist to the best advantage and advance the work of the surgeons in the Medical Department of the United States Army. The army medical officer must be a special class of soldier if he is to render good service, and what is needed is not a man with a knowledge of medicine, but a medical man who has been trained in the special work of a medical soldier. He further stated that for the medical man who is untrained in this particular specialty of medicine to undertake this work is to invite misfortune into his life. He then showed them in what way they could give their services to the army—by caring for the sick in the large hospitals of the rear, by helping the Army Medical Department to select young men for service in the Army Medical Department, by pushing the National Board of Medical Examiners to the full fruition of its desire, and thus eliminating the incompetent from the ranks of the profession. The younger men should be encouraged to go to the camps of instruction now being held in many parts of the United States. Could not they secure a law which would enable them to recommend to the War Department those medical men of the smaller districts whom they knew to be licentiates of the National Board of

Medical Examiners, whom they knew to be competent diagnosticians, men qualified to select recruits for the army under the laws of the War Department? The civilian surgeon had done the work, had stood the strain, and had suffered the pain in the past wars. Would it not be better to be trained? The assistance and interest shown by the civilian surgeon toward the army medical officers would encourage them in their work; it was the duty of all medical men to keep the spotless robes of high purpose and earnest endeavor ever pure and true in order that the men of the oncoming generation may attain to even better, higher things than Lavaran, Ross, our own Reed and Gorgas.

3. **Venesection as a Therapeutic Measure.**—Charles H. Lawrence, Jr., offers a contribution to the knowledge concerning venesection. The general impression heretofore conveyed is that it is a measure only to be used under the most desperate circumstances, and he shows the falsity of this impression. His conclusions are drawn from a series of fifteen cases, in which venesection was performed on twenty-two occasions. 1. Venesection performed under proper indications is not a dangerous measure, especially since the "dose" can be accurately controlled. 2. In the presence of dilatation of the heart, renal toxemia, hypertension, or a combination of these conditions, it may be expected to act more promptly and more surely than drugs. 3. It lowers blood pressure and at the same time produces a more efficient circulation when performed in cases of hypertension, but does not, in therapeutic "doses," lower normal arterial tension. 4. It should never be performed in the absence of definite indications, but should not be withheld until the hope of success for any measure is gone. 5. The amount of blood to be withdrawn is to be decided by the point at which relief is obtained. The error is generally on the side of too small an amount. 6. Repeated bloodletting, when indicated, does not seem to have any ill effects upon the composition of the blood.

6. **What Goiters Demand Operation.**—Frank H. Lahey states that goiter in itself means little or nothing so far as describing the disease goes. It signifies only that there is sufficient enlargement of the thyroid gland so that its prominence is noticeable upon the neck. Much of the confusion in the minds of these physicians who have not followed the advancement in thyroid diseases in the last few years is due to a misunderstanding of this term. Lahey gives six divisions of thyroid conditions, among them the symmetrical enlargement without toxic symptoms which usually occurs in young girls soon after the establishment of the menses, and which type is often sent for operation under the mistaken assumption that all goiters demand surgical intervention. Provided there are no symptoms of hyperthyroidism this type of goiter should be submitted to medical treatment, care being taken to distinguish the appearance of symptoms of hyperthyroidism, when an operation should be advised. He sums up the indications for operation upon the thyroid as follows: 1. For hyperthyroidism (exophthalmic goiter). 2. For pressure (either extra- or intrathoracic). 3. For remvoval of unsightly enlargements. 4. For malignancy or possible malignancy.

New York Medical Journal.

February 26, 1916.

1. Syphilis and Internal Medicine. Lewellys F. Barker.
2. Unsuspected Syphilis in Neurology. Joseph Collins.
3. The Medical Service in the Organized Militia. William S. Terriberry.
4. Quinine Urea Bichloride in the Toxemia of Pulmonary Tuberculosis. Myer Solis Cohen.
5. The Coroner and the Physician. W. S. Wadsworth.
6. Syphilis of the Stomach. E. D. Holland.
7. Gynecology. Karl H. Goldstone.
8. The Treatment of Typhoid Fever with Bacterins. Edward Waitzfelder.

1. **Syphilis and Internal Medicine.** — Llewellys F. Barker. (See MEDICAL RECORD, Feb. 19, 1916, page 346.)

2. **Unsuspected Syphilis in Neurology.**—Joseph Collins. (See MEDICAL RECORD, Feb. 19, 1916, page 347.)

3. **Medical Service in the Organized Militia.**—William S. Terriberry. (See MEDICAL RECORD, March 4, 1916, page 448.)

4. **Quinine Urea Bichloride in the Toxemia of Pulmonary Tuberculosis.**—Myer Solis Cohen considers that the treatment of the advanced stage of pulmonary tuberculosis presents the greatest difficulties and disappointments. The most distressing and uncontrollable feature in this stage is the toxemia, and while fresh air, rest, and good food are always indicated they do not constitute the whole treatment. Among the drugs which have a controlling effect on the toxemia is the hydrochloride of quinine and urea. In very many cases the administration of this drug will cause a reduction of the fever and an amelioration of the toxic symptoms. Every patient will not respond to this treatment, and the same patient may respond at one time and not at another. It is not a specific, and one who expects invariably favorable results will be disappointed. Cohen is unable to say why in some instances it gives brilliant results while in others it fails. The drug is given in capsules, and the dose may be five, seven and a half, or ten grains administered every three or four hours, or three times, or twice, or once a day. Doses and interval depend upon the effect produced. After the reduction of the fever a smaller dose and longer interval may be tried, and this must always be done upon the advent of cinchonism. If no effect is produced by a given dose it should be increased.

6. **Syphilis of the Stomach.**—E. D. Holland reports two cases of syphilis of the stomach which are unusual since they simulated gastric cancer and not ulcer. The first case was a railroad conductor, aged thirty-five years, who came to the hospital in a cachectic condition and vomiting after nourishment had been given. Physical examination revealed a dilated stomach, tenderness over the pylorus with a palpable tumor at this point. After an Ewald meal the gastric contents showed free hydrochloric acid absent, lactic acid strong, blood present both red and coffee colored, and microscopical particles of mucous membrane. A consultation ended in the unanimous opinion that it was a cancer of the stomach. An exploratory operation was done, and it was found to be impossible to remove the extensive growth. A piece of tissue was removed, divided, and sent to two different laboratories, and a report from one laboratory called it a tuberculous condition, while the other laboratory reported it to be cancerous. A new head in the department in the hospital decided to try antisyphilitic treatment, and placed the man on small doses of potassium iodide and mercury, with the result that in a month this patient was able to take full treatment, and in ten weeks he was back at work and has remained in good health ever since. This happened before the days of the Wassermann test. The second case was a mountaineer who had had stomach trouble for years. Patient could only drink broth and milk. Examination showed his stomach to be decidedly constricted above the cardiac end. Patient was thin and sallow, and stools showed blood. He denied any syphilitic history. A Wassermann test gave a two plus. He was given an injection of salvarsan five days after his arrival at Hot Springs, and another dose ten days later. At the end of three weeks he was able to eat vegetable soup, finely ground steak, and buttermilk. The blood had disappeared from his stool and he began to gain in weight. It was almost impossible to take an *x*-ray, as the whole stomach seemed to be so narrowed and elongated that its capacity did not seem to be more than three ounces, and it was almost impossible to get

enough bismuth into it to obtain a shadow. The man improved and would not wait for full treatment, but was able to work about his farm. The foregoing goes to prove that an internist, although a specialist, must be alert to every possible factor that might affect his diagnosis.

Journal of the American Medical Association.

February 26, 1916.

1. Present Views in Respect to Modes and Periods of Infection in Tuberculosis. Mazyck P. Ravenel.
2. Transfusion of Blood with Special Reference to the Use of Anticoagulants. Henry S. Satterlee, and Ransom S. Hooker.
3. Reactions Following Blood Transfusion by the Syringe Cannula System. Edward Lindeman.
4. The Relation of Hemolysis in the Transfusion of Babies with the Mothers as Donors. Thomas H. Cherry and Edwin G. Langrock.
5. Complicated Nerve Tissue Involvement Arising from Syphilis of the Vertebræ. C. C. Wholey.
6. The Relation of the Laboratory Courses to the Work of the Clinical Years. Elias P. Lyon.
7. Relation of the Preclinical Laboratory Courses to the Work of the Clinical Years. Lewellys F. Barker.
8. Principles and Experiments in Medical Education. James Ewing.
9. A Proposed Undergraduate Course in Clinical Physiology. Frederic S. Lee.
10. Overactivity as a Potent Factor in the Etiology of Some Nervous Diseases: Inquiry of 187 Cases. Alfred Gordon.
11. Corpus Luteum Extract in the Nausea of Pregnancy: Preliminary Report. John Cooke Hirst.
12. Diphtheria Carriers. J. C. Geiger, Frank L. Kelly, and Violet M. Bathgate.
13. Cultural Experiments with the *Spirochaeta Pallida* Derived from the Paretic Brain. Udo J. Wile and Paul Henry de Kruif.
14. Sanitation and the Control of Pellagra. Charles T. Nesbitt.
15. Systemic Poisoning with Bismuth. William H. Higgins.
16. Report of Two Cases of Cardiovascular Disease Caused by Stricture of the Urethra. N. P. Yeardley.
17. A Case of Symmetrical Gangrene or Raynaud's Disease Associated with Epilepsy. David F. Weeks and Dan S. Renner.

2. Transfusion of Blood with Special Reference to the Use of Anticoagulants. — Henry S. Satterlee and Ransom S. Hooker state that they previously have reported a method of transfusing blood by means of specially constructed pipets and cannulas designed for use with either a lining of hardened paraffin or a preliminary internal coating of an anticoagulant solution such as leech extract or herudin. In this present report they give the results of their experiments during the past eighteen months with various anticoagulants other than paraffin and hirudin, with a view to determining the best anticoagulative agents for purpose of transfusion. In the constantly enlarging field in which transfusion of the blood is being employed the questions which arise concerning the indications and contraindications for this operation, the amount of new blood to be supplied, and the advisability of removing some of the patient's own blood at the time of transfusion are all matters closely concerned with the probable benefit or futility of the operation. The problem is far more complex when it is a question of the benefit to be derived from the transfusion of a so-called normal blood into the circulation of a patient suffering from one or more of the various pathological conditions for which transfusion has been recommended, and they believe this question could be more satisfactorily answered if laboratory methods were available for the detection of other possible grounds of incompatibility than those which are covered by the tests which are now in use. Those who have had experience with the transfusion of blood in varying pathological conditions and by various methods have observed that certain toxic symptoms varying all the way from a slight chill and rise of temperature to marked anaphylactoid phenomena and even death have occasionally resulted as an immediate sequel to transfusion and where the serological tests for hemolysis and agglutination have been entirely favorable. They summarize the results of their experiments as follows: 1. A better knowledge of the physicochemical changes which may occur in the blood of the recipient as a result of transfusion in varying pathological conditions is needed in order to define more clearly the rational indications for this operation as a therapeutic measure. 2. Certain hypotheses are suggested to explain the occurrence of febrile and toxic reactions following transfusion which cannot be prognosticated by the existing laboratory tests for blood compatibility. 3. Importance is attached to the belief that many of the febrile and toxic reactions not to be explained by hemolysis or agglutination are due to the transfusion of blood which is undergoing coagulative changes or which contains potential coagulative factors such as thromplastin and thrombin. 4. In judging of the safety of any method of transfusion the extent and mode of action of the anticoagulant which is used, the toxicity of the substance, the amount of it which is necessary, and the mechanical technique in transferring the blood are the most important factors to be considered. 5. The employment of an antithrombin such as leech extract or the commercial "hirudin," while appearing to be ideal as an anticoagulant from the physiological point of view, is subject to uncertainty of action and possible danger from contamination with toxic substances. Minimum doses of tested and standardized preparations and optimum anticoagulative technique should be used if such agents are employed. 6. The use of paraffin is theoretically the method of choice in providing an anticoagulant agent for purposes of transfusion and has been found practicable, but not without certain precautions and proper apparatus. 7. Of the inorganic calcium-converting agents which they have investigated experimentally the citrate of sodium and the metaphosphate of sodium are the only substances which exhibit desirable characteristics. Both of these salts, however, have toxic effects which demand consideration of the amounts which can be safely employed for purposes of transfusion. Their experience with sodium metaphosphate is limited to experimental transfusion on animals. 8. Sodium citrate in the proportion of 120 mg. to 300 c.c. of blood, when used with the pipet-cannula apparatus and in the manner described, serves as an effective anticoagulant for transfusion. This proportion (0.04 per cent.) is from one-fifth to one-twenty-fifth of the amount of citrate necessarily employed with other methods. Because of the considerations which have been discussed they believe it to be the best method of transfusion for general use.

3. Reactions Following Blood Transfusion by the Syringe-Cannula System.—Edward Lindeman calls attention to the fact that since the simplification of technique, blood transfusion has acquired considerable popularity. The operative procedure is a life-saving measure and should be regarded as something more than an injection of saline fluid or salvarsan administration, and any tendency to curtail detail of execution to meet the convenience or inexperience of the operator should be discouraged. He takes up the problem of reactions to transfusion, to analyze their cause, and to show the way to prevention. In the first eighteen transfusions which he performed by the syringe-cannula system, preliminary blood tests were made in only two instances. In these eighteen cases there were no chills and no fever reaction above two degrees. The quantity transfused was small—never more than 700 c.c. The donors used were immediate relatives of the patients, and the diseases treated were not primary blood diseases. The conspicuous absence of hemolysis in the absence of blood tests in sixteen of these cases must be attributed to good fortune. In nearly all of the other cases operated upon later in the work, in which blood tests were made, chills and fever were encountered more frequently. In the

first 150 transfusions which were performed by the syringe-cannula system, chills followed by fever were present in about 33 per cent. The quantities transfused were usually 1,000 c.c. or more in adults. The work was done in many different laboratories and in different parts of the country; hence the preliminary blood tests of hemolysis and agglutination were done by many different serologists. In this group three cases of hemolysis occurred, accompanied by chills followed by fever. Hemolysis never occurs without these symptoms unless the patient dies during or shortly after the transfusion. The inference is therefore that these symptom reactions in transfusions are due to hemoglobin set free in the circulating blood. When blood pigment appears in the urine the danger is great and death may follow. The procedure when hemolysis occurs, even when death does not occur, is robbed of its therapeutic value. In the last 155 transfusions by the same system the preliminary blood tests were personally supervised by the writer in all but nine cases. In this last set of transfusions not a single case of hemolysis and not a single death referable to the transfusion occurred. Adults received 1,000 to 1,800 c.c. in each transfusion, and the quantity was alwas taken from one donor. No foreign substances or anticoagulants were employed in every case. Lindeman draws the following conclusions from his work: 1. The preliminary hemolytic and agglutinin tests when properly performed are reliable. 2. Incidents of hemolysis in transfusion can be eliminated entirely. 3. The reactions which follow transfusion when accurate tests are made are eliminated in all except 9 per cent. of the cases, and in this 9 per cent. chills and fever alone occur. When the quantity is 800 c.c. or less, these symptoms do not occur. 4. By careful, accurate, and complete hemolysis and agglutinin tests, when the work is done skilfully, blood transfusion is robbed of all danger attending its use. This marks a step in advance because of the comparative simplicity of application. He further comments on the fact that in the technique of blood transfusion by the syringe-cannula system the entire mass of blood is outside of the body for a period of between six and ten seconds regardless of the amount transfused. It passes through a minimum amount of foreign material, and embolism or clotting never occurs in transit. No syringe is used for a second filling until thoroughly cleansed with sterile saline solution, and they are cleaned as fast as they are used. Clotting in the syringe cannot occur, and the blood is transferred uninjured exactly as it exists in nature. There is no blind system into which air may leak, and there are no stopcocks, valves or rubber tubings about which blood may clot. Anticoagulants or foreign substances are never employed.

11. Corpus Luteum Extract in the Nausea of Pregnancy.—John Cooke Hirst reports five cases of pregnancy in which he administered corpus luteum extract for the relief of nausea, and states that his use of this extract for this condition is based on the presumption that there is more than a coincidence between the formation and disappearance of the corpus luteum of pregnancy and the cessation of the nausea. Since the nausea begins to diminish at the time the corpus luteum has reached its acme of development, it may be assumed that there is sufficient absorption from the corpus luteum of pregnancy to account for the disappearance of the nausea. The dose administered by him has been corpus luteum extract 1 c.c. (20 mg.) daily, given hypodermically. The regulation of the amount of dosage is still a matter for investigation, as the above dose may be too small, and will be dealt with in a subsequent report. His results show that he was successful in 80 per cent. of his cases, but one case out of the five failing to react to the treatment. This one failure shows that dependence cannot always be placed upon this treatment, but he considers it better than any other routine form of treatment, and that probably with increased dosage the method can be shown to have decided value.

12. Diphtheria Carriers.—J. C. Geiger, Frank L. Kelly, and Violet Bathgate report the results of an investigation carried on in six different schools in widely separated communities of California in which cases of diphtheria occurred during the month of October, 1915. A study of the statistics given, in which the personal equation has been eliminated by three persons making the examinations with checking of results, and only typical granular type of diphtheria bacilli being considered positive, proves absolutely that if epidemics of diphtheria are to be controlled by the isolation of carriers, nose cultures must always be taken with those from the throat. Of the 469 cultures made, 32.8 per cent. were positive, and of these positives 87.6 per cent. were found in cultures from the nose, and 28 per cent. of all positives were found in cultures from the throat. The Schick test was used on a group of young adult students in a large university, in order to distinguish between the contacts and the carriers without waiting for the elapsing of the incubation period. With this test it was proved in forty-eight hours that the whole group was immune, and so classed as carriers and relieved of some of the inconveniences attending the quarantine of contacts. None of the carriers developed the disease. In another investigation in which the Schick test was not used, several of the carriers developed diphtheria. Had the test been given, the non-immunes would have been detected and could have been immunized before the development of the disease.

The Lancet.

February 12, 1916.

1 The Lettsomian Lectures on the Effects of High Explosives upon the Central Nervous System. Delivered before the Medical Society of London. Fred. W. Mott.
2. Investigations on Clinical Thermometry: Continuous and Quasi-continuous Temperature Records in Man and Animals in Health and Disease. G. Sims Woodhead and P. C. Varrier-Jones.
3. The Aerial Conveyance of Infection, with a Note on the Contact Infection of Chickenpox. Frederic H. Thomson.
4. The Urea Content of the Cerebrospinal Fluid: With Special Reference to the Diagnosis of Uremia. R. G. Canti.
5. Prophylactic Vaccination Against Hay Fever. B. P. Sormani.
6. A Case of Febris Colombensis. G. A. Lurie.
7 Case of Intracranial Hemorrhage without Symptoms of Compression. P. W. Lam and Ed. Law.

3. The Aerial Conveyance of Infection.—Frederic H. Thomson offers the results of his experiments on the aerial conveyance of infection, which he began on February 12, 1912. The work was carried on in a hospital where 497 patients have been treated during a period of three years and about seven months. The total amount of the diseases treated is 657, as several patients suffered from more than one condition. The space allotted to each patient was 195 square feet of floor space and 15 lineal feet wall space. Scarlet fever, measles, whooping-cough, mumps, erysipelas, tonsillitis, chickenpox, and other conditions were treated, and Thomson has evolved the following conclusions: It must be understood that deductions as to the aerial conveyance of infection do not apply to any other conditions than those obtaining in this special ward, for the results might be different were the beds closer to each other, the ventilation less good, etc. He concludes that scarlet-fever infection and rubella are not carried by air. It has been held for years that the infection of diphtheria is not air borne, and the evidence from his ward corroborated this opinion. While he had an infection of mumps he does not consider it to be air borne. He confesses his doubt as to

whether whooping-cough may be air borne or not. Taking into consideration the propelling power of the cough he considers longer experience to be necessary before a reliable conclusion can be reached. He is satisfied that chickenpox is air borne early in the disease, but that it is difficult to determine the exact time it ceases to be so. He further states as to treatment of chickenpox that although it was safe to treat it in certain stages in this special ward, with all its precautions against direct and indirect infection, it does not follow that it would be a safe procedure to do the same in an ordinary ward when the disease was in a similar or a scabbing stage. He does not accept the view that this disease is infectious until the last scab has separated from the patient's skin, and proved it by introducing seven cases of chickenpox into a ward accommodating twenty patients suffering from scarlet fever. The cases were introduced at stated times and no infection occurred. Enough has been done to lead to economy in the provision of isolation for this disease in hospitals and to show that it is needless to keep the chickenpox patient separate from others for so long as is generally supposed necessary.

5. Prophylactic Vaccination Against Hay Fever.—B. P. Sormani gives an outline of his work and results in the vaccination or active immunization of hay fever with pollen extract in forty-eight cases last year. He gives in part the methods of treatment of Noon and Freeman and shows wherein he disagrees with them. In January, February, or March, he began the treatment by administering a dose of 10 u. p., increasing the amount every week as far as possible in each case. He usually proceeded up to 1,000 u. p., but when the patient showed symptoms of an overdose the increase was very slow or not at all. He prepared the extract by grinding the pollen by rubbing it with sterile sand, and made the extract with distilled water. This extract was not boiled, but was sterilized by adding one-tenth of its volume of 5 per cent. carbol solution, after which salt was added up to 0.85 per cent. Carbolic acid was not added to the extract which had to serve for the ophthalmic reaction, but it was boiled ten minutes, as Freeman does. Fresh vaccine was always used for inoculations. In each case the ophthalmic reaction is determined. Usually a resistance was found of 500 u. p. The reaction is not sharp, nor such as to serve as a guide to treatment. Sormani, however, considers it of the highest importance for diagnostic purposes in the beginning, for by this means he proved that two cases of suspected hay fever were something else. All other patients showed a clear positive reaction. The lowest resistance was 5 u. p., and the highest 5,000 u. p. Almost all of these had been treated in every possible way. In passing it may be observed that this past year was a very severe hay-fever year. Sormani gives his treatment for 1915 as follows: The initial dose was 10 u. p. A little reddening and swelling were observed at the point of injection. The dose was increased every week as follows: 20, 30, 40, 50, 70, 90, and then beyond 100 more rapidly, thus: 150, 200, 300, 400, 500, etc. He desired to carry the final dose up to 1,000 u. p., but found it a high dose. Some patients were cured by a much smaller final dose than 1,000 u. p. He considers it wise to proceed to a higher dosage, if during the preceding immunization nothing has appeared leading to a suspicion of hypersensibility. such as general itching or symptoms of an attack of hay fever. At the end of May the treatment was stopped, but a patient was requested to return if any symptoms appeared. If a patient returned a smaller dose was given, a decrease of 50 or 100 u. p., for fear of a negative phase. In the hay-fever season he began with 5 to 10 u. p., only increasing when necessary up to 25 or 50 u. p. Of fourteen patients treated prophylactically six were completely cured, six had few of their former symptoms, while two considered no benefit to have been received. Of twelve patients treated phylactically four were completely cured, three felt more or less relief, and five no relief at all. Of nineteen patients treated prophylactically by other physicians all found much relief, while three treated therapeutically found relief.

6. A Case of Febris Colombensis.—G. A. Lurie reports a case of *Febris Colombensis* which he recently observed in Serbia. The patient, an Austrian, had been prisoner in Serbia since December, 1914. Past history negative. He had never been in the tropics. In June, 1915, he began feeling tired and feverish. The fever was of a subcontinuous type, temperature seldom exceeding 103° F., and lasting for five weeks, terminating by lysis. There was no roseola, no spleen enlargement, no complication of any kind. The blood examination at various times for the different typhoid states proved negative; while it agglutinated *B. colombensis.* Ceylon strain in dilutions of 1/40, 1/80, and occasionally 1/160. No hemocultures were done, but the stools examined in the usual laboratory way by plating showed no typhoid bacilli, but four colonies out of twenty-six investigated turned out to be *B. colombensis,* the others being coli and coli-like bacilli. The bacillus is a motile bacterium, Gram-negative, does not liquefy either gelatin or serum. On agar the growth may be typhoid-like, or grow more abundantly than true typhoid. It grows well in milk, rendering the medium acid at first, then alkaline, and often bleaching it, or it may remain permanently acid. On lactose its action is variable. The same strain may at times produce gas and at other times none. This case shows that this disease is not limited to the tropics, but is found in temperate climates and must be regarded as a cosmopolitan disease.

British Medical Journal.

February 12, 1916.

1 "Trench Fever": A Relapsing Fever Occurring with the British Forces in France. Captain J. W. McNee, Lieutenant Arnold Renshaw, and Captain E. H. Brunt. (Note by Colonel Sir Wilmot Herringham.)
2. Antenatal Clinics and Prematurity Practice at the Edinburgh Royal Maternity Hospital in the Years 1909-1915. J. W. Ballantyne.
3. Brilliant-Green as an Antiseptic. Archibald Leitch.
4. The Physics of a Surgical Dressing. Lieut.-Colonel A. Primrose.

1. "Trench Fever."—McNee, Renshaw, Brunt, and Herringham contribute to the elaborate account of this condition and announce that during the whole time the army has been in Flanders cases of short fever have occurred continually. In a comparatively small number there has been a little bronchitis, or some diarrhea, or tenderness of the muscles or nerves in limited situations. As a rule the symptoms have not included more than the general aches and pains which are the common denominator of all fevers. The patients have been slightly ill, and usually have returned quickly to duty. These undetermined fevers have been from the first the hunting ground of the bacteriologists, who with their laboratories are disposed in a line along the front. After a thorough and comprehensive investigation the following conclusions have been deduced: That the disease is a definite entity, and of infective nature, as is proved by its ready transmission from one person to another by the blood. There are two clinical types of the disease: (a) A short fever of about a week's duration, followed frequently after a few days by a short single relapse; (b) a longer illness characterized above all by the number, sharpness, and periodicity of the relapses. The symptoms of both types are clinically identical, the most constant and characteristic being headache, and pain in the legs and small of the back. The two types described are, in the opinion of

the writers, merely varieties of one and the same disease. In addition to the identity of symptoms, the experimental evidence for this is strong, a typical "short" variety having been shown capable of giving rise to a typical "long" one. The incubation period varies, possibly with the dose of the infective virus introduced. The shortest incubation period in the experimental transmissions was six days, and the longest twenty-two days. The disease is transmissible in every case by the whole blood, whether injected intravenously or intramuscularly; but it is not transmissible by the serum. It follows that the virus is not a "filter passer" in the serum, as all the experiments with filtered serum were negative. The plasma was infective in one experiment, but hemolysis of red cells had occurred, so that the plasma was hemoglobin-tinted. The filtered plasma in another test was not infective. The above results seemed to point to the virus being contained within the blood corpuscles themselves, whether leucocytes or red cells. Blood corpuscles, after washing five times in saline to remove the plasma, were still found to be infective. Very many blood films at all stages of the disease have been examined without a parasite being detected, The blood has been examined fresh, under dark-ground illumination, and dried films have been stained in varying ways, without results. Blood corpuscles were broken down, and the hemoglobin-tinted fluid passed through a filter in an attempt to prove that the virus was an ultra-microscopic one confined to the corpuscles. The fluid was not infective. The only constant morphological change in the blood is the presence of punctate basophilia. The blood counts, differential and ordinary, gave no important results. As regards the means of transmission in nature they have no evidence to offer. The fact that only two classes of men are affected—those from the trench zone and men of the Royal Army Medical Corps—is, however, suggestive. The disease is either contagious from man to man, or what seems much more likely, is carried by one of the common flies or parasites found in the trenches. During the past summer various types of vermin, mosquitos, and flies have been comomn in the Flanders war zone.

4. **The Physics of a Surgical Dressing.**—A. Primrose says that his attention was called first to the harmful use of impermeable material such as protective, oil-silk, rubber adhesive, etc., by a paper on the physics of a surgical dressing published in a French journal about ten or fifteen years ago. Since then he has had many opportunities in the wards of hospitals to verify the fact. Each day now a new case comes to the wards with an impermeable dressing covering the wound. He has been able to note the great improvement on the omission of that covering in dressings—the custom of impermeable dressings of all septic wounds seems to be widespread. So high an authority as Sir Almroth Wright advocates the use of this type of dressing. In the writer's opinion the best dressing for septic wounds is a moist dressing, and it was found that the hypochlorous acid solution was wonderfully effective. The moist dressing is applied directly to the wound, and over this dry gauze. Everything should be done to favor free evaporation from the surface and absorption into the dressing, which should be frequently changed. He is convinced that it would be greatly to the advantage of the wounded if impermeable protective and oil-silk were entirely removed from the armamentarium of the army. The use of these substances in surgery is very restricted, and as they are employed in military surgery at the present time, the author contends, they generally do very much more harm than good.

Berliner klinische Wochenschrift.

January 17, 1916.

War Literature of Internal Medicine.—Reckzeh begins a serial review of this literature with the circulatory organs, disorders of which make up a large part of the total material. Mild cardiac symptoms are best classed as nervous affections, particularly for the patient's own good, as the knowledge that he had cardiac mischief would tend to make him a hypochondriac. The so-called exhausted heart is an aggravated type of athletic heart. In this condition a number of symptoms do not point directly to the organ—there may be digestive disturbances, lack of appetite, morbid excitability, restlessness, and insomnia. The subjects have precordial anxiety, quickened pulse, heart stitch, etc. In quite another syndrome in which the heart has been seriously damaged by overexertion we may see cyanosis, cold extremities, and a small, soft pulse, which may be rapid or irregular. Arteriosclerosis may rapidly set in as a result of the hardships of war. On the other hand, strange to relate, functional cardiac neuroses sometimes become latent as a result of the changed existence. The *x*-ray shadow of the exhausted heart shows great variation; this may be normal, or there may be drop-heart or slight dilatation. In the older soldiers the blood pressure may be notably raised. The pulse is regular and steady but often shows dicrotism. An overstrained heart may develop organic lesions, which begin as a rule in the mitral valve and cause either insufficiency or stenosis. There is no commonly accepted rationale for cases like these. There may have been old mercurial lesions or there may be a synchronous rheumatic factor, or the valvular phenomena may be due to dilatation. Murmurs and enlarged percussion area are both often present, but hypertrophy is seldom in evidence, despite the frequency of arteriosclerosis. The latter in the young soldier is often associated with drop-heart and dilatation. It cannot by any means be conceived as a precocious involutional process, but is simply a direct result of active military life. The author says that it is well known that French soldiers have made very considerable use of potassium iodide and of cola with the hope of averting arteriosclerosis. There are, of course, numerous sources of error in wholesale examination of the hearts of soldiers. Certain conditions, such as a high diaphragm, are very seldom thought of in locating the situation of the organ.

The Application of Hard, Filtered X-rays in Dermatology.—Schmidt states that these rays are indicated only when a deep action is desired, notable in hypertrichosis. There is always some danger when using them to the spleen, bone marrow, or gastrointestinal tract. Aside from their indication in epilation, they should never be used on the hairy integument, since they may give rise to an unintended and undesirable shedding of hair. A case is mentioned of psoriasis of the scalp in which unfiltered and medium soft rays had been employed with success. A relapse having occurred he was treated in another city with the hard, unfiltered rays, with exactly opposite results, *i.e.*, hair lost, psoriasis not improved. In a number of conditions in which deep radiation might be assumed to give good results after superficial treatment has proved of no avail the results have been quite negative—for example in epitheliomata. In order to prove that the hard rays have greater biological activity, as is claimed on some sides, it will be necessary to cure eczema and psoriasis which have resisted the action of medium rays, and as far as known, Schmidt says, such results have never been reported.

Deutsche medizinische Wochenschrift.

January 13, 1916.

Critical Remarks on the Diagnosis and Therapy of Ulcus Duodeni. — Boas attacks the correctness of the symptomatology of this condition as taught by Moynihan. He is by no means the first antagonist, as a number of French and Danish physicians have preceded him in his contention while as a class Germans have thus far been non-committal. Boas as a physician sees few cases under operation or at autopsy, while the surgeon naturally draws his conclusions from biopsy, and they are naturally one sided. Medical cases are recognized by the presence of occult hemorrhages. Both have like access to the personal history and for Moynihan this is the crucial factor, being almost pathognomonic. It should include the delayed pain, known as hunger pain, at a certain interval after eating and this phenomenon should show periodicity. It does away with the need of looking for evidence of occult bleeding which would surely be forthcoming. Actual bloody vomiting and melena are also encountered very frequently in the family history, as is also evidence of pyloric obstruction. Biopsy and autopsy, however, often show that a duodenal ulcer is insignificant in itself, being merely associated with pyloric ulcer, cancer, appendicitis, gall duct disease, nephritis, etc. In all these complicated cases a simple personal history cannot be obtained. In Germany there is no "hunger-pain" symptom of a typical character, nor is there a late or periodic element found of any classic sort which could be associated with duodenal ulcer. But certain authors, including Kemp of the United States, have long associated phenomena of this sort with ordinary gastric ulcer, especially of the nonpyloric site. To resume, periodic pain characterizes a great variety of abdominal diseases, "hunger pain" simply points to hyperchlorhydria.

The Dysglandular Psychoses.—Fauser refers to some of the serological reactions in certain psychoses believed to have a somatic basis in which the glands of internal secretion may be at fault. We should not expect specific reactions, for it is apparent that a dysfunctioning thyroid or brain cortex is a general proposition, and stops short of the how or why involved in individual mental states. The process of dialysis is a crude physical one, and we must wait for the further development of chemical pathology and histological technique before the psychoses can be understood. Moreover the clinical classification in use today is not adapted to the newer lore based on serological finds. The former is highly conservative, the latter progressive. The author regards Abderhalden's theories as a step forward in the sense that Ehrlich's side chain theory is such. The reactions produced, however, are only suggestive, not conclusive; and may be likened in a way to gross microscopic finds at an autopsy. Abderhalden's dialysis procedure is active only with the terminal or end products of digestion of the supposedly specific products derived from this or that organ. It is understood that he is at present endeavoring to elaborate methods which will recognize intermediate steps of digestion, in the hope of bringing out only specific ferment activities. Whether he succeeds or not, however, it will be difficult to believe that different reactions can be straightway indicative of definite entities as we know them clinically. A new classification will have to be formulated to meet the exigencies of psychiatry.

Deutsche medizinische Wochenschrift.

January 20, 1916.

Treatment of Incoercible Vomiting of Pregnancy.—Jung states that it is difficult to draw the line between benign and pernicious vomiting of pregnancy, but in his opinion, the involvement of the general health indicates the transition between the two. The scales should be resorted to every three days and loss of weight invoked as the criterion. Much depends upon proper regimen, which should incline to the fluid form, the special articles being chosen by the patient. Drugs are not indicated, for the stomach of the gravida is normal. Suggestion does much better. But if the condition is evidently pernicious the patient must be transferred to a private institution where she will be under strict supervision, and the doctor's orders will be faithfully executed. Such a resource may not be available and in that case the patient must be taken to the clinic where if various measures give no relief the uterus can be emptied. Suggestion may first be tried by utilizing such resources as gastric lavage, nutrient enemata, etc. Patient must be kept in bed, and frequent tests of the urine for acetone may give valuable information because a positive result means that inanition has begun. Fluid food with all possible regard to the due amount of calories should be used; hence milk, cocoa, egg flip are to be given along with broths, mineral waters, and fruit juices. Small, very cold portions should be given. The bowel should be moved by enemata, and nutrient clysters are a recognized part of the treatment. Cracked ice should be pushed for the vomiting, when this is incessant. The mere allusion to the possibility of rectal feeding will often cause cessation of vomiting, showing the suggestibility of these subjects; the same may be true of gastric lavage, and of saline infusion. The institution of fasting days and feeding (milk) days in some sort of rotation has also more or less value. The author, despite his conservative ideals, looks upon hyperemesis as an expression of pregnancy toxicosis, occurring in the suggestible subject. He seems to lay more stress on suggestibility than toxicosis and hence does not empty the uterus until the patient is surely starving. The disease is a matter of the "imponderable" and hence the main therapeutic factors must also come under this same head—physicians and nurses with winning personalities and remedies of suggestive character.

The Medical Profession in Austria.—A correspondent writes to the editor that 900 Austrian physicians have been affected in the present war as follows: 96 have been killed outright, 207 have perished of infectious diseases, 373 have been wounded, and 215 are war prisoners. In Austria the physician is not reckoned among the combatants, but retains his civil status. His activities are largely prophylactic—hence, perhaps, the notable loss from infectious diseases. That the Austrian surgeons do not go to the front like their German colleagues accounts for the low mortality. Among the Germans the actual deaths in battle among the profession may possibly equal the entire disability to the Austrian medical men, if indeed they do not considerably exceed it. In the University of Vienna every effort has been made to advance students of medicine, in order that they may replace units lost in the army. The war has placed many bureau employees, once thought to be superfluous, upon a very different footing. The sanitary personnel is now working overtime. A fear exists that after the war the rank and file of practitioners will be pauperized, partly because they will have lost their clientele; while many a "loaferish mossback" will retain a comfortable position through bureaucratic rotation. This state of affairs will be even more severe on the young practitioner. The author closes with unstinted praise of the sanitary personnel in the Austrian army and of the medical men who train them.

Book Reviews.

WHO IS INSANE? By STEPHEN SMITH, A.M., M.D., LL.D., Commissioner in Lunacy of the State of New York, 1882-1888. Price $1.25. New York: The Macmillan Company, 1916.

THIS little volume is a commentary on the experience of the author when, as State Commissioner in Lunacy, he was an official visitor of the institutions for the insane and the Charities and Reformatories of the State. He sets forth in a very simple and entertaining style, entirely devoid of technicalities, the illusory nature of insanity, its origin in the derangement of the functions of the brain cells, the extreme impressionability of these cells, and our power to increase or repress their activity. He takes the stand that our knowledge and treatment of the insane should be based on the teachings of biology and physiology and not alone on metaphysics and psychology. He shows that the insane, contrary to the prevalent impression, are very susceptible to curative measures and that the same principles that are effective in the cure of the insane are applicable to the idiot, the feeble-minded, and the criminal. A plan of organization is suggested by which every person committed to public care should be subjected to an extensive examination by experts in physiology, psychology, and sociology immediately on admission to an institution and it is urged that in dealing with these persons the ideal never to be lost sight of is "cure" and not merely custodial care. Because of his wide experience and ripe judgment the author is peculiarly fitted to present this subject. The book will be not only of interest to the physician, but instructive to the laity, and a most valuable guide at the present time when the need for the education of the public on the prevention of insanity and the possibility of its cure in the early stages has become such a vital problem.

BEAUTY A DUTY. The Art of Keeping Young. By SUSANNA COCROFT, author of "What to Eat and When," "Personal Hygiene," "The Reading of Character Through Bodily Expression," etc. Price $2.00 net. New York and Chicago: Rand, McNally & Company, 1915.

FOR years the author of this book has been bravely endeavoring to instill into the minds of women the fact that the cultivation of the human face and figure is a duty they owe, not only to themselves, but to the world at large. A broadening and deepening of womanly influence through this means is the reason for this book. Physical culture is used as the road to such success. The book is written in a simple, direct, and attractive style, and goes rather thoroughly into physiological and therapeutic methods for the accomplishment of the desired purpose. It is a pity the author feels it necessary to usurp the function of the physician occasionally. For example: "It [astigmatism] can be corrected by glasses fitted with cylindrical lenses. The difficulty is common, but often outgrown, unless glasses be constantly worn, which makes it chronic." A little later on she gives advice as sound as that just quoted is pernicious: "Ninety per cent. of eye diseases originate from weakness, neglect, or eyestrain. Eye disease should be treated only by specialists." A chapter is devoted to each part of the body and face and head, and, besides directions for improvement, there are a number of "don'ts" at the end of the majority of chapters to warn the woman who would grow careless or indifferent to the care of her physique and mind. "Keep the thoughts pure and the ideals high and every life touched by yours shall respond and be uplifted." Again, "Surely there is an education in the open book of the face as well as on the printed page."

A TEXT BOOK OF CHEMISTRY AND CHEMICAL URANALYSIS FOR NURSES. By HAROLD L. AMOSS, S.B., S.M., M.D., Dr. P. H. Formerly Chemist, Hygienic Laboratory, United States Public Health Service; Physiological Chemist, United States Bureau of Chemistry; Instructor in Physiological Chemistry, George Washington University Medical School, Washington, D. C.; Assistant in Preventive Medicine, Harvard Medical School, Boston, Mass, etc. Price, $1.50. Philadelphia and New York: Lea & Febiger, 1915.

THE writer of this book believes that the more chemistry a nurse knows the greater is her value to the patient and to the physician; and he further asks—"If the nurse knows no chemistry, how can she be expected always to remember that starches yield sugars and are to be given to the diabetic with extreme caution? And what can the term calorie mean to her?" So far as we have been able to ascertain, the present volume (which is neither better nor worse than other works of the kind) will not help the nurse to obtain any meaning of the term calorie; and while the book contains a certain amount of information on some of the chemical elements and compounds, it provides very little help towards an understanding of general chemical principles. More space is given to the consideration of the diazonium compounds and the quantitative estimation of dextrose (both somewhat advanced topics) than to an explanation of such terms as acid, base, and salt.

EMERGENCY SURGERY. By JOHN W. SLUSS, A.M., M.D. Associate Professor of Surgery, Indiana University School of Medicine; Ex-Superintendent Indianapolis City Hospital; Surgeon to the City Hospital. Third Edition, Revised and Enlarged, with 685 Illustrations, some of which are printed in colors. 12mo, 832 pages. Flexible leather, gilt edges, round corners. Price, $4 net. Philadelphia: P. Blakiston's Son & Co., 1915.

THIS book was designed to meet the needs of the general practitioner who may be called upon to deal with emergency cases requiring surgery. In the initial chapter entitled: "The general practitioner as an emergency surgeon; his duties and responsibility," the author clearly indicates his views as to the duty of the practitioner to be prepared not only through knowledge of the technique of emergency operations, but by having his emergency kit ready for use at any moment. In our opinion, comparatively few general practitioners who operate only "in an emergency" are likely to be qualified to do more than intelligently *advise* the performance of a great many of the operations described in this book. Outside of this remark we have nothing but praise for this work; for if the general practitioner will prepare himself in advance by learning what Sluss has to say as to diagnosis and the indications for surgical intervention, and has sufficient manual dexterity to carry out the operations as they are advised and described, his results should be as good as could well be expected under the circumstances.

This book seems worthy of forming part of the equipment of any practitioner who lives at a distance from a surgical center or a competent surgical specialist; for it covers the field of emergency surgery remarkably well and the advice for handling emergency cases is almost uniformly sound. Mechanically, the book is well printed, the illustrations are good and to the point, and with the flexible leather binding the book is well suited for packing with the emergency outfit which Sluss insists such a practitioner should always have ready.

TRANSACTIONS OF THE TRI-STATE MEDICAL ASSOCIATION OF THE CAROLINAS AND VIRGINIA. Seventeenth Annual Session held at Charleston, S. C. February 17 and 18, 1915.

THE book contains the transactions of the Tri-State Association of the Carolinas and Virginia including a series of papers read at the meeting, all of them of interest and some of them exceptionally so. The president, Dr. E. C. Register, delivered an able address and a great deal of credit is due to him for the success of the meeting. The book containing so many interesting papers should be useful for reference.

INTERNATIONAL CLINICS. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Treatment, Medicine, Surgery, etc. Edited by HENRY W. CATTELL, A.M., M.D. Vol. IV, Twenty-fifth Series, 1915. Price, $2.00. Philadelphia and London: J. B. Lippincott Company.

THIS volume marks the end of twenty-five years of existence for the International Clinics, and is its one hundredth number. It contains twenty-two articles, of which five have to do with the progress of some of the branches of medicine during the past quarter century. One by William Osler is very flattering to this country, and we could wish that it were better deserved. Probably the most important contribution is the Alvarenga Prize Essay by J. E. Sweet on "The Surgery of the Pancreas." There are several other interesting articles. A brief note by the editor summarizes the history and accomplishments of this publication, and announces his retirement and the appointment of Dr. Henry R. M. Landis of Philadelphia as his successor. The "Clinics" have had a long and honorable, as well as useful, existence, and one may predict that their prosperity will continue under the guidance of their new editor.

Society Reports.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, January 5, 1916.

THE PRESIDENT, DR. JAMES C. WILSON, IN THE CHAIR.

Operation for Removing the Gall-Bladder. — Dr. JOHN B. DEAVER described his technique in this operation, claiming that it allowed exploration of the common duct in its entirety and control of bleeding from the gall-bladder bed. With the abdomen open, the gall-bladder and the right free border of the gastrohepatic omentum freed of any adhesions, the region was thoroughly walled off, the wound being kept wide open. The edge of the liver and the fundus of the gall-bladder were grasped with the left hand carrying a piece of moist gauze, pulled downward, outward, and upward, making taut the cystic duct and the free border of the gastrohepatic omentum. In the presence of a diverticulum or adherence of the liver to the parietal peritoneum, the cystic duct and the free border of the gastrohepatic omentum were made prominent by grasping the diverticulum with a pair of long curved forceps and making traction. When the diverticulum was adherent to the free border of the gastrohepatic omentum it was to be freed before effective traction could be made upon the cystic duct. A small incision was made through the upper part of the free border of the gastrohepatic omentum and the upper end of the common and cystic ducts exposed. A small piece of gauze was placed beneath the border of the gastrohepatic omentum to take up the bile escaping upon division of the cystic duct. The cystic duct at its junction with the gall-bladder was clamped with a pair of long hemostatic forceps and cut across distal to the forceps with the actual cautery. A small, followed by a larger, probe was passed into the stump of the open cystic duct and carried through the common duct into the duodenum, in this wise determining whether the duct and the papilla of Vater were patulous. With the probe still in the common duct, palpation was made to determine the presence of stone, or obstruction outside of the duct. The cystic artery was clamped and cut. If not necessary to drain the common through the stump of the cystic duct, the cystic duct was ligated and next the cystic artery. The next step in the operation, the separation of the gall-bladder from the liver, was made by a dissection from below upward. The gall-bladder was freed and turned upward and outward and the gall-bladder bed closed, carrying a continuous catgut suture through the liver substance forming the sides and floor of the gall-bladder bed. The free end of the suture was left long and tied to the portion of the suture carried by the needle through the liver substance. The tie was made on the upper side of the line of apposition of the walls of the gall-bladder bed. It was pointed out that as the gall-bladder was removed step by step the suture was passed and tied so that when the gall-bladder was entirely removed, the gall-bladder bed was completely closed, making the procedure bloodless, which to Dr. Deaver's mind was far preferable to packing the gall-bladder bed with gauze or placing a cigarette drain retained by suture. The next step was that of suturing the divided layers of the gastrohepatic omentum, but not covering in the stump of the cystic duct, and the final step was the placing of a small rubber tube down to and just beyond the free border of the gastrohepatic omentum. This tube was to be retained for four or five days to provide an exit for the bile in the event of the giving way of the ligature on the cystic duct. When prolonged drainage of the common duct was necessary Dr. Deaver opened it and inserted a T-shaped rubber drainage tube. He stated that one patient under Dr. Riesman's and his care had been wearing such a tube for more than two years. Dr. Deaver believed that early drainage of the common duct by this method or by a cholecystoduodenostomy to be the only chance for the cure of pancreatic diabetes.

Dr. A. P. C. ASHHURST asked Dr. Deaver what he did in the more troublesome cases than the ones illustrated, and which incision of the abdominal wall best exposed the whole biliary tract. The bayonette incision of Kehr, he said, was used for years on the continent of Europe, and Terrier had come to use it because he had found the Mayo Robson incision to be insufficient. He noted that Dr. Deaver had said nothing about emptying the gall-bladder. If this were very large Dr. Ashhurst pointed out that the cystic duct and the gastrohepatic omentum could not be reached until it was emptied. Another point in technique was that if the patient were short and fat the cystic duct when divided would retract at the distal end. It had been his experience to have the tube pull out of the common duct during operation and to have difficulty in again isolating the duct and replacing the tube. In the method described by Dr. Deaver there was no way by which one could hang on to the end of the cystic duct after dividing it. Dr. Deaver, he said, had described the typical operation which did not take acount of the *atypical* cases. His only criticism was that in the surgery of the biliary tract the difficult cases were so very frequent that they merited recognition.

Dr. DEAVER, in answering Dr. Ashhurst, admitted that some cases were more difficult than others, yet he had always been able to carry out the technique described. Occasionally he aspirated as well as freely opened the gall-bladder to empty it. Adhesions presented the most troublesome complication. The straight incision through the rectus muscle was the one he most commonly used, although occasionally using the Mayo Robson incision.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held October 14, 1915.

DR. WALTER LESTER CARR IN THE CHAIR.

Hypertrophic Pulmonary Arthropathy in a Girl of Eleven Years.—Dr. CHARLES HERRMAN presented this patient. Her family history was negative. She was one of eight children, none of whom had died, and the mother had had no miscarriages or still births. None of the other children had any symptoms pointing to tuberculosis of the lungs, bones, or lymph nodes. When this patient was seven years of age the mother noticed that she held her head to one side and later the spinal curvature became more distinct. In 1912, when eight years of age, the patient was operated on by Dr. Whitman at the Hospital for Ruptured and Crippled. During the past four years she had lost weight and had a cough which was worse at night, but no sweats. The enlargement of the fingers began about seven months ago and that of the knees and ankles about four months ago. There had been occasional slight pain in the knees, ankles, and fingers. The patient was admitted to the Lebanon Hospital September 1, 1915, at which time she weighed 49 pounds, was poorly nourished, had marked spinal curvature, pronounced deformity of the chest and dyspnea, more marked after slight exertion. Examination of the lungs showed râles in the axillary line and over both bases posteriorly. The patient complained of pain on both sides of the chest. There was a small amount of purulent expectoration, which on examination failed to show the tubercle bacillus. There was distinct atrophy of the muscles of the upper arm, and the leg, the hands were cold but not cyanotic, and the ends of the fingers and toes were clubbed. The patient's temperature ranged between 99° and 101.2° F. The urine contained a small amount of albumin, but no casts. Dr. Herrman exhibited radiographs of the hands showing in the metacarpal bones a thin layer of new-formed bone under the periosteum and a similar but less distinct layer in the first phalanges. Similar changes were shown in the bones of the feet. The radiograms of the knee showed layers of new formed bone ovevr the upper end of the tibia. The joint itself presented no changes. Dr. Herrman said that about 100 typical cases of hypertrophic pulmonary osteoarthropathy had been reported, only seven of which had occurred in children. In adults the condition occurred fivev times as often in males as in females, and most of the patients were between twenty and forty years of age. Some form of chronic disease of the lungs was present in 75 per cent. of the cases, the most frequent lesion being bronchiectasis and next in frequency was chronic pulmonary tuberculosis and empyema. The condition was occasionally seen in diseases of the liver. One of the most plausible explanations of the changes in the bone and the tissues surrounding the joints was that the imperfect function of the lungs caused a lack of proper elimination of toxic substances. The characteristic feature of the condition was the deposit of new bone under the periosteum of certain bones. The enlargement of the joints was due to hyper-

trophy of the soft tissues covering the terminal phalanges, and not to any change in the cartilage. The clubbing of the fingers was also due to hypertrophy of the soft tissues and not to any change in the bone itself. In extreme cases the nails became convex and curled at the end.

Dr. HENRY W. BERG asked Dr. Herrman whether the patient had had a Wassermann reaction taken and whether it was negative or positive. He said he did not remember having seen more than two such cases and did not know there had been such a large number of cases reported as Dr. Herrman had stated. One of his cases exhibited a spinal arthropathy somewhat similar to those of locomotor ataxia. The *x*-ray did not show a bone disease process. The rapid collapse of the spine through destruction of the bodies of the vertebræ was not what one usually saw in Pott's disease, but was rather suggestive of the possibility of specific disease, The slight amount of paralysis indicated that the collapse had occurred so suddenly as to cause compression of the cord.

Dr. CHARLES HERRMAN, in reply to Dr. Berg's question with reference to the Wassermann reaction, said that the test had been made and was negative; the von Pirquet, however, was positive. The lungs had been fluoroscoped, but on account of the deformity of the chest one could not state definitely that tuberculosis was present. There were no signs of specific disease in the parents or children and besides there was positive evidence of tuberculous infection and it was known that chronic pulmonary tuberculosis was very frequently present in the history of the condition.

A Case of Meningitis with Complete Recovery.—Dr. W. MORGAN HARTSHORN presented this patient, a child 2½ years old, who had been admitted to Roosevelt Hospital with the symptoms of meningitis. There was nothing of significance in the previous history of the child. The present illness began with the vomiting of green watery fluid, spasms, and later general convulsive movements. At the time of admission to the hospital the child was unconscious, eyes staring, and the right pupil larger than the left. There were furuncles on the knee, and pustules on the gluteal region, some of which were covered with a thick crust. The heart was rapid and crepitant râles were heard in the chest. There was slight opisthotonos, but no Kernig, Babinski, or Oppenheim signs, or ankle clonus. A diagnosis was made of meningitis complicated by bronchial pneumonia. A lumbar puncture was performed and examination of the fluid showed that most of the cells were lymphocytes which was unusual and very puzzling. The patient's temperature during the first week in the hospital ranged from 100° to 104° F. and the pulse between 96 and 120. The child remained in an unconscious condition. During the second week the temperature ranged from 101° to 106° F., pulse from 120 to 150. Very little spinal fluid was obtained by puncture, but it was still purulent. The child's pulse grew weaker and its condition was considered hopeless. During the third week the temperature continued to run high, from 103° to 100° F., and the pulse ran from 99 to 145. At this time they obtained 25 c.c. of clear spinal fluid. They had given very little medication, a little whiskey when the child was refusing nourishment, a few bromides, and a little urotropin. The temperature then began to come down, though the child was still unconscious. It continued to fall and the child began to take nourishment and to show signs of intelligence. The symptoms gradually disappeared and the patient went on to recovery and was discharged in good condition.

Dr. L. E. LA FETRA said that cases of epidemic meningitis even in young children frequently recovered without treatment. He related an instance occurring in a child 14 months old, in which thick pus was withdrawn and complete recovery had taken place. In the case reported the findings were rather peculiar in that the majority of the cells were said to be lymphocytes, but the high temperature and the blood count would have indicated the case to be one of meningococcus meningitis. Dr. LeFetra said it was his custom to administer the anti-meningitis serum whenever he found a cloudy spinal fluid without waiting for a complete examination. One should make it a rule never to inject more serum than the amount of spinal fluid withdrawn. A house surgeon might inject 20 c.c. for the first dose and follow it by similar doses, even though less spinal fluid was withdrawn. Such a procedure had been followed by prompt respiratory failure and death. A good rule to follow was not to give of the serum more than two-thirds the volume of spinal fluid withdrawn. In some cases it might be very difficult to withdraw fluid and in these it might be necessary to puncture the ventricles and make the injection directly into them.

Case of a Child Swallowing a Foreign Body.—Dr. W. MORGAN HARTSHORN presented this child, 18 months old, who had swallowed a safety pin on July 26. Radiographs were taken, but gave no indication as to the location of the safety pin. The child had diarrhea and was irritable for ten days or two weeks, and was then discharged from the hospital. Nothing was heard from it until October 15, nearly three months after it had swallowed the safety pin, when the mother reported that the child had passed the safety pin.

Scarlatina: Some Unusual and Severe Types. — Dr. HENRY W. BERG presented this communication, in which he said that the ten minutes allotted to him allowed him only to present a schematic arrangement of the types of severe cases of scarlet fever, such as one saw in large contagious disease hospitals. The first group which he considered were the severe toxic cases. This group had certain characteristics and a very uncertain prognosis. There was either a very severe eruption, or there might be no eruption except around the neck. There was a very high temperature persistently maintained without any attempt at resolution. The rash was punctate and almost blue. The punctate spots were sometimes almost purple, but on compression became white. These cases must be differentiated from the hemorrhagic cases. These never got well while the toxic non-hemorrhagic cases might get well. All the severe toxic cases had cerebral symptoms of a marked kind, resembling meningitis, but one did not get the Kernig, the Babinski, or other physical signs characteristic of meningitis, but one might get coma. As far as the kidneys were concerned one might find albumin, but rarely casts, except in the toxic hemorrhagic cases. Of the cases of the severe toxic type a few had a slight amount of adenitis, usually marked angina, and an eruption of the congested punctate type. There was a type of severe cases that might be designated the septic type. Physicians frequently confused this type of severe scarlatina with the toxic type. The septic type was a severe scarlatina plus the results of a mixed infection with the pus organisms. These were usually the cases with the severe throat complications and diphtheritic and septic types of anginas. In the septic cases there was rarely more than one attack of vomiting, whereas in the toxic cases the vomiting was more persistent. The temperature of septic scarlatina had practically the features of the temperature curve due to septic infection. One of the most important symptoms was the enlargement of the glands at the angle of the jaw. All the glands in that region might become involved. These cases became extremely ill with the angina, some of which might be diphtheritic, and they invariably showed albumin in the urine. The importance of differentiating the septic from the severe toxic type was obvious if only because the cases of the toxic type had a very bad prognosis, while in the septic type the prognosis was better. The sepsis might be due to different organisms or combinations of organisms, but the streptococcus had been recognized as the chief cause of the sepsis in three-fourths of the cases. Not all the cases called hemorrhagic scarlatina by clinicians really belonged to the hemorrhagic type. The true hemorrhagic cases were invariably fatal. This type of severe scarlet fever showed petechial spots and hemorrhages from the nose, ears, throat, intestines, kidneys, or other organs. The finding of a few hemorrhagic spots did not constitute a true hemorrhagic scarlatina. The peliosis rheumatica accompanying scar latina might cause such cases to be diagnosticated as hemorrhagic scarlatina. The so-called scarlatina complicating burns, surgical injuries, and puerperal fever were, in the opinion of the speaker, none of them scarlet fever. In the cases of so-called scarlet fever complicating the above conditions the eruption was not typically punctate, the throat symptoms were rarely characteristic, there was not the universal lymph adenitis, and the desquammation was not the typical scarlatinal desquammation. The scarlatinaform eruption in these cases was a punctate erythema manifesting itself as a symptom of sepsis.

Scarlatina: Morbidity and Case Fatality, by Locality, Sex, Age, and Season (Based on a Study of over a Million Cases).—Dr. HENRY H. DONNALLY of Washington, D. C., presented this paper. He stated that such questions as "Could the differences in family and individual susceptibility to scarlet fever account for the differences in fatality between different small epidemics to the

disease?" "Would it be found that after all scarlet fever was a pretty uniform disease, attacking year in and year out an average number of children, of whom an average number could be regularly expected to die in a fairly uniform proportion?" and similar questions had been suggested to him by Dr. Howland. Starting out with the reportable diseases, he had found that scarlet fever was the only one that admitted of such investigation with any satisfaction because it had been well reported and had undergone little change in the method of treatment and also because it could usually be readily diagnosticated. Of course, the value of such a study depended upon the completeness with which cases of scarlet fever were reported. Very mild cases were frequently unrecognized and very severe ones died without scarlet fever having been given as the cause of death. These two types balanced up more or less, so that it was believed the fatality figures obtained for this study gave an approximately accurate idea of true conditions. In the course of this study something more than seven million cases had been collected, but only those were retained where it was believed that approximately all cases and deaths were reported. Among approximately 2,000,000 cases there were 104,500 deaths, a case fatality of 5.25 per cent., while the morbidity rate was 3.9. This meant that about four persons in every 1000 inhabitants had scarlet fever and one case in twenty died. A study of a large number of cities for different periods of time showed that there was a marked difference in the amount of scarlet fever in different localities. In large cities the disease might be abundant in some parts and slight or absent in others; the case fatality was also higher in some places than in others. England had more scarlet fever than any other place studied. Since 1892 the mean case fatality of England and Wales was 3.3 per cent., and of the Russian Empire 22.3 per cent. For the past forty years that of former New York was 12.2 per cent, Brooklyn 11 per cent, Boston 7.2 and Christiania 9 per cent, while Norway as a whole gave 7.9 per cent. In all the places studied it was found that scarlet fever was practically endemic. The fluctuations in the amount as evidenced by the annual morbidity rates followed no rule as regarded periodicity. An epidemic either subsided slowly during two or three years or might attain a greater height in its second than in its first year. It went slowly or came slowly, as compared with measles. There might be but a single year between epidemics of scarlet fever, or there might be two, three, four, five, or more years, with low morbidity rates between them. There had been no striking reduction in the annual morbidity rates anywhere during the periods studied. They fluctuated from year to year within essentially the same limits now as years ago. The smaller the place the greater were the annual fluctuations in morbidity rates. The amount of scarlet fever showed a tendency to decline in Norway and Philadelphia, while in the Russian Empire and in Montreal the tendency was in the opposite direction. There had been a consistent, general, and marked reduction in the case fatality during the past half century, and that in the absence of specific treatment. In contrast to this general rule, the later case fatality in the Russian Empire had been around 30 per cent., while twenty years ago it was only half that amount. In Australia and New Zealand there had been very low morbidity rates and a case fatality of only 1.5 per cent. The explanation of the lowered case fatality seemed to be that the disease was milder to-day than formerly, though the removal of patients to hospitals had improved the care given them, and it was possible that the practice of administering diphtheria antitoxin to all scarlet fever patients brought into hospitals might also be a factor, since combined scarlet fever and diphtheria had a high case fatality. It was also conceivable that the immunity had been increasing during the three hundred years since the disease was first recognized. The study of seasonal influences showed that the height of an epidemic might occur at any season of the year. January and December usually had the maximum number of cases and August and September the smallest. Case fatality was highest in the summer months and lowest in the fall. A study of sex susceptibility showed that the number of male cases of scarlet fever bore almost the same ratio to the number of female cases that the number of males bore to the number of females in the entire population. There seemed, however, to be a slightly increased susceptibility of the males. During the first five years of life males were more susceptible while between five and fifteen years females were distinctly more susceptible. The number of deaths from the disease was both absolutely and relatively greater among males than among females at each age period throughout life. Nearly one-half the cases of scarlet fever occurred in children under the age of seven years, the percentage being about 10 per cent. for each of the years. Somewhat over 1 per cent. occurred under one year of age. Few adults, though exposed, became infected. The disease was most fatal during infancy. Ninety per cent. of the deaths occurred under ten years of age.

Scarlatina: Prevention and Control of Scarlet Fever in New York City.—Dr. S. DANA HUBBARD read this paper. He said that in discussing the "control" of scarlet fever in New York there was no such thing as "controlling" scarlet fever. The control of scarlet fever had presented many peculiar and vexatious problems, and especially when, prior to the modification of the regulations, the Department of Health failed to receive the support of both physicians and infected families. By the time the diagnosis of scarlet fever had been made, frequently a number of exposures had taken place and particularly was this true when the patient became ill in school or in a public conveyance. Parents and teachers should be taught that a child vomiting suddenly and without apparent reason was a danger to others. When vomiting was accompanied by a fever and rash a physician should be called, the patient properly isolated, and the places occupied during the onset of the disease should be carefully cleaned and disinfected. All persons should be taught that vomited material was very infectious and a danger to the community. A study of later (secondary) cases both in New York and in Chicago had proved that where there was a close regard for regulations of quarantine there were the fewest secondary cases. The freedom from scarlet fever of the Italian colonies of the city was interesting and might be due to the fact that in a mild form of the disease the families did not consult a physician. Quarantine as formerly practised by the Department of Health did not seem to meet with approval and support, and a modification was made substituting trained nurses for the medical inspectors. These nurses were trained in the duties of establishing and maintaining quarantine. The nurse visited the case, instructed the family, saw that the patient was comfortable, and did whatever social welfare or uplift work was necessary. This change to nurses had been highly successful. Dr. Hubbard presented a table of incidence and mortality of scarlet fever in New York City for the past six years. The figures showed that the fatality had varied from 6 to 4 per cent.; it was 4 per cent. at present. Particularly was it interesting to note the experience in Queens, where, in 1912, there were only six deaths from scarlet fever, which was followed in the two succeeding years by a large increase, 46 in 1913 and 40 in 1914. They had been unable to explain this. Exposures to scarlet fever in schools were most interesting. Mild cases, difficult of determination, and other cases unrecognized no doubt were the source of many infections in the schools. The remedy for school infection must be sought in greater alertness on the part of school inspectors to detect the presence of infection. They should especially be on the watch for mild cases and in addition teachers and mothers should be educated to recognize the early cardinal symptoms of scarlt fever. Dr. Hubbard described the present system of control of infectious diseases in New York City and stated that the principles of control consisted in regarding the patient as the original source of infection and in concentrating all efforts here. The most frequent carriers of infection were the patient, persons coming in contact with the patient, and the patient's surroundings, the bedding, room, clothing, etc. This being accepted control must be exercised by safe and sane quarantine continued until every possible danger signal was passed both for the patient and for the public. The quarantine to be effective must be wholly efficient. Here cooperation of all concerned was the keynote and no hard and fast rules were applied in any case. Convalescence was supervised and the patient afforded every opportunity to a safe and speedy recovery. Poverty and ignorance were their greatest opponents. Remove these and rigid quarantine could be exercised with positive prevention of sickness and the saving of many lives. Men and money were often inadequate but intelligent application of means and knowledge available would result in appreciable and effective control.

Dr. HAVEN EMERSON said that Dr. Donnally's paper put the matter before health officers in rather a bad light. In communities in which the death rate seemed

high it usually meant a failure to report cases and that there was a lack of an effective method of impressing on the community the necessity of reporting cases. Health officers did not feel so hopeless regarding the situation as the statistics presented might lead one to assume. A number of outbreaks of scarlet fever had been traced to the milk supply. Pasteurization of the milk supply seemed to have some bearing in decreasing the number of cases of scarlet fever and also the number of cases of septic sore throat and even of tonsillitis. From 1868 to 1877 the death rate from scarlet fever in New York was 91 per 100,000 while from 1908 to 1912 it was but 18 per 100,000, a reduction of 80 per cent. and there had been a further fall in the case rate and mortality since 1912. Dr. Emerson said it was not fair to check off mild undiagnosed cases against severe undiagnosed fatal cases, since there was no evidence to show how they would balance one another. In Poughkeepsie where they recently had an epidemic, so-called, of septic sore throat, physicians, after having had their attention called to the matter, admitted that many of the cases might have been cases of scarlet fever. The Health Department was now using a system of recording non-susceptibles. When an instance of infectious disease was reported and the diagnosis verified, the patient was given a certificate stating that he or she had had that disease and might be regarded as immune. In this way there was an increasing number of children whose attendance at school was not interfered with because of a case of that particular disease in the same house provided the patient could be properly isolated and watched.

Dr. Meyer Solis-Cohen of Philadelphia said that if it was true that they were making no progress in the control of scarlet fever, as Dr. Hubbard stated, it behooved them to find out why the disease was always present. He took exception to Dr. Donnally's statement that the unreported cases balanced those dying without the disease being recognized; he thought the unreported cases were far in excess of those dying without scarlet fever being recognized as the cause of death. Dr. Solis-Cohen cited a number of instances showing the prevalence of unrecognized cases in Philadelphia. One should watch for these mild cases of scarlet fever and should be especially alert to detect them during an epidemic of measles or German measles, for it was at such times that they were likely to pass unrecognized. The remedy for the scarlet fever prevalence was to be found in the recognition and control of the mild cases of scarlet fever and this could be brought about by popular education, as Dr. Hubbard had suggested, but not so much as to isolation and quarantine as to the danger of mild unrecognized cases and how to recognize them. Many of these cases might be reached through the school. Only the medical inspector should not wait until two or three cases had developed before examining the school, but, after the first case, should make an inspection of every child in the school and then keep on going through the school until the period of incubation had passed since the finding of the last case. He must go even further and examine every school child on its return to school after having recovered from ivy-poisoning, measles, German measles, etc., for there was the possibility that these might have been scarlet fever. Since mild cases of scarlet fever frequently did not have a physician there should be a law compelling the householder to report cases of contagion occurring in his house, especially if there was no physician in attendance. Physicians who failed to report their cases should be prosecuted. To allow a man to make a practice of not reporting cases was unfair to the honest physician. Children absent from school for an unknown cause should be investigated by an attendance officer, who should report cases of illness in absent children or members of their families.

Dr. W. L. Somerset said he did not wish to differ from Dr. Berg concerning the hemorrhages in the eruption but to add that certainly in scarlet fever petechiæ or small hemorrhagic areas were not necessarily rheumatic and did not have a perceptible effect on the clinical course of the disease. The discovery of the Klebs-Loeffler bacillus and the control of diphtheria by antitoxin might have had a marked effect on the morbidity and mortality of scarlet fever since the two diseases frequently occurred together. Since it was customary to give an immunizing dose of antitoxin to every scarlet fever patient entering a hospital there were fewer instances of this complication. Dr. Donnally said that statistics showed that something more than 1 per cent. of the cases of scarlet fever occurred in infants under one year of age; it had been his impression that a very small fraction of 1 per cent. occurred at this early age. In reference to the confusion of scarlet fever with milk-borne sore throat, Dr. Somerset made the point that one could not safely make a diagnosis of scarlatina sine eruptione.

Dr. Louis Curtis Ager of Brooklyn spoke of the different ideas that different individuals might get from the same statistics. It was stated that Old New York had a high mortality rate in comparison with the morbidity rate and Dr. Donnally attributed this to locality, but why would it not be more reasonable to say that the high mortality was due to laxity in reporting cases? It had been stated also that the morbidity rate was unchanged; but it was just as reasonable to say that as a result of education the number of cases had been greatly reduced while the percentage of cases reported was much greater than formerly; so that in reality, Dr. Ager said, there was now a lower morbidity rate than formerly and we were making gratifying progress in controlling the disease.

Dr. Henry Heiman said that as to the albumin in the urine, that might be found in any infectious disease; the point with reference to scarlet fever was that albuminuria occurred about the third week of the disease. Shortening the period of quarantine had its advantages in that with the shorter period one was more likely to get the cooperation of the families, and it might also be suggested that a physician, after attending a case of scarlet fever, might do his part in preventing the spread of the disease by washing his hands, spraying his nose, and gargling his throat. Some of the mild cases of scarlet fever were extremely difficult to diagnose, and in certain instances Dr. Heiman said he did not believe any one could do it.

Dr. Henry W. Berg congratulated Dr. Donnally on the amount of information he had collected and stated that a man who merely heard the paper once did not grasp immediately the large amount of information it contained. It contained a great deal that would aid in prognosis and the figures spoke for the utility of health department work. The paper showed, Dr. Berg said, that the statistical returns from Russia were very much more reliable than was generally supposed and it also showed that a much larger number of cases were reported in proportion to the population in Russia than in some of our lage cities.

Dr. Donnally, in closing, said he had not claimed that the fatality figures were strictly accurate and did not believe that they were, but they were probably approximately so, and gave a fair idea of conditions. The point brought out by Dr. Emerson that deductions from combined groups of cases were fallacious was well taken, but it was interesting to get the figures roughly from such a large combination. He did not believe that all the cases reported in children under one year of age were actually cases of scarlet fever, but one could not go back of the figures as presented in the health office reports.

Dr. S. Dana Hubbard, closing the discussion, said that there was a law requiring doctors, superintendents and managers of hospitals to report cases of scarlet fever as well as cases suspected of having this disease; there was also a law requiring every person having knowledge of the existence of a communicable disease to report the fact to the Department of Health. In the latter instance the difficulty of enforcing the ordinance was in the fact that it was difficult to obtain evidence of knowledge of the fact—that but few laymen knew what scarlet fever was when they saw it. With reference to the element of time in the quarantine of scarlet fever, it was appreciated that thirty days minimum period was an arbitrary period pure and simple. The Department had no method of determining the period of infectivity in scarlet fever and so had to accept the opinion of its medical advisers. In measles the work of Bordet and Gengou, later supplemented by Anderson and Goldberger, had enabled the Department to eliminate fourteen days in that disease and substitute a minimum period of five days. Dr. Hubbard added that, according to the custom of the Health Department, if any physician believed the quarantine period of thirty days required as a general rule in all cases of scarlet fever was unnecessary and inflicted in certain instances a hardship or was detrimental to the patient, if he would bring the matter to the attention of the Department, giving all facts, the case would receive careful consideration and, if it was safe to do so, it would be discharged on its own merits, as the facts warranted.

SECTION ON SURGERY.

Stated Meeting, Held November 5, 1915.

DR. JOHN DOUGLAS, SECRETARY, IN THE CHAIR.

Impacted Vesical Calculus.—Dr. CHARLES GOODMAN presented a man, fifty-six years of age, whom he first saw April 17 last. He had had attacks of pain referable to the left kidney; this had occurred off and on for twelve years. For several days past, attempts to pass urine was accompanied with a great deal of pain in the bladder. It was followed by complete retention. His physician attempted catheterization but failed to enter the bladder; this operation was followed by a most profuse hemorrhage from the urethra and Dr. Goodman was then called to see him. He found the patient prostrated and in great agony; he was bleeding profusely from his urethra and seemed to be suffering great pain referable to the bladder. His urine had not been voided in twenty-four hours and the bladder extended above the umbilicus. Dr. Goodman succeeded in passing a catheter and relieved him of about 30 ounces of very bloody urine. This was followed by considerable relief of the pain but, in view of the profuse hemorrhage which persisted after the catheterization, he suggested that the patient be removed to the hospital with the view of exposing possibly, a neoplasm in the bladder. While the presence of calculus was thought of, he did not believe that its presence was sufficient to account for this profuse and continued hemorrhage. After admission to the hospital the bladder was opened by Dr. Goodman under local anesthesia and he came upon the large calculus which he presented to the Section; this was imbedded in the bladder and in order to dislodge it and favor its delivery through the bladder opening, which had become contracted around the calculus, the patient was given nitrous oxide gas and the calculus was then delivered with a placental forceps. The bleeding from the extensive eroded mucous membrane of the bladder was controlled by hot irrigations. A drainage tube was inserted and the upper part of the wound was sutured. The calculus weighed 5¼ ounces and was faceted corresponding to the surface of the lobes of the prostate and a projection which apparently protruded into the prostatic urethra. About three weeks after the operation, the patient developed prostatic abscess of the left lobe which was drained through a perineal incision. The wound in the bladder, as well as in the perineum, entirely healed and, with the exception of a small amount of residual urine, which required occasional irrigation of the bladder, the patient had been in good health, gained about 30 pounds, and was able to attend to his business. The case was presented on account of the unusual size of the calculus and on account of the extraordinary amount of hemorrhage caused by the calculus; this was due to the fact that the calculus had become firmly imbedded at the base of the bladder, and its attempted dislodgement during attempts of catheterization was sufficient to produce shock due to hemorrhage. A radiograph taken of the kidney did not reveal any calculi, although the patient had volunteered the information that he had been able to collect about sixteen small calculi, passed at intervals, during the last twelve years. A radiograph was not taken before the operation because the patient was admitted in a condition where temporizing was not considered advisable.

Veno-Peritoneostomy for Ascites.—Dr. CHARLES GOODMAN presented this case as an example of reconstructive or reparative surgery. The woman had been a great sufferer with dyspnea and very frequent asthmatic attacks of the most severe type which was due to cardiac disease. The heart was very much hypertrophied and almost filled the left side of the thorax. She had ascites and the circumference of her waist measured 46 inches. They decided to give her the benefit of Freund's operation in order to relieve the rigid state of her emphysematous thorax. Therefore, they removed the 2nd, 3rd, 4th and 5th costal cartilages and performed a plastic operation by reflecting the anterior and posterior layers of the perichondrium respectively over either severed end of the cartilage in order to produce a permanent joint, permitting free mobility of the ribs. Her dyspnea was relieved and the asthmatic attacks were decidedly diminished in frequency. About six months later they performed a veno-peritoneostomy. Her ascites was causing her a great deal of distress and in order to relieve her of this distention, the right saphenous vein was exposed for a distance of about 4 inches and tunnelling the skin from this incision up to the lower part of the abdomen, the peritoneum was opened through a small incision, and the split end of the saphenous vein was sutured to the parietal peritoneum. The omentum which presented was fixed by two sutures to the parietal peritoneum a short distance from the anastomosis in order to prevent its interference with the drainage of the vein. The wounds were closed. This operation was first suggested by Ruotte, the idea being to establish a permanent communication between the peritoneal cavity and the venous system. In inverting the vein, hemorrhage was prevented by the valves which only permitted the fluid to travel in one direction, namely, downward from the peritoneal cavity to the femoral vein. In this case, the circumference of the abdomen was reduced 10 inches and remained so up to the present time. Should the amount of fluid in the abdomen increase, they might repeat the operation on the opposite limb. The technique of this operation had been offered as a possible substitute for anastomosis of the portal and hepatic veins, or the establishment of a fistula—an operation perfectly feasible in a dog, but one that entailed almost unsurmountable difficulties in the human being. The operation was perfectly feasible under local anesthesia.

Dr. ROBERT T. MORRIS said that there was one point that would stand in the way of success of the operation, the question of the hydrostatic balance; he had been struck by this fact in his operations on hydrocephalic cases, in which the temporal vein was connected with the lateral ventricle. The vein did not carry off the fluid from the ventricle. This same difficulty might be encountered in the operation devised for the relief of ascites. There was still another factor which stood in the way of success, the tendency to the formation of lymph exudate, such as occurred in all work disturbing the endothelium of the veins. This exudate had a tendency to plug the lumen of any blood-vessel. These two factors might stand in the way of success, but he hoped that this was only a theoretical objection to the operation rather than a matter of fact.

Dr. JOHN DOUGLAS asked Dr. Goodman how large were the veins he had to deal with. He recalled one operation he did where the saphenous vein was so small that the operation was unsuccessful.

Dr. CHARLES GOODMAN replied that the vessels he dealt with were about one-half the diameter of an ordinary lead pencil. He split the end and employed the method commonly used in implanting the ureter into the bladder. The objections to the operation were purely theoretical rather than practical as the report of his case had proven. After a period of six months the abdomen had remained flat. He believed that a great deal of the success of these operations depended upon how one handled the vein. Arteries and veins must be handled with great care so as not to injure the intima and it must be emphasized that the operative field should be absolutely free from blood.

Operation for Malunion of Fracture of Head of Radius.—Dr. SETH M. MILLIKEN presented this case. The patient, a man thirty-four years of age, an iron worker, was admitted to the Lincoln Hospital on September 28, 1915, and was operated upon by him September 30. An incision was made from just above the olecranon and over the external epicondyle downward about 2 inches on the flexed forearm over the bony prominence of the fracture. The incision was deepened into the elbow joint. No obstruction could be made out between the radius and ulna and humerus. The displaced fragment was removed with the chisel. This did not release the joint. The upper end of the radius was then stripped of cartilaginous and muscular attachments dividing the orbicular ligament on the outer side. Separation could not be effected between the radius and the lesser sigmoid. The Gigley saw was passed as deeply as possible and the upper fragment removed but this did not remove the entire head, but gave room to pass a carrier around the neck of the radius, so that the remainder of the head could be removed with Gigley saw. This was done and pronation and supination could then be carried out to almost the full extent. Extension was limited by contractions and adhesions in the anterior surface of the capsule which were forcibly stretched. The blood was removed from the joint by peroxide and a 1 per cent. solution of formalin. The wound was closed without drainage. The arm was put up in extension on a posterior splint. On October 1st, the tension sutures were removed. There was passive flexion and extension of 10°, but there was no power to extend the fingers. On October 5th, the splint

was removed and the patient encouraged to try elbow motions. During October the remaining sutures were removed and a small dressing applied. At this time pronation and supination were about 15° and flexion 90°. On October 22nd, the patient was referred to the Zander de la Chapelle Institute for massage and passive movements.

Final Results of Arteriovenous Anastomosis for Thrombo-Angiitis Obliterans.—Dr. WILLY MEYER presented these cases which were to illustrate some of the points brought out in his paper.

Conservative Surgery in Gangrene of the Toes.—Dr. RICHARD LEWISOHN presented two cases of gangrene of the toe, one diabetic, the other arteriosclerotic in origin.

CASE I.—This was a woman, forty-one years old, with a moderate diabetes. She had suffered from a badly infected toe for two weeks before her admission to Mount Sinai Hospital. The big toe and the first metatarsal bone were removed and the wound healed by primary union.

CASE II.—This patient was operated on in the same manner over one year ago at the Beth Israel Hospital. The pains which had been very severe disappeared right after the operation and the wound healed in about six weeks. In this instance the gangrene of the toe was caused by arteriosclerosis.

Dr. Lewisohn drew attention to the fact that utmost conservatism was indicated in these cases. Generally these patients were advised to undergo amputation of the thigh. His results showed that even in an amputation near the gangrenous and infected area they could obtain perfect results and thus save the leg of the unfortunate patient.

Remarks on the Conservative Treatment of Gangrene Due to Thrombo-Angiitis Obliterans.—Dr. WILLY MEYER reviewed some of the work he had done on this subject and again reported two cases of artificial hyperemia in threatened gangrene of the foot due to diabetic endarteritis which were reported in the *Annals of Surgery* (Vol. LII, page 713.). The first was a man, sixty years old, on whom he did an amputation of the thigh in 1907 for dry rapid spreading gangrene of the toes and foot. One and a half years later the patient began to show evidences of beginning gangrene of the opposite foot; several toes became affected and it was decided to try artificial hyperemia. A suitable hot air apparatus was used and faithfully carried out and the gangrenous process affecting the remaining foot was overcome, not one of the toes necrosing. The second case was a man, also sixty years old, with beginning gangrene of the toes of both feet, with some edema and threatening pain which indicated an extension of the process. A hot air apparatus was provided and the result of treatment was beyond their expectations. The threatened gangrene failed to extend and the bluish discoloration of the toes disappeared and the patient remained in good health. Dr. Meyer thought that as a matter of fact this treatment would be successful in a certain number of cases only and that it meant an addition to their therapeutic resources and deserved further trial. This was not employed in the moist form of gangrene. Dr. Meyer reported some patients he had injected with Ringer's solution and was very enthusiastic over the final results obtained. He also showed patients operated on by him showing the final results in arteriovenous anastomosis for thrombo-angiitis obliterans.

Dr. LEO BUERGER said that he could not be quite as enthusiastic as Dr. Willy Meyer, as to the final results of injecting Ringer's solution for thrombo-angiitis obliterans. He certainly felt with the other members of the Society that Dr. Meyer ought to be congratulated on his results, but he did not think that any permanent effect could be obtained by altering the viscosity of the blood in the cases of this disease. For histological examination and the study of many limbs had demonstrated very thoroughly to him that arteries and veins were already closed over considerable expanse of territory, that they were completely obstructed and organized, and that alteration of the viscosity of the blood could hardly make for improvement of circulation through such vessels; nor could one accept the theory that increase or diminution of the fluidity of the blood, and diminution of its viscosity could prevent the progressive nature of the disease since the increase of symptoms was not altogether due to the advent of new areas of thrombosis. Most of the cases treated by the conservative method did improve for a time. Many of them improved without treatment with mere prophylaxis. Many of them returned after all sorts of treatment, diathermic, hot air, Ringer's solution, only to require amputation at a later date. Dr. Buerger did not wish to be understood as not being in favor of conservative treatment, but he wished to warn against the too hasty acceptation of the results of special lines of conservative treatment, as indicating the presence of specific therapeutic worth because of the vagaries of prognosis in this disease.

Dr. ABRAHAM LEON GARBAT said he wished to speak of two points that were of special interest: the character of the blood in these people and the amount of sodium citrate that could be infused. He called attention to the normal agglutination of human red blood cells by the serum of another human being, so-called iso-agglutination. In the early development of this study it was thought that the agglutination of the red blood corpuscles by the serum of another human being was pathological, but later on it was found to be a normal phenomenon. The remarkable fact was brought out that human beings could be divided into four distinct and sharply defined groups according to agglutinating properties of their blood. The serum of the first group agglutinated the red blood cells of all other groups. The red blood cells of Group 1 were not agglutinated by any human serum. In Group 2 the blood serum agglutinated the red blood cells of Groups 3 and 4; the red blood cells were only agglutinated by the serum of Groups 1 and 3. Group 3 was the reciprocal of Group 2. In Group 4 the serum did not agglutinate any red cells, but the red blood cells were agglutinated by all the others. These group characteristics were permanent and, furthermore, the agglutinating characteristics were hereditary. Group 1 comprised from 50 to 60 per cent. of all people. Of four cases of thrombo-angiitis obliterans, three belonged to the rare third group and one to the rare fourth group. It is possible that this finding was merely coincidence; at the same time further observations along these lines should be made. Another important point was in reference to sodium citrate. Its effect upon thrombo-angiitis obliterans was yet to be studied further. With regard to the method of sodium citrate transfusion, he believed that success depended upon two factors, whether the blood cells were viable when the transfusion was given, and whether the sodium citrate *per se* was harmless. As for the first, future experience only would tell. As for the second, sodium citrate had been found to be absolutely harmless, 19 5 grams having been given without any bad effect whatever.

Dr. DEWITT STETTEN said that he did not agree entirely with Dr. Meyer in what he stated regarding the arteriovenous anastomosis for thrombo-angiitis obliterans. This was a dangerous and unphysiological operation and should be in his opinion discarded. His conclusions were based upon injection experiments. He thought Dr. Meyer did not give him full credit for the interpretation of his experiments which were a comparative study of injections of both arteries and veins. The arteries acted so much better than did the veins that there was practically no comparison to be made at all. He did not believe there was any justification for arteriovenous anastomosis at all from an experimental basis. With regard to the results of this operation Dr. Stetten said he had collected 136 cases altogether and he found that there was a 30 per cent. mortality, 72 per cent. absolute failures, and 11 per cent. successes. With regard to the successes so-called, he believed they occurred in spite of and not as the result of the treatment. He also believed that the work of Horsley and Whitehead had confirmed his own experiments and supported his conclusions that this operation was not a justifiable one. He agreed with Guthrie, who had claimed that an experimental reversal of the circulation was possible, but who deplored the fact that the operation had been applied to the human being.

Dr. CHARLES GOODMAN said he differed with Dr. Stetten as to the value of arteriovenous anastomosis for thrombo-angiitis obliterans. Dr. Meyer's case was not the only one that improved after this operation. It should be remembered that the measures discussed so far showed a relief of the symptoms for a time only. He referred to two cases in which he had performed arteriovenous anastomosis in order to do a conservative amputation, that was, below the knee; in one week or ten days after the venous anastomosis there was hemorrhage from the veins and an arterial hemorrhage from the venæ comites.

Dr. WILLIAM C. LUSK said he was aware that in sug-

gesting syphilis as the possible cause of thromboangiitis, he was sounding an unpopular note, but that out of five cases of this disease which he had had under observation, in three the Wassermann had been positive. In one of these three cases the Wassermann had at first been negative for about a year and then following the giving of antispecific treatment, had become positive. In another of these five cases, though the Wassermann has always been negative, the patient had a positive history of luetic infection with secondary manifestations, and the symptoms of his thromboangiitis became controlled following the use of the antispecific remedies. In the fifth case there was no history of syphilis and the Wassermann was negative. Two of the five cases had regained their health and two had been benefited with the use of the antispecific remedies in conjunction with the four-cell electric bath of Dr. Schnee (*Annals of Surgery*, LVIII, 1913, p. 670). One case (Wassermann positive) in the course of four months of the same treatment received no benefit. The electric baths caused this patient pain, but he had an open wound of the foot which was not protected from the action of the electrolysis, which latter was afterward learned to be irritating to the ulcerations of this disease. In administering the antispecific remedies, mercury salicylate not more than one grain should be given by injection every five days for about three months, and potassium iodide in ten grain doses for four or five months prior to giving neosalvarsan. Dr. Lusk said he wished to emphasize the fact that the four-cell electric bath properly administered, *did* relieve or ameliorate the pain for varying lengths of time, sometimes at the beginning only for half an hour to an hour, but that with continued use, in conjunction with the antispecific treatment, the intervals of respite grew longer so that the patients could get some continuous sleep. The current should be 10 ma. and the duration of the bath should be for ten minutes. Two of these baths a day could be given to relieve the pain. Any ulcerated area should be thickly covered with lanolin to protect it from the action of the electrolysis, since if not thus protected the electric bath would cause pain instead of relieving it.

Dr. WILLY MEYER said that he would be the last to minimize the work and investigations of Horsley and others. He did believe, however, that one successful clinical case was worth more than any reported experience upon a case after a limb had been amputated. He looked at the results or the conclusions at a different point of view. Personally he believed that without enthusiasm one could not make any progress; at the same time he withheld as much of his enthusiasm over these cases as was possible. He said he had tried for two years to see just what there was in the treatment; how to explain the results he left for the future to decide.

Bone Metaplasia.—Dr. FREDERICK W. BANCROFT presented this paper, in which he said that many theories had been propounded concerning the processes of repair of bone following trauma. The main point of contention was whether or not the periosteum was a definite osteogenetic membrane. Any explanation of the formation and repair of bone after trauma must be comprehensive enough to include the formation of bone in human arteries, the formation of bone in myositis ossificans and the experimental formation of bone in the kidneys, bladder, and aorta of animals. After reviewing some of the recent views on this subject the writer stated that in the study of bone repair, the origin of the bone cells was the all-important question. Was it a specific cell, and if so what was its origin? Did it spring from the periosteum alone? Did it, as MacEwen suggested, grow out from the Haversian canals? Could it spring from the surrounding connective tissue by a process of metaplasia? In order to answer some of these questions, if possible, the writer had attempted to study the process of the repair of bone by performing simple experiments, and examining microscopically the specimens at various lengths of time following operation. Bone cavities were made by denuding the humerus of periosteum for a distance of 4-6 cm., and making a rectangular cavity about 0.5 by 1 cm. in its shaft extending into the medullary canal. The canal was thoroughly curetted to remove the endosteum, and an attempt was made to establish complete hemostasis, in order to have an empty cavity in the bone. It was found that by plugging the medullary canal at both ends of the cavity with Mosetig Moorhoff's bone wax, complete hemostasis could be produced, although on section later it was found that the cavity had been filled with blood clot. At different lengths of time these animals were sacrificed and longitudinal sections of the bone made. Four of the animals experimented on in this manner jumped from elevations and fractured their legs at the site of the previous operation. These fractures were studied at different lengths of time afterward in order to observe the process of repair. During the past year experiments had also been made on the radius. A piece of the shaft about 2 by 4 cm. in length was excised, and the periosteum and endosteum curetted away; the periosteum was also removed for a distance of 2 cm. from the cut ends of the radius. The excised piece was cut into fragments 1 by 2 mm. in size, and these were replaced between the cut ends of the radius and the muscle sutured over them. Sections of these fragments had been most instructive. In all instances the nuclei of the bone cells, with the exception of those at the periphery of the fragments, lost their staining reaction in from ten to twenty days. The process of repair in bone cavities, fractures and bone transplants was similar. A blood clot formed around the traumatized area, became organized by true granulation tissue, with fibroblasts growing in the periphery, and then young blood vessels. As the granulation tissue became organized, calcium salts were deposited in the perivascular areas forming a very definite new bone. At a later period, the bone areas increased in size at the expense of the areolar tissue, the latter gradually changing from areolar to fibrous connective tissue. Sections under high power showed gradual gradations of the cellular elements; from connective tissue to bone; from connective tissue to fibrocartilage; and from fibrocartilage to bone. Normally this change could be seen at the entrance of a tendon. In the experimental work on a fracture, for instance, if the section was studied from the muscle tissues toward the site of the fracture, a gradual change in the character of the cells was observed. The fibrous tissue cells and fibroblasts became by gradations irregular in contour, the staining reactions changed, and little by little the cells took on the character of osteoblastic cells. Frequently areas of fibrocartilage were found in a zone between the fibrous tissue and the newly formed bone; in such instances the fibrous tissue gradually changed into cartilage, the cells took on capsules, and the collagen fibers shaded into the cartilage matrix. Then on the internal surface there was a metaplasia again between the cartilage and bone cells; the nuclei became irregular, the cell body lost its capsule, and the staining reaction changed from blue to pink, when stained by hematoxylin and eosin. All stages of gradation could be observed. In the repair of bone fragment transplants, the initial process was hemorrhage, with secondary formation of granulation tissue, as described. At a slightly later period, ten to twenty days after operation, the bone cells in the central portion of the fragments lost their staining reaction, while those at the periphery, where there is an adequate blood supply, were still visible. New bone was seen forming about all the fragments in the granulation tissue; at later periods the blood supply was reestablished through the Haversian canals of the transplants, and two or three concentric layers of bone cells with normal staining nuclei were found about the larger canals. There were areas of rarefaction and of new bone formation. In the embryo early formation of bone arose from the metaplasia of embryonal connective tissue, and later stages showed metaplasia from connective tissue to cartilage and from connective tissue to bone; cartilage cells were always broken down in front of the new bone formation. If it was assumed that, after trauma, new bone was formed in connective tissue, all the irregular formations of bone could be explained. In other words, if the proper stimulus was produced, and it was possible that this stimulus might be a positive chemotaxis exerted by the freshly exposed bone surfaces, lime salts might be so deposited upon connective tissue cells that metaplasia occurred and true bone was formed. In the kidney and bladder, where the urine contained a fairly high amount of calcium salts, it was easy to conceive that some interference with the blood supply might produce the change necessary. In this way myositis ossificans and new bone in arteries could be produced by metaplasia and likewise spurs along tendons. The periosteum was a definite connective tissue structure and therefore undoubtedly formed new bone when the proper stimulus was forthcoming, but it did not form bone when transplanted and the stimulus was absent, nor was it reasonable to suppose that it

was the only connective tissue structure from which new bone and cartilage could be formed.

Dr. BUERGER said that he agreed with Dr. Bancroft's very lucid and interesting exposition, believing, too, that metaplasia of connective tissue was the most important method of bone formation, in the case of bone transplants. Dr. Buerger himself in collaboration with Miss Oppenheimer had made a study of bone formation in sclerotic arteries in 1907 and 1908, and had pointed out at that time that, given the factors, lime, hemorrhage, with the organization of the extravasated blood by fibroblasts and angioblasts, they had all the necessary factors for the production of new bone. In the case of the arteries, they had found, that by virtue of some stimulus, be it an organizing thrombus, or an attempt at vascularization of the obliterating pathological intima, or possibly in the presence in the diseased mesial coat of lime alone, a penetration of the media with vessels took place. This was followed by the proliferation of young connective tissue in the media which came into contact with the lime; at such points of meeting the young connective tissue cells manifested a new function by producing the ground substance of true bone. The same factors, the presence of blood, attempt at organization, and lime, were present also in the case of bone transplants. Here, then, were all the necessary conditions for the conversion of the connective tissue into bone by a process of metaplasia.

Dr. FRED H. ALBEE said in reference to the osteogenetic potency of the detached periosteum that in 1911 he did a large amount of experimental work on the dog along these lines. He proved to his own satisfaction that this question depended wholly on what elements were included in the periosteal membrane which was separated from the bone cortex. Almost without exception anatomists and histologists described the periosteum as consisting of an outside fibrous layer, a vascular loose layer and an inside osteogenetic layer in the form of stratum of an embryonic type of bone cell. The natural area of cleavage in a normal bone was through the vascular layer which left the osteogenetic layer on the bone. This was demonstrated by his experiments which were published in the *Journal of the American Medical Association*, April 5, 1913. Whenever the dog's ulna was removed subperiosteally and a sharp elevator was used with an effort to secure a deep cleavage, active bone growth always occurred from the periosteum left in the limb. When the ulna was removed by a blunt instrument without an effort to get into a deep cleavage the periosteal membrane obtained (Macewen's limiting membrane) produced very little bone and this in the form of small plaques which apparently originated from adherent osteoblasts. The question whether the periosteum was osteogenetic or not resolved itself into whether the whole anatomical periosteum was obtained or not.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

LOUISIANA STATE BOARD OF MEDICAL EXAMINERS.

December 2, 3, 4, 1915.

ANATOMY.

1. What bones form the roof of the orbit?
2. Name the carpal bones that articulate with the radius.
3. Name and bound the triangles of the neck.
4. What muscles are inserted into (*a*) the outer ridge, (*b*) the inner ridge, of the bicipital groove?
5. Name the principal branches of the external carotid.
6. How is the jugular foramen formed? What important structures pass through it?
7. Name (*a*) the sensory, (*b*) the motor, nerves of the tongue.
8. Give origin and function of spinal accessory nerve.
9. Describe briefly the blood supply of the intestines.
10. What important structures are found between the layers of the broad ligament?

PHYSIOLOGY.

1. Describe the character of contractions observed (*a*) in striated muscles, (*b*) in non-striated muscles; give examples of each.
2. Give one example of a (*a*) nitrogenous food, (*b*) carbonaceous food, (*c*) carbonitrogenous food; state what part each plays in nutrition.
3. Where, and how, are the nitrogenous foods digested?
4. Give the distribution and functions of (*a*) the hypoglossal nerve, (*b*) the spinal accessory nerve, (*c*) the superior laryngeal nerve.
5. What is the vasomotor system, and how does it influence the blood supply of the body?
6. Name the chief waste products of proteid metabolism, and state where they are formed.
7. State the functions of the (*a*) anterior nerve-roots of the spinal cord, (*b*) the posterior nerve-roots of the cord.
8. What factors are concerned in the heart sounds (*a*) in diastole, (*b*) in systole?
9. State briefly the influence on the body temperature of (*a*) muscular work, (*b*) mental work, (*c*) age, (*d*) sleep.
10. Give briefly the action of (*a*) trypsin, (*b*) lipase, (*c*) succus entericus.

CHEMISTRY.

1. What is understood by the conservation of energy, and give an example.
2. What are the special characteristics of alkaloids in general; name three alkaloids.
3. Give examples of (*a*) oxides, (*b*) hydroxides, (*c*) normal salts, (*d*) basic salts. These can be stated either in ordinary language or by formulæ.
4. Describe the contact method in testing for albumin in the urine.
5. What is the chemical composition of human milk?
6. What is ptyalin and explain its action?
7. What is hemoglobin; state some of its chief properties?
8. Give the most reliable chemical test for detecting blood.
9. What are the general properties of proteins?
10. Name two biliary pigments and by what test can they be recognized?

MATERIA MEDICA.

1. Name three emetics and give dose of each.
2. Give source and average dose of atropine.
3. How much opium is there in the following preparations: Pulvis ipecacuanhæ et opii; tincture opii camphorata.
4. Give the composition of lotio hydrargyri nigra.
5. How is nitroglycerin prepared? What precautions should be taken in handling it, and in what doses would you give it?
6. What is eserin? Give the average dose.
7. Write a prescription for a diuretic mixture.
8. Give dose properties and uses of santonin.
9. What action has ergot on the circulation; on the muscles? What is the dose of the fluid extract?
10. What is emetine? What is its dose and what is its action?

PATHOLOGY.

1. Explain the difference between secretion and excretion, giving example of each.
2. Give the difference between exudate and transudate, with an example of each.
3. Pus is the result of what?
4. Define atrophy. Give the varieties of atrophy.
5. What is an embolus; how formed, and state some of the sequels of embolism.
6. Give the pathology in gonorrheal arthritis.
7. What is the difference between stock vaccine and autogenous vaccine?
8. Describe the *Amœba coli*, and give method most used in the examination for the *Amœba coli*.
9. Describe a Paget's cancer, and where most found?
10. Describe a Charcot's joint.

THEORY AND PRACTICE OF MEDICINE.

1. Name five reflexes, and describe the manner of eliciting them.
2. State the symptoms, diagnosis, and treatment of amebic dysentery.
3. (*a*) What is the import of hematuria? (*b*) What conditions may give rise to it?
4. State the diagnostic value of a blood count.
5. Treat a case of endocarditis complicating rheumatic fever.
6. Differentiate acute morphinism, acute alcoholism, and apoplexy.
7. Treat a case of pernicious malaria.

8. Outline briefly the dietetic management of a case of chronic nephritis.

9. State the diagnosis and treatment of impetigo contagiosa.

10. (*a*) Describe locomotor ataxia; (*b*) state briefly the symptoms and physical signs in the initial and ataxic stages.

ANSWERS.

ANATOMY.

1. *Bones forming the roof of the orbit:* Frontal and sphenoid.

2. *Carpal bones that articulate with the radius:* Scaphoid and semilunar.

3. The ANTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by a line from the chin to the sternum; *behind* by the anterior margin of the sternomastoid; *base* is upward, and is formed by the lower border of the body of the lower jaw and a line from the angle of the jaw to the mastoid process. It is *divided* into three smaller triangles (inferior carotid, superior carotid, and submaxillary) by the digastric muscle and the anterior belly of the omohyoid. The *inferior carotid triangle* is bounded, *in front* by the median line of the neck; *behind,* by the anterior margin of the sternomastoid; and *above,* by the anterior belly of the omohyoid. The *superior carotid triangle* is bounded, *behind* by the sternomastoid; *below* by the anterior belly of the omohyoid; and *above* by the posterior belly of the digastric. The *submaxillary triangle* is bounded, *above* by the lower border of the body of the mandible and a line drawn from its angle to the mastoid process; *below,* by the posterior belly of the digastric and the stylohyoid; and *in front,* by the anterior belly of the digastric.

The POSTERIOR TRIANGLE OF THE NECK is *bounded:* In *front* by the sternomastoid; *behind,* by the anterior margin of the trapezius: and its *base* corresponds to the middle third of the clavicle. It is *divided* into two smaller triangles (the occipital and the subclavian) by the posterior belly of the omohyoid. The *occipital triangle* is bounded in *front,* by the sternomastoid; *behind,* by the trapezius; and *below,* by the omohyoid. The *subclavian triangle* is bounded *above,* by the posterior belly of the omohyoid; *below,* by the clavicle; and *in front,* by the sternomastoid.

4. To the outer bicipital ridge is attached the Pectoralis major; to the inner bicipital ridge is attached the Teres major.

5. *Branches of the external carotid artery:* Superior thyroid, lingual, facial, occipital, posterior auricular, ascending pharyngeal, superficial temporal, and internal maxillary.

6. The *jugular foramen* is formed by the temporal bone in front and externally, and the occipital bone behind and internally; it *transmits:* The inferior petrosal sinus, lateral sinus, meningeal branches of occipital and ascending pharyngeal arteries, and the glossopharyngeal, vagus, and spinal accessory nerves.

7. TONGUE. *Sensory nerves:* Lingual branch of the inferior maxillary division of the trigeminal (ordinary sensation to anterior two-thirds), chorda tympani (nerve of taste for anterior two-thirds), glosso-pharyngeal (general sensation and taste to posterior third). *Motor nerve:* Hypoglossal.

8. SPINAL ACCESSORY NERVE. *Superficial origin:* From the lateral tract, inferior to the pneumogastric; and from the side of the spinal cord as far down as the sixth cervical nerve. *Deep origin:* From the anterior horn of gray matter of the medulla, and of the spinal cord as far down as the fifth cervical nerve. *Function:* Motor nerve to the sternomastoid and trapezius muscles.

9. BLOOD SUPPLY OF THE INTESTINES. *Duodenum:* Pyloric and pancreatico-duodenal (of the hepatic), and inferior pancreatico-duodenal (of superior mesenteric). *Jejunum and ilcum:* Branches of the superior mesenteric artery. *Cecum and appendix:* Ileocolic and appendicular arteries. *Colon:* Right colic and middle colic (of superior mesenteric), left colic and sigmoid branches (of inferior mesenteric). *Rectum:* Superior hemorrhoidal (of inferior mesenteric), middle hemorrhoidal (from internal iliac), and inferior hemorrhoidal (from internal pudic artery).

10. *Structures between the layers of the broad ligament:* Fallopian tube, round ligament, ovary, ovarian ligament, parovarium, loose connective tissue, vessels and nerves.

PHYSIOLOGY.

1. *During contraction,* the following changes take place in a voluntary (striated) muscle: (1) It becomes shorter and thicker, but (2) there is no change in volume; (3) there is an increased consumption of oxygen; (4) more carbon dioxide is set free; (5) sarcolactic acid is produced; and hence (6) the muscle becomes acid in reaction; (7) it becomes more extensible, and (8) less elastic; (9) there is an increase in heat production and consequently a rise of temperature; (10) the electrical reaction becomes relatively negative, and (11) a sound is produced. Further, a single stimulus produces a simple contraction; a series of rapid stimuli produces a condition of tetanus, but of an incomplete kind. Involuntary (non-striated) muscle acts differently: The duration of the contraction is prolonged; there is a tendency to rhythmical contraction; peristalsis is also a characteristic of this class of muscle; involuntary muscle cannot be thrown into tetanus. *Voluntary muscle* is found in all the skeletal muscles, pharynx, diaphragm, larynx, external ear, and eye. *Involuntary muscle* is found in the alimentary tract from the middle third of the esophagus to the anus, in the ducts of glands, in the trachea and bronchial tubes, within the eyeball, the internal urinary and genital systems, circulatory (except the heart) and lymphatic systems, and the capsules of some organs.

2. A *nitrogenous* food, peas; a *carbonaceous* food, sugar; a *carbonitrogenous* food, sweetbread.

FOOD.	FUNCTIONS.
Proteids.	
1. All substances containing nitrogen, of a composition identical with, or nearly that of albumin; proportion of N to C being nearly as 2 to 7.	Formation and repair of tissues and fluids of the body. Regulation of the absorption and utilization of oxygen. May also form fat and carbohydrate, and yield energy sometimes.
2. Substances containing a larger proportion of N are apparently less nutritious; proportion of N to C about 2 to 5½.	These perform the above functions less perfectly, or only under particular circumstances.
3. Extractive matters, such as are contained in the juice of the flesh.	These substances appear essentially as regulators of digestion and assimilation, especially with reference to the gelatin group.
Carbohydrates.	
Substances containing no N, but made up of C, H and O; the O being exactly sufficient to convert all the H into H_2O.	Production of energy and animal heat by oxidation. Form fats and possibly some proteids.

3. Nitrogenous foods are digested: (1) In the stomach where the pepsin, in the presence of dilute hydrochloric acid, causes hydrolysis of the protein molecule, splitting it up into smaller and more soluble molecules. The stages of gastric digestion are from protein to globulin, to metaprotein, proteoses and peptones. (2) In the intestine, where the trypsin of the pancreatic juice, in a slightly alkaline medium, performs a somewhat similar function as the pepsin of the gastric juice; only, here, the process is continued further, and the proteoses and peptones are further broken up into polypeptides and amino-acids.

4. The HYPOGLOSSAL NERVE is *distributed* to the muscles of the tongue, to the thyrohyoid, and to the omohyoid, sternohyoid and sternothyroid muscles. *Function:* Motor to the tongue. SPINAL ACCESSORY NERVE. *Distribution:* After emerging from the cranial cavity the nerve soon separates into two branches: (1) An *internal* or *anastomotic* branch, consisting chiefly of filaments coming from the medulla oblongata. It soon enters the trunk of the vagus, from which fibers pass to the muscles of the pharynx, to the muscles of the larynx through the inferior laryngeal nerve, and to the heart according to most authorities. (2) An *external* branch, consisting chiefly of the accessory fibers from the spinal cord. It is distributed to the sternocleidomastoid and trapezius muscles.

Function: The transmission of nerve impulses from

the cells from which they take their origin to the muscles to which they are distributed. They therefore excite to action some of the muscles of deglutition, the muscles which regulate the tension of the vocal bands during phonation, and the muscles which control the respiratory movements associated with sustained or prolonged muscle efforts; the fibers also convey nerve impulses which exert an inhibitory influence on the heart; it is the motor nerve to the trapezius and sternomastoid. (From Brubaker's *Physiology.*)

SUPERIOR LARYNGEAL NERVE. *Distribution:* Larynx, cricothyroid muscle. *Function:* Sensory to the larynx, and motor to the cricothyroid muscle.

5. The vasomotor nervous system consists of (1) a vasomotor center in the bulb, (2) of some subsidiary centers in the spinal cord, and (3) of vasomotor nerves, which are of two kinds: (*a*) those causing constriction of the vessels, and so-called vasoconstrictor nerves; and (*b*) those causing dilatation of the vessels, and so-called vasodilator nerves. These nerves supply the muscle tissue in the walls of the blood-vessels and regulate their caliber, thus influencing the *quantity* of blood supplied to a part; at the same time they regulate the *quality* of blood supplied to a part; they also regulate the *nutrition* of a part, also *secretion* and *heat production.* They are concerned, too, in the control of the heart-beat. The center is in the medulla, in the floor of the fourth ventricle, near the calamus scriptorius.

6. *The chief waste products of proteid metabolism are:* Urea, ammonia, creatin, creatinin, hippuric acid, sulphates, various purin bases (chiefly uric acid).

Most of the *urea* is formed in the liver, from (1) the amino acids which have been absorbed from the small intestine, and which are not needed by the body; and (2) from the ammonium carbonate which is derived from the tissues, and from the action of a uricolytic enzyme upon uric acid. These two sources give respectively what is known as *exogenous* urea and *endogenous* urea.

Uric acid: "In man uric acid has a twofold origin; one portion, coming from the breaking down of the nuclein-containing tissues or cell elements of the man's own body, and hence is of endogenous origin, while the other portion—usually the larger—is of exogenous origin, coming from the transformation of free and combined purin compounds present in the food."—(Chittenden.)

Hippuric acid has its origin in the kidney; and creatin and creatinin in muscle and other tissues.

7. The anterior nerve roots of the spinal cord are *motor;* the posterior nerve roots are *sensory.*

8. The *causes* producing the *first* sound of the heart are not definitely ascertained. The following are supposed to be causatory factors: (1) The vibration and closure of the auriculo-ventricular valves, (2) the muscular sound produced by the contraction of the ventricles, and (3) the cardiac impulse against the chest wall.

The *second* sound is caused by the vibration due to the closure of the semilunar valves.

The first sound is synchronous with the ventricular systole; and the second sound with the first part of the ventricular diastole.

9. *Muscular work* increases the body temperature; *mental work* slightly increases the body temperature; *age* exerts a slight influence, as the temperature of the child is generally a little higher than that of the adult; and the temperature of an old person is a little lower than that of the adult; *sleep* diminishes the body temperature by lessening the production of heat.

10. *Trypsin* converts proteins into proteoses, peptones, polypeptides, and amino-acids, in an alkaline medium.

Lipase splits fats into glycerol and fatty acids.

Succus entericus converts starch into dextrin and then into dextrose and levulose; it also splits polypeptides into amino-acids and ammonium compounds; it converts sugars into dextrose, levulose, and galactose.

CHEMISTRY.

1. *Conservation of energy.* When one form of energy disappears, an exact equivalent of another form of energy takes its place. Thus heat may be converted into motion, and motion into chemical energy; but in each case there is exactly the same amount of energy present.

2. *Alkaloids* are nitrogenous, basic substances, of alkaline reaction, and capable of uniting with acids to form salts in the same way that ammonia does. Most alkaloids are solid, crystalline, contain carbon, hydrogen, nitrogen, and oxygen, are sparingly soluble in water, but are soluble in alcohol, their salts are freely soluble in water, they are generally bitter in taste. *Three alkaloids:* Morphine, atropine, quinine.

3. *Oxides:* Sulphur dioxide, SO_2; ethyl oxide $(C_2H_5)_2O$.

Hydroxides: Potassium hydroxide, KOH; ethyl hydroxide, C_2H_5OH.

Normal salts: Dipotassic sulphate, K_2SO_4; calcium carbonate, $CaCO_3$.

Basic salts: Lead carbonate (of the pharmacopœia), $(PbCO_3)_2PbH_2O_2$; so-called, bismuth subnitrate, $BiONO_3$.

4. *The contact method in testing for albumin in the urine:* Put a small amount of nitric acid into a test-tube; fill a pipette with the filtered urine; hold the test-tube at a small angle to the horizontal and allow the urine to flow slowly from the pipette upon the surface of the nitric acid. Remove the pipette, and gently turn the test-tube into the vertical position; a milky zone at the junction of the nitric acid and urine denotes the presence of albumin.

5. *Human milk* is composed of almost 87 per cent. of water and 13 per cent. of solids. The latter are: Fat, about 3.5 per cent.; milk sugar, about 6 per cent.; protein about 4 per cent.

6. *Ptyalin* is an enzyme found in the saliva. Its action is to turn starches into maltose. It acts only in an alkaline medium, and acts best at about the body temperature; it is necessary to remove the products of its activity.

7. *Hemoglobin* is a proteid coloring matter containing iron, and is present in the red blood corpuscles. It is of very complex constitution; it readily absorbs oxygen from the air, and forms oxyhemoglobin; it is the oxygen-carrying part of the blood, conveying the oxygen from the lungs to the various tissues of the body; it gives a characteristic spectrum band.

8. *The best chemical test for blood,* is the formation of hemin crystals. These crystals are obtained by boiling a fragment of dried blood with a drop of glacial acetic acid on a slide; the characteristic crystals may be seen with the microscope.

9. Proteins are very complex organic compounds, consisting of carbon, hydrogen, oxygen, nitrogen, sulphur, and other elements. They are split up by pepsin and trypsin into proteoses, peptones, polypeptids and amino acids; they are insoluble in alcohol and ether, most of them are insoluble in water, but some are capable of entering into a state of colloidal solution; they are soluble in the gastric and pancreatic juices. Most of them are coagulated by heat; they are colloids, are levorotatory, and give many color reactions.

10. *Two biliary pigments:* Bilirubin and biliverdin. *Gmelin's test for bile pigments* consists of a play of colors—green, blue, red, and yellow—produced by the action of fuming nitric acid.

MATERIA MEDICA.

1. *Three emetics:* Apomorphine hydrochloride, dose 1/10 grain used hypodermatically. Copper sulphate, dose gr. iv. Zinc sulphate, dose gr. xv.

2. *Atropine* is an alkaloid of *Atropa Belladonna;* the average dose is 1/160 grain.

3. *Pulvis ipecacuanhæ et opii* contains 10 per cent. of opium; *Tinctura opii camphorata* contains about one grain of opium to the half ounce.

4. *Lotio hydrargyri nigra* contains thirty grains of calomel to ten ounces of lime water.

5. *Nitroglycerin* is prepared by the action of a mixture of nitric and sulphuric acids upon glycerin. The spirit of nitroglycerin is given in doses of one minim. It should be kept in well-stoppered tin cans, in a cool place, away from lights and fires, and should be very carefully handled because, if a considerable quantity of it is spilled a violent explosion may occur.

6. *Eserine* is an alkaloid of physostigma. The dose of the salicylate and sulphate is 1/64 grain.

7. *Prescription for a diuretic mixture:*

℞.
Potassii acetatis.
Potassii bitartratis.
Potassii citratis aa ʒij.
Aquæ q.s. ad ʒviij M.
Sig.:—Take one tablespoonful, well diluted, three times a day.

8. *Santonin* is obtained from Santonica, which is derived from *Artemisia pauciflora;* it is used as an anthelmintic to round worm and thread worm; dose, for a child, gr. ¼-½; for an adult, gr. j or ij.

9. *Ergot* stimulates and causes contraction of in-

voluntary muscle fibers, hence it is vasoconstrictor, hemostatic, and oxytocic. It is also a cardiac sedative; it raises the blood pressure, it increases peristalsis, and is an emmenagogue. The dose of the fluid extract is thirty minims.

10. *Emetine* is an alkaloid of *Cephaelis Ipecacuanha;* it is used as an expectorant and an emetic; the dose (as an expectorant) is 1/100 grain; (as an emetic), 1/6 grain.

PATHOLOGY.

1. A *secretion* is a liquid or semi-liquid product formed by glandular organs; as saliva.

An *excretion* is a product which is eliminated from a gland (or other structure); as urine.

Formerly, it was held that a secretion had some further use in the body; and that an excretion had no use, but that its further retention was dangerous. Another view, once held, was that in the case of an excretion the gland merely extracted the substance ready-made from the blood; whereas, in the case of a secretion, the gland was supposed to produce some of the constituents.

2. *Transudates* are pathological fluids of non-inflammatory origin, as in ascites. *Exudates* are pathological fluids of inflammatory origin, as in peritonitis.

Further, *transudates* do not coagulate spontaneously, contain but few cells, have specific gravity below 1018, and contain but few bacteria; *exudates* tend to coagulate on standing, have more cells and albumin, specific gravity is above 1018, and bacteria are generally present and are often numerous.

3. Pus is the result of inflammation plus the presence of pyogenic bacteria.

4. *Atrophy* is a decrease in the amount of a tissue owing to diminution either in the *number* (*numerical atrophy*), or in the *size* (*simple atrophy*) of the histological elements of which the tissue is composed.

5. An *embolus* is a plug in the circulation; the process is called embolism. *Causes:* Thrombi, detached pieces from the heart valves, microorganisms, oil, fat, parasites, pieces of new growths. *Results:* Obstruction to the circulation; infarction; inflammation of blood-vessel; dilatation of blood-vessel.

6. "*Gonorrheal arthritis* is due to the gonococcus, which is carried by way of the blood from the urethra, or rarely from the conjunctiva in gonorrheal ophthalmia. As a rule, it appears during the subsiding stage of an acute gonorrhea or in chronic cases. One or several joints may be involved, generally the former, the knee, ankle, and wrist being most frequently affected. The inflammation may be acute or chronic, and varies in extent as well as in degree. Although the synovial membrane alone may be involved, the ligaments and periarticular structures are very apt to be thickened infiltrated. Suppuration may occur, and ankylosis is very prone to follow even in the milder cases. Endocarditis and like complications of general infection occasionally occur." (Stewart's *Surgery.*)

7. *Stock vaccines* are made from the same kind of bacteria as those causing a given infection, but are not derived from the patient; *autogenous vaccines* are made from bacteria freshly isolated from the patient himself.

8. The *Amœba coli* is a colorless, granular cell, about 10 to 20 μ in diameter, with a nucleus which is distinct, and pseudopods; it is found in the stools. To examine for the*Amœba coli*, the stool should be passed in a warm vessel, and kept warm till the examination is complete; a warm stage should be used.

9. *Paget's disease* is an eczematous inflammation of the nipple and areola, with a tendency to ulceration; it is, in very many cases, the starting point of a carcinoma. It has been asserted that the condition is due to the presence of coccidia, but this has not been proved. The nipple may be retracted, there is a moist desquamation, followed by a sticky discharge and formation of crusts; under the latter, the surface is raw and red. In some cases the nipple may be completely destroyed.

10. "*Charcot's joint* is a joint affection observed in posterior sclerosis, syringomyelia, poliomyelitis, transverse myelitis and a few other forms of spinal disease. The joints usually affected are the knee, hip, shoulder, elbow, hand, foot, and more rarely the fingers. The disease is rather rapid and is quite destructive, thickenings and ulcerations forming upon the synovial membrane and ligaments. Serous exudates and inflammations of the peri-articular tissues occur, and spontaneous luxation is not infrequent. The cause of the affection is supposed to be atrophic neurosis. In general, the pathologic changes resemble those of arthritis deformans." (McFarland's *Pathology.*)

THEORY AND PRACTICE OF MEDICINE.

1. FIVE REFLEXES. *Plantar:* elicited by stroking or scratching the sole of the foot, when the patient attemps to withdraw the foot. *Tendo Achillis reflex:* when the leg is extended and supported at the knee, and the hand is pressed firmly against the ball of the foot, a tap on the tendo Achillis causes contraction of the gastrocnemius and soleus, and the heel is jerked up. *Patellar reflex:* when the thigh is supported by being crossed over the other thigh, and the leg is flexed at the knee, a tap on the quadriceps tendon just below the patella causes the leg to be suddenly extended. *Ankle clonus:* if the half-extended leg be supported at the knee, and the ball of the foot be suddenly pressed up, putting the tendo Achillis on the stretch, there sometimes results a series of contractions of the muscles of the calf with alternate extension and flexion of the foot, which continues so long as pressure is maintained on the ball of the foot and ceases when the pressure is released. *Cremasteric:* when the inner surface of the thigh is irritated, the testicle on the same side is retracted.

2. AMEBIC DYSENTERY. *Symptoms:* It is usually ushered in by an attack of diarrhea, accompanied by slight fever, nausea, and vomiting. There are intense abdominal pain and a constant desire to go to stool. The stools become more frequent and bloody. Tenesmus is worse in the afternoon and at night. Temperature may be normal or slightly elevated (100° F.). Intermissions occur in the disease, and the *Amœba coli* is found in the stools. The *diagnosis* is made by finding the microorganisms in the stools, in conjunction with the symptoms.

The treatment consists of rest in bed and liquid diet. Laudanum (30 drops), followed in half hour by ipecac, gr. 30, repeated, if necessary, has been recommended for internal administration. Rectal irrigations of plain water, silver nitrate solution (gr. 20-30 to the quart) creolin (4 drams to the quart), or quinine (1:5000 to 1:1000) constitute the best treatment. Pain is relieved by opium. Emetine hydrochloride, given subcutaneously or intravenously, is also recommended.

3. *Hematuria* means the presence of blood in the urine; when blood-pigment only (not corpuscles) is found in the urine the condition is called *hemoglobinuria.*

The *principal causes of hematuria* are: (1) Conditions in which the blood is affected, as in the infectious diseases, in scurvy, pernicious anemia, and purpura; (2) traumatism or inflammations in any part of the urinary tract; (3) congestion of the kidneys secondary to disease of the lungs, heart, or liver.

4. A *blood count* will settle the diagnosis of a pernicious and secondary anemia, leukemia (lymphatic and splenomedullary). Further, a leucocytosis is generally present in lobar pneumonia, pericarditis, empyema, acute rheumatism, erysipelas, cerebrospinal meningitis, typhus, relapsing fever, Asiatic cholera, bubonic plague, yellow fever, tonsillitis, appendicitis, septicemia, pyemia, and other inflammatory conditions. A leucopenia is found in typhoid, malaria, influenza, measles, pernicious anemia.

5. In *endocarditis complicating rheumatic fever*, the patient needs absolute rest in bed for a long period of time; care must be taken in the use of salicylates, as these tend to depress the heart; digitalis is indicated if the heart is failing, but care must be taken not to overstimulate the heart; light diet, milk, attention to the bowels, and sleep are of prime importance.

6. The following table is from Eisendrath's *Surgical Diagnosis:*

APOPLECTIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; sudden onset. If any injury, only a scalp wound.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.

APOPLECTIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Pulse full and slow, often arteriosclerotic high - tension pulse.	Pulse more rapid than normal, and full.	Pulse rapid, may be irregular.
Respiration slow and irregular.	Regular respiration.	Respiration very slow—may be 6 to 8 per minute.
Temperature higher on paralyzed side, but lower in rectum.	May be low or normal.	
Urine contains trace of albumin, but may be same as in uremia.	Normal.	Normal.
Hemiplegia with convulsions on one side.		

7. *Treatment of pernicious malaria:* The patient should be promptly cinchonized by the hypodermic injection of bisulphide or bihydrochloride of quinine (about 30 grains); or the muriate of quinine and urea in 15 or 20 grain doses may be similarly employed; intramuscular injection is said to be less painful than subcutaneous injection; methylene blue, in doses of 3 grains, in capsules or pills, has been recommended; Warburg's tincture, either with or without aloes, may be used; in the cold stage, heat may be applied to the body surface, and in the hot stage cold may be applied, and morphine administered hypodermically.

8. *In chronic parenchymatous nephritis,* the *diet* is important. "An exclusive milk diet is impracticable, even harmful. The cereals, with fruits and the lighter vegetables are all permissible. Meats in small quantity are allowable, either light or dark. The water intake must not be regulated by any hard-and-fast rule, but it should be proportioned to the freedom of diuresis. If there is marked edema, especially if it be on the increase, attempted flushing of the kidney is provocative of harm. Under these circumstances water is among the most difficult substances for the kidney to excrete. If the edema is slight or subsiding rapidly larger quantities of fluid are not only permissible but advisable. The intake of salt should be limited to the minimum, as it is pretty generally conceded that its presence in the diet aids the development of edema." (Williamson's *Practice of Medicine.*)

9. In *impetigo contagiosa,* the eruption appears with the greatest frequency on the face and hands and often follows some very trivial injury, as a scratch. As the lesions appear, their contents are clear, but within a day or so the vesicle or bleb character is lost and they assume all the features of pustules. The pustules rapidly dry, forming crusts which have a "stuck on" appearance. After several days these drop off, leaving a slightly red area beneath. Usually there are present at the same time several lesions in various stages of development. The vesicopustules may coalesce, forming several large blebs, or they may arrange themselves in half-circles. Itching is very slight or absent. Neglect or improper treatment may cause the development of an eczema or an impetiginous area. The duration of the disease is in most instances from ten days to two weeks. *Treatment:* The crusts should be removed by means of some nonirritating soap and water, after which an ointment containing ammoniated mercury and the red oxide of mercury may be applied. Other mild antiseptics, such as boric acid, sulphur, etc., may be employed, care being taken to reduce the strength sufficiently to avoid irritation." (Hughes' *Practice of Medicine.*)

10. *Locomotor ataxia* is a disease of the spinal cord, characterized by loss of coordination, characteristic and unsteady gait, a tendency to stagger when standing up with the feet together and the eyes closed, sharp and paroxysmal pains called *crises,* girdle sensation, Argyll-Robertson pupils, and loss of knee-jerk and other reflexes. In locomotor ataxia the posterior columns of the spinal cord and the posterior nerve roots are involved. The process is destructive and progressive; it is not a simple wasting, although the nerve fibers are atrophied, but it is characterized by irritation, changes in the axis cylinders, overgrowth of the connective tissue, and sometimes congestion. The spinal ganglia may also be affected and the membranes over the affected parts are adherent and opaque.

In the *pre-ataxic stage,* there may be found: Lightning pains, girdle pains, paresthesia, loss of knee-jerk, Argyll-Robertson pupil, ptosis, and optic atrophy. In the *atoxic stage,* there will be found: Incoordination, the ataxic gait, flaccidity of the muscles, loss of muscle sense, various visceral crises, perforating ulcer of foot, brittleness of bones, and Charcot's disease.

(To be continued.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	W. H. Sanders, Montgomery	Montgomery . July 11
Arizona*	J. W. Thomas, Phoenix	Phoenix . April 4
Arkansas	T. J. Stout, Brinkley	Little Rock . May 9
California	C. B. Pinkham, Sacramento	Los Angeles . April 4
Colorado	David A. Strickler, Empire Building, Denver	Denver . April 4
Connecticut*	Chas. A. Tuttle, New Haven	New Haven . Mar. 14
Delaware	J. H. Wilson, Dover	Dover . June 20
Dist. of Col'bia.	E. P. Copeland, Washington	Washington . April 11
Florida*	E. W. Warren, Palatka	Jacksonville . June 13
Georgia	C. T. Nolan, Marietta	Atlanta / Augusta . June 1
Idaho*	Charles A. Dettman, Burke	Boise . April 4
Illinois	C. S. Drake, Springfield	Chicago . May 4
Indiana	W. T. Gott, Crawfordsville	Indianapolis . July 11
Iowa	G. H. Sumner, Des Moines	Iowa City . June ..
Kansas	H. A. Dykes, Lebanon	Topeka . June 13
Kentucky	J. N. McCormack, Bowling Green	Louisville .
Louisiana	E. L. Leckert, New Orleans	New Orleans . June 8
Maine	F. W. Searle, Portland	Portland . Mar. 14
Maryland	J. McP. Scott, Hagerstown	Baltimore . June 20
Massachusetts*	W. P. Bowers, State House, Boston	Boston . Mar. 14
Michigan	B. D. Harison, 205 Whitney Building, Detroit	Ann Arbor . June 13
Minnesota	T. McDavitt, St. Paul	Minneapolis . April 4
Mississippi	E. H. Galloway, Jackson	Jackson . June 13
Missouri	J. A. B. Adcock, Jefferson City	St. Louis . Mar. 20
Montana*	Wm. C. Riddell, Helena	Helena . April 4
Nebraska	H. B. Cummins, Seward	Lincoln .
Nevada	S. L. Lee, Carson City	Carson City . May 1
N. Hampshire	Walter T. Crosby, Manchester	Concord . June 26
New Jersey	A. MacAlister, Trenton	Trenton . June 20
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe .
New York	H. H. Horner, Univ. of State of New York, Albany	New York / Albany . May 16 / Syracuse / Buffalo
N. Carolina	H. A. Royster, Raleigh	Raleigh . June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks . July 4
Ohio	Geo. H. Matson, Columbus	Columbus .
Oklahoma	R. V. Smith, Tulsa	Oklahoma City . April 11
Oregon	B. E. Miller, Portland	Portland .
Pennsylvania	N. C. Schaeffer, Harrisburgh	Philadelphia .
Rhode Island.	G. T. Swarts, Providence	Providence . April 6
S. Carolina	H. E. Boozer, Columbia	Columbia . June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre . June 13
Tennessee	A. B. DeLoach, Memphis	Memphis / Nashville / Knoxville . June
Texas	M. P. McElhannon, Belton	San Antonio . June 20
Utah	G. F. Harding, Salt Lake City	Salt Lake City . April 3
Vermont	W. Scott Nay, Underhill	Burlington . July 11
Virginia	J. N. Barney, Fredericksburg	Richmond .
Washington*	C. N. Suttner, Walla Walla	Tacoma . July 4
W. Virginia	S. L. [illegible], Charleston	[illegible] . July
Wisconsin	J. M. Dodd, Ashland	Milwaukee . June 27
Wyoming	H. T. [illegible], Laramie	[illegible] . May

*No reciprocity recognized by these States.

†Applicants should in every case write to the secretary for all the details [illegible]

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

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FIFTY-FIRST ANNUAL REPORT OF THE TRUSTEES OF THE BOSTON CITY HOSPITAL. February 1, 1914—January 31, 1915, inclusive. Published by Printing Department, Boston. 206 pages.

CONSUMPTION AND ITS CURE BY PHYSICAL EXERCISE. By FILIP SYLVAN, M.D. Published by E. P. Dutton & Company, New York. 203 pages. Price, $1.25.

WHO IS INSANE? By STEPHEN SMITH, A.M., M.D., LL.D. Published by the Macmillan Company, New York. 285 pages. Price, $1.25.

PAINLESS CHILDBIRTH—EUTOCIA AND NITROUS OXID-OXYGEN ANALGESIA. By CARL HENRY DAVIS, A.B., M.D. Published by Forbes & Company, Chicago; 134 pages. Price, $1.00.

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Original Articles.

THE USE OF TRICKERY TO DISCOUNT MEDICAL TESTIMONY.

BY EUGENE R. CORSON, B.S., M.D.,

SAVANNAH, GEORGIA.

THE following case presents certain interesting points in connection with medical expert testimony, and questions of bias and medical ethics, so that I do not hesitate to publish it, and in some detail.

A white man, æt. 31 years, a car inspector, on May 27, 1914, was inspecting the air brakes on a long train, when, without any warning, the train suddenly started, striking him on his right shoulder, and knocking him sideways and backward. To save himself from being crushed he caught on to some support by his left arm, and managed to throw his left leg over the axle of the car, with his right leg dragging. In this position he was dragged seven or eight car lengths, fearing every second that the dragged foot would be caught in a switch which he knew was not far off, and that he might be crushed into a bloody pulp. When the train was stopped, and he was taken from his perilous position, he was badly bruised and in a state of nervous collapse. For four days he suffered great pain in his back, shoulder, and hip, and was kept under opiates all that time. He was confined to bed eighteen days. At the end of six weeks his physician turned him over to an osteopath for massage, hoping thus to overcome the contracted muscles of the back and legs, and to relieve his pains.

Having entered suit against the road, his attorneys sent him to me for examination on July 29, two months after the accident, when I examined him in my office.

To me he gave a characteristic picture of a traumatic neurosis. Of his physical injuries there was no trace, but of the psychical or mental picture there was no doubt in my mind. He had been a car inspector for eight years, and had given satisfaction to his employers. He denied syphilis and gonorrhea, but admitted some drinking. There was a tonic contraction of the back and thigh muscles, causing him to walk bent over, and with a cane, as though in a plaster cast. There was a partial and irregular hemianesthesia of the left side, a hyperesthesia over the lower dorsal spine, and excessive knee-jerk. The only other noticeable reflex was the pupillary, which was pronounced on pressure over the lower dorsal spine, the pupil dilating when he flinched, to me an uncommon symptom. With this there was an increase in the pulse beat to one hundred or a little over. His blood pressure taken just before the trial was 130 mm. systolic, 82 mm. diastolic. He complained of constant pain in his back and legs, of frequent and difficult urination, of loss of sexual desire, and of poor sleep. There was great emotional depression at the first examination. He wept while telling his story. There was evidence of lack of mental attention and concentration, and of aboulia—his facial expression bearing out his emotional and mental states. He weighed in my office 125 pounds, a loss of twenty pounds from his usual weight.

The wholly psychical character of the case led me to advise his lawyers to wait a sufficient time to try out his powers of recovery before going to trial. Altogether I went over him four times, the last time in my office the day before the trial, with the five physicians representing the road. During this interval of five months he gained ten pounds, had a better color and a fuller face, but I saw no change in his other symptoms.

I asked a specialist in whom I have every confidence, and who, by the way, happened to be the specialist for this very road, to examine his eyes and ears. He reported to me that he found no retraction of the visual field, which I thought might exist, but did find a 50 per cent reduction in the bone-conduction for the left ear, the same side on which I found the hemianesthesia on the back, which seemed to me to confirm the hysterical element in the case. The trouble was not in the middle-ear but in the internal ear.

And now to go back a little in my story and introduce a new character in this medicolegal drama. Early in October, I think, I have no record of the date in my card catalogue, a large, alert, and intelligent looking man came into by office, helped from a carriage by the driver, walking with difficulty and seemingly in much pain, and after settling himself in my most comfortable chair, gave me in substance the following history: He was from Jacksonville, and on his way to Virginia to settle an accident claim. After finishing his business he was to return to Savannah and enter the Savannah Hospital and place himself directly under my care. He said he was an engineer on the A. C. L. R. R. and that on July 2, 1914, while climbing up on a freight car the grab-iron gave way, and he fell a distance of 12 feet, striking on his buttocks and jarring his back and head. He was unconscious an hour, was laid up in bed five weeks; that he could get no satisfaction from the road, and that this, with certain inimical conditions in Jacksonville, induced him to come to Savannah and enter his suit here. He asked me if a certain firm of lawyers were good men (the same firm which was to try the present case), and asked me to give him a letter to this firm after my examination of him.

He walked with a high-stepping gait and his legs far apart. There was apparently excessive knee-jerk and great sensitiveness over the lower dorsal spine. He complained of great pain on any jar or movement. I find on my card record: "Vegetative life normal, urine normal, frequent urina-

tion; sexual function limited." He asked for a prescription to give him some temporary relief, at least, and I wrote him one for potassium bromide and aromatic spirits of ammonia. I gave him a letter to the lawyers mentioned, stating he was injured, and also made a similar statement to an accident company in Virginia.

A day or so later, the junior member of the law firm referred to told me he had seen this man, who had told him he had lost the letter I gave him, and he intimated to me that the man might not be honest. It is interesting to note how much more critical the mind becomes when any suspicion enters in. In rehearsing the case in my own mind I became aware of certain features not noted at the time, which I had taken in subconsciously and which only now came to the surface. The man was dramatic in his actions; he was in a hurry, and seemed oversensitive and anxious while I was eliciting his knee-jerk. The testimony at the trial showed he had very carefully prepared his part, and had with much skill worked out all its details and possibilities. His promise to me to return immediately to Savannah and place himself under my care in the hospital was a cunning ruse to throw me off my guard and to minimize my examination at the time. However, I gave the case no further thought, when, about six weeks before the case I have detailed came to trial, I got a letter from Jacksonville, purporting to come from this man's brother-in-law, in which he asked for information about the hospital expenses, and also making excuses for his brother's delay in entering the hospital as he had promised to do, and that he had been busy with his other claims. He stated further that he had the grab-iron which had caused his fall. His letter still further threw me off my guard. I kept no copy of this letter nor of the one I wrote in reply. As the man did not turn up at the hospital, we inclined to the belief that the case was not genuine. As I look back now I am surprised that I gave the whole affair so little after-thought or concern. I did tell the lawyer, however, that I felt the case might be sprung on me at the coming trial, but that I could easily defend myself. I simply would have to admit that I had been deceived by one paid to deceive, and skillful at the business; that I had seen the man but once, and for a short time which he had skillfully arranged, and that when I gave him this letter to the lawyers the case would have to be verified in all its medicolegal aspects before any decisive steps could be taken; and that my mistake could in no way lead to any injury to any party; it could lead to nothing but a cul-de-sac.

At the trial, soon after the cross-examination began, I saw the trap laid for me ready to be sprung, so that I was not wholly unprepared for the blow. Opposing counsel handed me the letter I had written and asked me if it was mine. I admitted the letter and the deception by a hired impostor; I admitted I had been over-credulous and over-hasty in my diagnosis on the spur of the moment; that in the practice of my profession I had been deceived many times before, and had made many mistakes, and would probably be deceived again and make more mistakes.

The physician who attended the plaintiff immediately after the accident, and for two months following, testified to the man's sufferings and to the genuineness of his symptoms. The osteopath who, of all who attended him and examined him, had had the best chance of knowing the tonically contracted muscles and concomitant pains, through five months, testified the man's symptoms to be genuine.

The five doctors for the Railroad Company all testified that the man was normal and therefore a fake; though each one of them on the cross-examination admitted one or more abnormal symptoms. One admitted that the pulse was one hundred; one admitted that he had noticed the pupillary reflex; one admitted that he had noticed a difference in the sensitiveness of the skin on the two sides, and they all admitted when questioned concerning the impostor that one could be deceived on the first examination.

I testified on the stand that the plaintiff was suffering from a traumatic neurosis combined with some traumatic hysteria; that the condition was probably one of psychical shock, the result of the peculiarly distressing circumstances of the initial injury; that I considered the case genuine; that from our present knowledge of the subject these traumatic neuroses, including hysteria, were largely dependent on the psychical shock and not a result of the physical injury; that the best key to the solution of the peculiar combination of symptoms was a *cerebrospinal disassociation;* that normally the brain superconsciously or subconsciously controlled in a measure the functions of the cord, regulated them, so to speak. perhaps roughly speaking, like the governor of an engine, and that when in some occult way, this control was disturbed, the cord acted tumultuously or irregularly with all the train of characteristic symptoms, aboulia, amnesia, over- and irregularly-contracted muscles, anesthesias, hyperesthesias, fugitive and irregular pains, increased reflexes, etc., etc. I also stated that the large majority of these cases eventually recovered, in proportion to the more favorable conditions of life and life-history and constitutional status of the patient; that a certain proportion only improved; and, finally, a small proportion were permanently injured and went from bad to worse.

At present writing ten months have gone by since the trial of this case. It will be interesting to note the man's present condition. He is now living in the country doing light work about the house. He can carry a pail of water; but he cannot lift it up the two or three steps into the house unless he first steps up and draws it up. His attitude and gait are the same. On the scales in my office he has gained eight pounds. There is the same rigidity of the back muscles, the same tenderness over the spine; the same pupillary reflex, the same rapid pulse. He reports himself just the same, barring the increase in weight. I present a photograph of him stripped, standing in his usual attitude with his stick. This attitude and gait have not changed since I first met him and I have seen him repeatedly on the street.

In the rebuttal, a disinterested physician, in good standing, was called in, who had examined the plaintiff in my office, and who, unprompted by me, had noticed at once the unusual and exaggerated pupillary reflex and the accelerated pulse, both following pressure over the lower dorsal spine, as well as the pronounced hemianesthesia; he, too, testified to the genuineness of the neurosis.

When the case went to the jury there was only one question in their minds, namely, the amount they should give the plaintiff. Several were for large sums. I understand there was one man against this view. The fact that there was one

man on the jury who would so act was hinted to me by two men who know juries pretty well. At any rate a verdict was soon given for $9,500.

I have had some dealings with this railroad in question before this case. I have been called on a number of times to make *x*-rays for the Road. I have also appeared for the plaintiff in a number of damage suits against this Road. Some three or four years ago I was called to attend a man who fell from a car from the giving way of a grab-iron very much like the imagined accident in the trick case, only the man fell on his left side and ruptured his spleen. There was a violent intraabdominal hemorrhage. I removed the spleen, but lost

my patient, despite all my efforts. The mother brought suit and it was settled out of court.

Again, five months ago, the claim agent of the same road asked me in consultation with another physician to examine a man injured while in the employ of the Road. I found serious injuries; in fact, the man was a hopeless cripple, and I advised a settlement. The very next day the man's attorneys called on me for information about the case, which, of course, I had to decline to give on the ground of being employed by the other side. The case was settled for a mere nominal sum.

On account of having done much *x*-ray work I have been more and more called upon to examine and give an opinion on railway and other injuries, so that I have more and more been retained as a medical witness in the courts. Several corporations are employing me for my *x*-ray work, yet I am more frequently employed by the plaintiff in the damage suits against these very corporations, the regular corporation surgeons appearing for the defendant.

The lawyers who were employed in this case are really corporation lawyers, and I imagine that nine out of ten of their cases are for this corporation, and I have appeared in court mostly for the plaintiff against them, and yet they call on me frequently when they represent a plaintiff and have also employed me for their own corporation, as an expert medical witness. That I had the good opinion of this firm was gratifying to me.

The attorneys for the defendant in this case made two great mistakes. In the first place, they employed deceit and fraud as a weapon against one who, at least, had the reputation of decency and respectability, and where they could only prove that he could be deceived by a hired impostor on one examination, which they had cunningly planned to make as short as possible. Anybody can be deceived if the proper means are used. Deceit is always a dangerous weapon no matter how skillfully employed. As far back as man has recorded his thoughts he has so expressed it. Camerarius put it well in a famous sentence: "*Nulli fraus tuta latebris,*" where the word *latebris* is a whole sentence in itself—Deceit is safe for no man *though he hide in secret places.* Counsel for the defense had the ponderously difficult task of explaining to the jury why his client had to lie and cheat to defend himself. Secondly, they compared my case of deception, one examined but once and hurriedly in my office, with nothing verified or corroborated, and with no possibility of coming to trial, with another case, seen by me four times and treated and examined by other physicians, and all the details of the accident corroborated by witnessees, and regularly brought to trial. I was deceived in one, and, therefore, I was deceived in the other; and they attempted to drive this *non sequitur* home by getting five medical witnesses to testify along the same line. To compare two such cases and to try to influence twelve men of ordinary intelligence would in itself constitute a fraud were it not so stupid on the face of it. It was only the hired imposter who showed intelligence; the defendant alone made himself ridiculous.

One of the physicians in the case twitted me for taking a contingent fee, and a modest fixed fee at that. He himself had asked more as a "flat fee" for testifying, even before he saw the plaintiff, and yet he took the position that I was the one who must be biased and not himself; and that the contingent fee is not professional. I have never asked nor received more than $100 for being retained in any case, no matter what the verdict was, and I consider it a modest fee. I am supposed to see the case at varying intervals for months, besides testifying in the court. When a patient is sent to me for examination my position is an absolutely independent one. If I see no injury and no reason for suit I can so state and can decline to have anything to do with the case. This not very infrequently happens, and usually my decision holds. I feel I am delightfully independent, and much more so than when retained by a corporation; then I feel I am in a sort of straight-jacket. This may be from testifying so much more for the plaintiff, and that my sympathies are with the man with the dinner pail rather than with the high official. Viewed from

every point of reason, and admitting that we are all biased to a certain extent, I believe I have the advantage as a free lance. I can see nothing wrong in the contingent fee provided it is a reasonable one and not based on any percentage. In private practice we are not infrequently paid on this principle. It is the only one for the poor man who does not wish to be on charity, and whose gratitude for services rendered prompts him to pay for these services when he has the means to do so. I believe it is quite universally done, and that there is nothing in our code of ethics prohibiting it.

As the question of bias and self-interest is such an important one in medicolegal testimony I beg to call attention to a paper of mine which appeared in the *Southern Medical Journal* for August, 1908, entitled "A Medicolegal Case Involving *X*-ray Testimony and Its Bearing on a Recent Proposal to Regulate Medical Expert Testimony." In that paper I quoted a proposal to regulate medical expert testimony published in the MEDICAL RECORD for May 9, 1908, which read as follows:

"The committee of the Medical Society of the State of New York appointed to confer with a special committee of the New York State Bar Association in regard to the regulation of expert testimony has prepared the following tentative draft of a bill with this end in view: 'At any time in the pendency of any civil proceeding in any court in which any medical or surgical question is likely to be material, the court or any justice thereof may, or at the request of either party, shall appoint from the list made up as hereinafter provided one or more persons learned in the science of medicine and surgery, and of not less than seven years' actual practice as official experts, who shall investigate the facts of the case and give their opinion upon any such question arising in such proceedings, and make written report thereof to the court. Upon such appointment by the court, or if the parties file an agreement designating an expert for the case, the court shall issue an order for the person so appointed or agreed upon, to be served in the manner provided by law for the service of subpoenas. As soon as may be after service thereof the expert shall make such examination of the case as in his judgment may be necessary and practicable and shall file his report as above provided. Such report shall be filed in the case and shall thereupon be open to the inspection of either party, and such report may be read in evidence, and such expert may be called as a witness by either party at the trial. The New York Academy of Medicine for New York City and the Medical Society of the State of New York, acting for the State outside of New York City, shall through committees appointed by these organizations furnish to the court or courts in various counties, a list of names of members of the medical profession of good standing, and of not less than seven years actual practice, recommended by them as competent and expert in medicine and surgery, from which list the court may select such expert or experts as in its judgment may be required. Such official expert shall be paid out of the treasury of the county a minimum fee of $50 for the examination of, and report on, any case in question; $50 additional for the first day's attendance in court upon the case, and $100 a day thereafter while attendance is required by the court. The expert witnesses so listed may be called by any court of the State, and if called from the county of their residence the fee shall be increased to the extent of the extra expense incurred to which shall be added a reasonable compensation for such extraordinary service and loss of time. Either party at the trial may call other expert witnesses than those appointed or agreed upon, but at his own expense.'"

This proposal impressed me as a step in the right direction. I had hoped that there might be further developments along this line, but I have seen nothing of it.

I also attempted to bring out in this paper the bias shown by the medical witnesses for the defendant. Briefly, the plaintiff sustained an injury of his right elbow, followed by some restricted movement in the joint. I made several *x*-rays of the injured limb and also of the normal side for comparison, and found a fracture through the lower end of the humerus, running into the joint. The evidence was unmistakable in black and white. The company's surgeon denied any injury whatsoever, and the lawyers for the defense, seeing the case going against them, hurriedly brought in two other corporation surgeons to help out. The plaintiff was hurriedly examined in the middle of the trial, as well as my plates, and they both testified that my plates showed nothing. Now I know these men to be honest men, and I also know they were influenced by the crassest bias. The man, however, got a verdict of $677.65. I examined the joint two years after the trial, and again but a month ago, and found the same restricted motion. My experience has taught me that the chief error of the defense in these damage suits, which is based, of course, upon the statements of the corporation surgeon, is that they deny too much. This places one in a very awkward position, for it gives an added weapon and advantage to the other side. "*Omnia dat qui justa negat,*" a sentence ascribed to the Latin poet Lucanus, who, whatever his poetic qualities may have been, was a smart fellow withal. In a recent damage suit where the plaintiff had sustained an initial injury of considerable physical violence, and where the psychical shock must have been very great, for the victim for several seconds could see the oncoming blow from which escape was impossible, and who developed a condition quite similar to the plaintiff's in the present case, counsel for the defense began his declaration to the jury somewhat in these words: "Gentlemen of the Jury: We propose to show you that the plaintiff in this case was in no way seriously hurt; that there is at present no evidence whatsoever of his injury, that he only had a nervous shock, and that his present complaints are imaginary; that in short there is nothing the matter with him." Now this was a very stupid thing to say, and the corporation surgeon who advised him in the case gave him very bad advice. He played absolutely into the hands of the other side, and counsel for the plaintiff made good use of his opportunity. Throughout the trial it was very evident that the defense had no idea what psychical or mental might mean. His only idea was that psychical was nothing, no thing, and therefore negligible, while opposing counsel fully realized that a psychical change was still a material change, although we were as yet unable to put our finger on it; that everything had to be argued on a basis of a materiality of some kind. And this led him to show that the psychical by the very fact of its being elusive and indefinite is more difficult to treat than the ordinary physical injury; that the severe physical injury may be more easily cured than an apparently simple psychical trouble.

A mere glance at the figures of damages paid by corporations startles one with its stupendousness; one can hardly realize the toll paid for modern rapid transit. One wonders a corporation can live at all; dividends seem impossible. With the ever increasing rapidity and intricacy of this transportation, the dangers should increase in geometrical rather than in arithmetical proportion, according to the laws of physics. Under present laws and conditions a point must be reached where continuation is suicide. Whatever change must come, must come through the law. On one point at least a step can be taken, and that is, a more careful consideration of the initial injury, and the conditions and circumstances existing at the time. This factor has always been an important one in my estimate of the real damage done, and the prognosis as well.

I have seen cases tried where the initial injury was so ridiculously slight that no corporation or individual could in any way have been held accountable, and yet damages were recovered. A certain latitude is due the defendant. We do know that psychical disturbances come from apparently slight causes. But it becomes at once evident that the susceptibility to psychical change must have been very great, so great, indeed, that the victim was a subject for treatment before the accident, and that the ordinary occurrences of every day life were equally liable to start the new train of symptoms—the sudden attack of a barking dog, the slamming of a door, the pricking of a finger, insignificant accidents, which Janet* has so well shown to be operative in hysterical attacks and other mental states. Such cases in court should never be argued past the initial injury; they should never get to the court room. The present law that "the existence of a predisposition does not excuse the defendant" will, by necessity, have to be modified.

Again, the law "that the defendant is not excused from the results arising from malpractice on the part of the plaintiff's physician" does not seem to me just. Certainly if malpractice on the part of the corporation's surgeon can be shown, it is bound to influence the verdict. I recall one case where a desperate effort was made by the defendant to show improper treatment on the part of the plaintiff's surgeon, where, from my standpoint, the defendant's surgeon was distinctly to blame in the original treatment.

As already mentioned, the attitude of the defendant's surgeon is by no means always conducive to his employer's interests. Holding the position of a regularly employed servant of the company, and expected to stand by the company, he is in constant danger of going too far in the support of his client. He has lost the faculty of putting himself in the other man's place, which is usually a very necessary thing to do, to get an unbiased and judicial view of the case. The great principle of charity rests on this faculty. Certainly, in denying too much he injures his cause, and this fault can partly be explained by the lack of this faculty. Again, I am convinced that a lack of the proper conception of the psychology of hysteria and its allied nervous states, the cases which are the most stubbornly contested, and with the bitterest feelings aroused, favors this wet-blanket denial where nothing is seen but exaggeration and fraud; they show a sublime indifference to trauma.

With all the brilliant symptomatology of Charcot, it was Janet, the brilliant French psychologist, who helped put these symptoms into line, and give us a more comprehensive, a more intimate, and a more charitable view of these cases. And Janet's conception has been maintained and further elaborated by subsequent workers, so that there is no excuse for a failing to apply this new knowledge. But the railroad surgeon says, and quite naturally: "But this is out of my line; this belongs to the nerve specialist, the neurologist." Quite true; but the railroad then had better get the services of such an expert where testimony might enlighten the jury, and possibly protect the defendant. He certainly could be of more benefit than the rushing into the case of five surgeons who are quite willing to deny everything in spite of all consequences.

But as a skilled lawyer and a very excellent judge of human nature said to me after the trial of this case: "It's great sport, even if it is a free fight, and I am always intensely interested."

10 Jones Street, W.

*État mental des Hystériques: les accidents mentaux. Par Pierre Janet. Paris, 1894, or the English translation: The Mental State of Hystericals; A Study of Mental Stigmata and Mental Accidents. By Pierre Janet, Litt. D., M.D., with a preface by Professor J. M. Charcot, translated by Caroline Rollin Carson. G. P. Putnam's Sons, New York, 1903.

POLLEN THERAPY IN POLLINOSIS;

WITH RESULTS OF TREATMENT BY IMMUNIZATION METHODS DURING 1915.

By SEYMOUR OPPENHEIMER, M.D.,

AND

MARK J. GOTTLIEB, M.D.,

NEW YORK

The term "hay fever," although it has received almost universal adoption, is a misnomer, covering as it does all the forms of periodical influenzas. We use it only in its most generic sense. Our preference would be pollinosis or pollen disease. Although not dangerous to life, it causes at certain times such extreme discomfort to some of its victims as to unfit them for their ordinary pursuits. While it is possibly among the minor ills that flesh is heir to, a prominent place must be assigned to this curious infirmity. If we accept the view that it is a disease of the classes rather than the masses we may take the viewpoint of self-congratulation rather than of humiliation as indicating a superiority in culture and civilization of the favored few. When this idea of the intimate connection of pollinosis and culture has been firmly grasped by the public mind, the complaint will perhaps come to be looked upon like gout, as a sign of breeding. It will be assumed by those who have it not—like Louis the Fourteenth's courtiers who submitted their sound flesh to the surgeon's knife in pious imitation of their majestic but diseased master. Soon, no doubt, presence or absence of the tendency to sneeze at the sight of a rose will become a test surer than the letter "h" for the separation of the elect from the common herd.

To speak more seriously, however, the prospect opened up by modern observation is rather alarming. As civilization and culture advance, other diseases analogous to the one under consideration may be developed from oversensitiveness to sound, color, or form, and the man of the twenty-first or twenty-second century may be a being of pure intellect,

whose organization of mere nervous pulp would be shattered by a strong emotion, like a pumpkin filled with dynamite. Perhaps, however, in that dreary time of omniscience to which we are all said to be hastening, when machinery shall have taken the place of nature, and nothing is left to remind the world of flowers but dried specimens in botanical musemus, the disease will become extinct equally with the cause. At the present time we are fortunately still far removed from this consummation and the human is warmly interested in devising means of curing the disease.

Hay fever, or pollinosis, is a disease which manifests itself in the spring, from the early part of May or June to early or middle July, and in the autumn from the middle of August to the end of September or early October. It is characterized by itching of the eyes and lacrymation, sneezing, seromucous discharge from the nose, obstructed breathing, and itching of the palate and face. If the attack is very severe, sooner or later there are coughing and difficult breathing accompanied by wheezing. Pollinosis is caused by the action of the pollen grains from flowering plants, the pollen being carried by air currents and thus conveyed to the mucous membranes of the eyes, nose, and the remainder of the respiratory system. If the recipient is susceptible to any of the pollens which occur in the air and if their concentration is sufficient to go beyond the threshold of reaction, an attack of pollen disease will promptly ensue.

The term rose fever as applied to the spring variety of pollen disease is also a misnomer, because in a large series of cases of vernal pollen disease tested by us we have found only one person who was sensitive to the pollen of roses. To be correct, one should speak then of the spring type and fall type of pollinosis. The impression of the patient as to the causative pollens cannot in most instances be depended upon. In many instances patients have made the suggestion of the most unique pollens as being responsible for their attacks, but upon investigation this was proven to be a faulty observation in the majority of cases.

Etiology.—Predisposing Causes. Heredity plays a very important role in the etiology of pollen disease, as we have shown that over 90 per cent. of our patients have other members of their family who suffer with allied ailments such as urticaria, asthma or other manifestations of anaphylaxis, following the ingestion of casein, egg white, shellfish, or are sensitive to the contents of pollen, flies, or are anaphylactic to dust, the serum of horses, and cats.

Any denuded surface on the body is a suitable place for the parenteral absorption of the proteins of pollen, so that given a patient whose antecedents either in collateral or direct line have shown themselves to be sensitive to any of the above-mentioned substances; that patient, if so exposed, will in all likelihood develop pollen anaphylaxis. For the above reason it can be easily understood why chronic inflammatory conditions of the nose and throat, such as sinusitis, or obstructions to drainage make these organs a suitable place for the reception of this disease. The nasal factor, however, should not be considered as too important; in fact, many of the patients under our care have had considerable surgical treatment of the nose at previous times in the hope of the relief of the condition and it has been in but the rarest instance that benefit has resulted. While it is important that a marked stenosis or mechanical condition causing definite pressure or a suppurative process in the accessory nasal cavities should be corrected, yet to attack every slight septal irregularity or other deviation from the normal by surgical means is in our judgment a procedure which should not be countenanced.

Exciting Cause.—The cause of this disease has definitely and conclusively been proven to be the pollen of anemophylous plants, particularly the Graminaceæ, Cyperaceæ, and Compositæ.

In a previous communication we have enumerated a large variety of pollens which we have found active and which our botanists have been engaged in the collection of. The collection work is most important, and considerable experience has been gained as to the best means of conducting this work. Some grasses and plants were found to be best brushed in the fields, whereas others have to be subjected to a variety of other methods to obtain the best results.

In order to carry out this work in the most satisfactory way it is desirable to have as large a working collection of pollens as possible, so as to be able to treat patients coming from distant points with the particular pollen of the grass or plants which grow abundantly in the locality in which the individual patient lives and is exposed to and to which he is susceptible.

The method of preparation of the pollen extract we have dealt with in a previous report. At the present time our laboratory staff is engaged in a large series of experiments for determining what relation exists between different methods of pollen extraction and their solution or suspension and the degree of immunity induced.

It is possible to produce a typical attack of pollen disease in a sensitive individual at any time of the year independent of the time when the plants bloom to which the patient is sensitive. A small quantity of pollen, if aspirated into the nose, will cause a typical attack of pollinosis which will last for a few hours, and if the quantity sniffed up is very large, a severe attack of anaphylaxis may result.

Diagnosis.—Three methods may be employed for determining to which pollen a patient is anaphylactic—the ocular, the hypodermic, or the cutaneous method. The method which we now use for determining which pollen or pollens are operative in a given case is the skin scarification or cutaneous method. A very small scratch, not enough to produce bleeding but sufficient to cause the exudation of serum, is made on the arm of the individual to be tested, and a very minute quantity of pure pollen is gently rubbed into this wound. In a very few minutes a wheal will develop around this area of scarification. The swelling and redness are measured after fifteen minutes has elapsed; subsequently such vaccinations are made during the course of treatment, and are again measured after a fifteen-minute period, so as to determine whether the size of the wheal diminishes as treatment and immunization progress.

Some patients are susceptible to only one or two pollens and there are other patients who suffer from a sensitiveness to all pollens, so that the latter have symptoms of pollinosis lasting five months during the spring and summer, while the former exhibit symptoms but from six weeks to two months. It is important to bear in mind that in the case of a patient showing symptoms, let us say by way of example, from May 15 to July 15, the symptoms

are not due to a single pollen, but rather the attack is kept up by a succession of different pollinizing periods of the different plants which are operative in the given case. It is important for this reason to learn from the botanist working in the fields when each grass begins and terminates its pollinization so as to determine the period of the beginning and the ending of the proposed immunization to the individual pollen. The earliest we have found a patient suffering from pollen disease in this locality is about the first of May. This spring, however, we had a patient under our care whose attack of pollinosis began in the early part of April. He is a resident of southern Georgia and is sensitive to the pollen of the pecan tree. The latest we have known patients to suffer from pollen anaphylaxis is the latter part of October. This occurred in several patients suffering from the fall variety of pollen disease who removed to an immune locality during August and September, and on returning in October, developed symptoms of pollen anaphylaxis because they had not developed their usual seasonal immunization and were just as sensitive in October as they were in the early part of August.

In conjunction with the scarification method of diagnosing which pollen is operative we have made extensive use this year of the complement fixation test of the patient's blood, using an antigen of the pollen which gives the most intense reaction. In that way we are able to gage how much natural immunity exists. Aften ten or twelve treatments the complement fixation test is again performed to determine the amount of immunity produced. In this way we are able to judge when treatment should be stopped. It has been our experience that pollinosis patients who have never had treatment show a doubtful fixation test, whereas those who have had treatment the previous year show a reaction of between three and four plus. From this it can be deduced that a patient having had treatment the year previous carries over a certain degree of immunity to the ensuing year. This is important in its practical bearing on the duration of seasonal treatment required.

Complications.—Notwithstanding the fact that the subject of pollinosis has never been taken sufficiently seriously by the profession and general public, it nevertheless has its serious aspects. A case of pollinosis may develop a train of symptoms which, if remaining untreated, may be the cause of an untimely death.

One of the most common complications is asthma. Patients suffering with pollinosis, especially those who breathe through the mouth, due to obstructed nasal passages, inhale into their bronchial tubes large quantities of pollen which cause a swelling of the mucous membranes of the lower respiratory tract, with the production of typical asthma. Superimposed upon this, should the patient be unfortunate enough to have his bronchial mucous membranes infected by any of the microorganisms which are natural inhabitants of the respiratory tract, such as streptococci, pneumococci, etc., asthmatic symptoms are perpetuated throughout the year with an accompanying profuse bronchorrhea. The asthma and bronchitis are very much worse during the time the patient is exposed to the pollen disease, and the conditions are as pitiful as any that the physician has to contend with. Ultimately the pulmonary tissue becomes dilated and emphysema, followed by the usual cardiac dilatation, may ensue.

Nasal sinusitis occurs very often during an attack of pollinosis, due to retention of secretions from obstructed drainage of the sinuses, and deafness due to tubal catarrh or pressure upon the membrana tympani during violent paroxysms of sneezing is a very common complication and sequel of this disease.

Prognosis.—A great many cases of pollen disease have their attacks each year without acquiring any of the complications or sequelæ referred to. In fact, we have seen patients who have suffered with this disease for over forty years, and with the advent of age the intensity of their attacks have gradually diminished so that they are moderately comfortable during the season for pollen anaphylaxis. On the other hand, we have seen severe pollinosis accompanied by asthma and bronchitis followed by chronic emphysema and myocarditis. It is our firm conviction that every case of pollen disease, either complicated or uncomplicated, except where degenerative changes have taken place in the pulmonary or cardiac tissue, cen be benefited, if not cured, if we are in possession of the pollens which are instrumental in the causing of symptoms in the given case. The cases which have superimposed on the primary condition an infective bronchitis do often very well, if an autogenous vaccine from the pathogenic microorganisms found in the sputum is administered in conjunction with the specific pollen antigen. The outlook depends in a great measure upon the general condition of the patient. Many patients come to us very much below weight, with an anemia or other physical incapacity, and if this is not corrected by proper medication, diet, or other measures, the treatment will be a failure, because they are unable to produce for themselves an immunity.

Treatment.—We have referred in our previous writings to the principles underlying the basis of all immunization methods, and these same methods which have proven so successful in bacterial conditions, it is our belief, can be applied to a non-bacterial factor.

We recognize two different immunization methods, active and passive. By active immunization we mean an immunity which is developed in the individual himself, and by passive immunization an immunity which is transferred from an animal to a human being or from one human being to another.

Active Immunization.—It is our practice to begin treatment about eight or ten weeks before the expected onset of symptoms. Gradually increasing doses of pollen extract are given about every four to six days; should an immoderate swelling and itching occur at the site of the injection, the dose is lowered or remains the same until no more reaction occurs to that dose, and then we proceed increasing the dose as before. If a patient is susceptible to more than one pollen, an individual injection of each is given so as to gage the dose of each pollen and thus vary it according to the reaction produced by the previous injection. Under these circumstances we have been compelled to give to some of our patients five or six hypodermic injections at each treatment. These directions as to treatment are, of course, subject to much modification in each case and can be construed only in the most general way. Much judgment must be employed in securing an accurate dosage, as this is all important in its bearing on the results. Our observation has been that an excessive dosage will break down the potential resistance of the patient and defeat the object which we strive to obtain.

Passive Immunization.—Should any of our patients not be able to develop for themselves enough immune body as would be expected from the effect of the injections of pollen extract, one large dose of blood serum is administered from a rabbit that has had large quantities of pollen extract injected at regular intervals for about five months. Under these circumstances the rabbit serum shows an antitoxic content of thousands of units which are sufficient to bind the antigen with the complement in the blood and thus effect a quick proteolysis of the antigen down to amino acids and ammonia, which are not toxic. Only one dose of this serum is given and thus the possibilities of anaphylaxis occurring are avoided.

Many of the patients who have come to us during the attack of pollen disease have felt greatly improved within a number of hours after the first treatment. About all of the patients in this group stated that their symptoms were decidedly modified by each treatment. It has been observed if treatment is kept up regularly at the proper intervals, the symptoms disappear entirely. Should the patient's vitality be insufficient to build up for himself an immunity, we administer a large dose of immune serum, as stated above, and our results for this procedure have been most satisfactory.

Results.—Spring Cases. In our published reports in 1913-1914 we had the gratification of having 50 per cent. of seasonal cures. After much refinement in our method of pollen collection, extraction, suspension, etc., and the experience gathered from our previous year's work, we are able to state that of the thirty-two cases of spring pollinosis (1915) which we had under our care, only two had symptoms. Some few patients exhibited symptoms of but a few moments' duration and of the mildest intensity, and can be construed as having been satisfactorily immunized. In one case we have not been able to determine the pollen to which the patient reacted markedly, and treatment with the pollens to which he was but mildly anaphylactic has been conducted very irregularly.

Fall Cases (1915).—Eighty-five patients were subjected to diagnostic tests, the detailed report of which in connection with the report of the thirty-two spring cases tested will be taken up in a subsequent communication.

Of these eighty-five patients, sixty-two took up treatment. These latter cases can be divided into two groups, the one comprising fifty-two cases in which treatment was begun sufficiently in advance of the attacks to have made the immunization possible. The other group comprises those who consulted us either during their attacks or but very shortly in advance of the expected attacks. Of the first group of fifty-two, fifteen were definitely free from symptoms, twenty-five were markedly improved (this being the direct expression of opinion of the patient), and twelve had their symptoms apparently in no way modified by the treatment, although it appeared that the attack took place rather later than in previous years.

Of the second group of ten, in four the attack was decidedly beneficially influenced after but one or two injections.

Conclusion.—The authors feel it incumbent upon them to warn the medical profession against "hay fever" vaccines which contain a mixture of a large number of pollen extracts, such mixture being given both for spring and fall cases. No diagnostic means are employed to determine which pollen or pollens are operative in a given case. Under these conditions many a patient who is suffering from the spring variety of pollinosis, being already a fit subject for further sensitization, is placed in danger of becoming sensitized to those pollens which are active during the fall. It may also be stated that pollen extracts in large doses are extremely dangerous, and with the dosage not properly controlled by experienced workers in this particular field, a calamity from mishandling may cast a shadow upon a very valuable proposition.

We speak in emphatic terms upon this subject because in our experience we have seen the ill effects of large doses of these substances and appreciate their dangers; therefore, this note of warning.

In conclusion let us express the hope that our readers have not alone been interested in the subject we have presented, but that they have been impressed with the honesty and earnestness of the manner with which is work has been conducted, and it is our hope that at least a fair proportion of those patients who are under our care will have their symptoms so improved that they will no longer have occasion "to fear the gracious odors conveyed upon the gentle wing of some calm breathing wind."

45 East Sixtieth Street

FLATULENCE AND METEORISM AND THEIR TREATMENT.*

By MAX EINHORN, M.D.,

NEW YORK.

Professor of Medicine at the New York Postgraduate Medical School and Hospital.

A great many patients with digestive disorders complain principally of the belching of gas and a feeling of fullness; others, of flatulence and the passing of wind per rectum, which annoys them a great deal. By flatulence we usually understand that type of gas accumulation which exists in the stomach or lower down in the digestive tract, but which is easily liberated. The patient can get rid of the gas easily by belching or the passing of wind, flatus. He may feel a little pressure, but has no difficulty in getting rid of the gas.

By meteorism, on the other hand, we understand an accumulation of gas in the stomach or intestine which is not easily gotten rid of. The great difficulty of the patient consists not in belching or passing wind, but in the fact that he cannot do it. It is a kind of incarcerated condition of the gas.

Usually the variety which has to deal with flatulence will give a better prognosis than the second, which is not so easy to correct.

Beginning with the patients who suffer from flatulence, we have to deal with a difficulty of the stomach. They complain of eructations of gas from the stomach, and that they have to belch a great deal. This is a very common variety, and embraces a great many dyspeptic patients. Some of them have no other symptoms outside of the gas difficulty and the requirement of ridding themselves of the gas, and they complain of nothing else. The patient feels well and looks well, but is annoyed by having to belch constantly, and sometimes he cannot go to an entertainment or other gathering on account of the annoyance to himself and to other persons. Others complain that it interferes with their business.

In other patients the same type exists, but with

*Delivered at the N. Y. Postgraduate Medical School, on December 31, 1915.

the addition of a feeling of fullness, and loss of appetite; and sometimes the regurgitation of food, slight pains, constipation, and other symptoms. Years ago physicians were inclined to ascribe all the symptoms to the accumulation of gas. They considered the type of disease accompanied by eructations as very grave, and clinicians thought the gas must be due to the fermentation going on in the digestive tract, and especially if the carbohydrates were not digested they called it amylaceous dyspepsia. Dujardin Beaumetz described this type some thirty or forty years ago, in his book on the stomach and intestines, in a chapter on fermentative dyspepsia dealing especially with these troubles.

Now while there are conditions in which fermentative disturbances exist and the gas may be due to that cause, still the majority of patients complaining of eructations, etc., do not suffer from that type. What is it, then, that is belched up, if it is not a fermentative process that does it? To what can we ascribe the accumulation of gas?

The answer is (1) that there may be some disturbance in the absorption, and (2) that there may be a great amount of gas production or gas ingestion. The patients who belch and suffer from it can do it all the time. There is no end to the belching, and the stomach is in the same condition, *i.e.* not much inflated before or after the eructation; the patients do not even feel relieved after the act of belching.

Dr. Bouveret of Lyons, France, was the first to assume that in most of these cases the eructations were due not to an increase of gas in the stomach, but to the swallowing of air. The more the patients belch the more they have to do it, for after belching they swallow more air and have to belch it out again. This he called aerophagia, "the eating of air," and he was certainly correct—that means for the majority of cases. In these there is no organic lesion present. . . . I would call it an idiopathic type of eructation. Then the stomach may be perfectly right; it is a kind of habit which the patient has acquired—to bring up gas—he thinks he has to do it.

When he has performed it frequently the cardia is relaxed and ready to do that act of letting the gas out, and the stomach does not want to do the absorbing. Whenever there is lessened pressure in the organ there is less absorption. In these instances, while the stomach may be perfectly normal there is after a while disturbed absorption due to the relaxation and lessened pressure, and the patient will never get better while that continues.

In contradistinction to this variety of aerophagia, or eructation of gas, there are conditions encountered in which there is a really increased fermentation going on in the stomach. But here the patients rarely complain of belching. According to my experience, the amount of gas emitted is due to just the opposite of what was formerly believed. If we consider the type of disease in which the pylorus is obstructed, with the food fermenting in the stomach —ischochymia—the food never entirely passes into the intestine, and there is always a fermentation going on in the stomach—we notice that in this type of gas augmentation the patients complain of pain and acid vomiting, but not of constant belching. They may occasionally bring up a little gas, but it is quite a different type, that fermentative condition. There is an amount of badly smelling gas developing all the time. When this gas is kept in the stomach it irritates the cardia, which then remains closed tighter than normally, and the patient cannot bring it up, and only suffers pain and discomfort—just the opposite of the other variety, where there is constant belching, no pain, and no odor to the gas.

I have often been astonished to find in patients who have a cancer of the pylorus,—where the food cannot escape the pylorus and there is much fermentation and decomposition, so that after introducing the stomach tube there is such a disagreeable smell that one can hardly stand it in the room,—that the patients would be utterly unaware of that condition. It is an exception that the patient is aware of the bad odor. How can that be explained? The answer is the same as before. In these conditions the cardia is almost hermetically closed and the gas cannot reach the mouth, and the patient is unconscious of the condition. You may think that nature has arranged this wisely for the patient, and it is well for the patient in one respect, for he would be in a most distressful state if he were aware all the time of this decomposed matter in his stomach.

It is important to note the great difference in these two conditions. They show that, clinically, the fermentative conditions have not much to do with aerophagia, or nervous eructations.

Now a few points with regard to the treatment of these conditions. The treatment of aerophagia will consist simply of suppressing the coming up of the gas. These patients must be told not to bring up the gas, but rather to suppress it. Many patients think the gas exists in the stomach, and they bring it up in order to feel better, and they try to belch, and some physicians encourage that opinion. These patients will go on all the time that way unless they are corrected. It is important for them to know that the gas should not be brought up. The second point is of still greater importance: these patients should not be put on a diet. A great many physicians, even now, believe that all these troubles are due to fermentative troubles, and will forbid the patients many foods, will take away bread and carbohydrates. Now if these patients are put on a diet and suffer from too great uniformity and lack of food, they really become sick—not because of the food, but because of the want of it. They should not be dieted, but should be allowed a liberal amount of food, like every one else. They should have no restrictions at all. Another point of treatment would be the administering of some sedative, because these people are usually of a neurotic type. If you tell them not to bring up the gas they cannot at once break the habit, but if you give them a mild sedative, valerian, or a bromide, etc., they are accessible to the suggestion, and if you go on wisely with the nerve remedy you can a little later take it away and they can do without it; they have gained confidence. All of these patients give a good prognosis, and can be easily cured.

In the second variety, in which the eructations are combined with some complicating disease, such as gastric catarrh, gastrosuccorrhea, hyperchlorhydria, etc., which give rise to amylaceous dyspepsia, the treatment will be that of the original disease, and besides, if there is more starch remaining unconverted, you will have to regulate it. Amylaceous dyspepsia has played a very important part in past years, and is now called hyperchlorhydria. I am of the opinion that none of these patients should be dieted too much. Many physicians think that the carbohydrates should be taken away from them, but I am not of that opinion. Either you can partly

restrict starchy food, or you can give remedies that change the character of the starchy food—alkalies, etc., which diminish the acidity and disastase. That is the main thing. That is better than to take away the starchy food.

Now we will consider the type of flatulence which has to do with the intestine. Here we find similar conditions and slight pain: that means a great deal of gas is passing out in the form of flatus, and such a patient sometimes never gets freed; he keeps on passing and passing wind. How is it with that gas?

Here, also, are two conditions present; one in which the gas formation or emission of gas continues without other disturbance; the digestive act is correct, and everything seems normal; and another kind in which there is a complication in the digestive tract. Two types: The one in which nothing wrong is found in the digestive tract, must be explained by diminished absorption of gas, just as in the stomach. There is always formation of gas in the intestine, or the food could not be digested. Gas is always formed by the act of digestion, but normally it is absorbed and goes into the blood, etc., and is changed into different components. If everything is normal we are unconscious of anything, and the gas is quickly absorbed and does not give rise to any symptoms.

But suppose the gas is formed in the same way, but that the absorption is disturbed; then something will happen. Now in the lower part of the digestive tract, in the colon, there are more gases forming from bacterial action and decomposition, etc. Some are of the opinion that almost one-third of the fecal matter is due to bacteria. There are always decomposing processes going on, and gases all the time present, but they are absorbed so quickly and changed into innocuous bodies for the organism, and we do not notice them. It is only when a movement comes and the gas goes first and clears the way that we pass flatus. That is a provision of nature, to widen the intestinal canal and have it ready for the passage of the feces, but that amount could be absorbed if necessary.

Now, then, there are always gases in the colon; if a patient passes flatus, he relaxes his sphincter, and there is diminished pressure on the colon; at that time the gas is not so quickly absorbed; if he feels like doing it again, very soon he can push out another amount of gas. Rosenheim explained the frequent passing of flatus by the pumping of air into the intestine through the rectum. I do not think that is the cause. Another explanation is that there are gases all the time ready in the intestine which are ordinarily absorbed if the pressure is great enough. If the patient so desires he can relax his rectal sphincter and emit flatus. After a few moments there is more gas, which can be pushed out again. In that variety of flatus it is not necessary to do anything. If the patient knows that no harm is done by keeping in the gas; the case can be managed in the same way as the similar condition in the stomach; the patient is taught to suppress the flatus, and after a while he will feel no need to pass it. Some of these people are so annoyed that they fear to go into society; they feel they must let the gas escape, and they get nervous and sick; whereas it is simply a habit which has to be suppressed.

Some nine or ten years ago I wrote a paper on this subject, of flatulence and its treatment,* and in it I said that a proof that the digestive tract can go on without sending out this gas lies in the fact that if these patients who suffer from flatulence are occupied with something interesting they go ahead and feel no need of belching or passing wind; while if they are by themselves and not very much occupied they have to do it all the time. Again, when they are sleeping it is not done; they go on sleeping seven, eight, or nine hours uninterruptedly, not bringing up any gas, and not passing wind, but as soon as they wake up they begin again. That shows that the management of gas in the organism can be left to the body; the digestive tract is fully able to take care of it, and can do so without inconvenience, but rather to the benefit of the organism, and when we are awake we should do the same. The patient should not be encouraged to allow the gas to escape, but rather to suppress it. The assurance to the patient that no harm will be done to him by the retained gas is of great importance. It is of importance to bring this point out, for one may at any time encounter patients afflicted with this trouble and may be puzzled to know how to manage it.

The second type is due to a disturbance of the intestinal functions. Here we have something more substantial to deal with. For that abnormal state we have two varieties: (1) intestinal dyspepsia due to a lack of digestion of starchy food. That variety was first described by Schmidt as fermentative or intestinal dyspepsia, and while it does not often exist we sometimes encounter it. It can be proved that that is the cause if one finds starchy food in the stool unchanged, turning blue to iodine. If the starch is left undigested, more gas is formed, mainly in the intestine. Outside of the general management this variety requires something which will remedy that particular condition—the restriction of starchy food, etc. Schmidt takes it away, but I do not. I limit the starchy food, and give the patients something for the indigestion.

Another type is due to incomplete digestion of proteins and their decomposition. This variety is more difficult to manage and the patient suffers more. This can also be determined by finding large amounts of undigested muscle fibers in the stool. In this type the restriction of albuminous or animal food is essential, and perhaps some remedy which will help the digestion, and diminish decomposition, such as salicylic acid or benzonaphthol.

There are two main points which will help in the management of flatulence: not to be afraid of gases in the stomach or intestine, and not to allow the patient to give in to the inclination to belch or pass wind, but to suppress the gas and retain it.

Before going to the subject of meteorism there is a similar condition existing to the bringing up of air which is not due to gastric or intestinal disturbance, but to some disturbance of the circulatory or respiratory or renal apparatus. It is a kind of secondary condition. For instance, a patient has a pleuritic attack, and the right side of the chest is filled with water. Then he does not get enough air. If the stomach is filled at that time the condition is worse, for that part of the lung is limited by the pressure, and cannot get enough air. If the patient eructates more gas from the stomach he gets more space, for his lung is pushed down. If the stomach is really filled with gas the patient can get much relief by sending forth this gas by belching. It is a kind of secondary condition, and the patient often tries to bring up gas in order to have more space

*Max Einhorn: On Flatulence and Its Treatment, MEDICAL RECORD, Sept. 14, 1907.

in his chest. Once the patient may have done this out of necessity and it gave him relief. The second time he does it, at a time when the stomach is not filled with gas, in order to try it as an experiment, and he feels better, or he imagines he feels better. Then he acquires aerophagia, just to help himself, but he deceives himself. I have been called frequently to see such patients; they complain only of gas, but there is something else; they are suffering from dyspnea. It is the same way if there is a tumor in the abdomen; it takes away some space from the lung, and the act of respiration is disturbed. In arteriosclerosis you find the same thing. So there is a secondary form of aerophagia, which has nothing to do with the digestive apparatus, as such.

Now, as to meteorism. While the prognosis of all forms of flatulence is good, in many cases of meteorism the prognosis must be given very guardedly. That means the condition may always become serious. We find meteorism or increased gas in the stomach or intestines which cannot be liberated in two conditions; one is a neurosis, due perhaps either to a spasm of some part of the intestinal tract or to a motor deficiency, paralysis; the absorption cannot go on because the mucous membrane does not work well, the muscles do not move. That may be a primary neurosis of the stomach or intestine, or a secondary condition due to some mechanical obstruction of the intestine.

One can see at once the great difference; any phase of mechanical obstruction in the intestine is very serious, but even in the neurotic form we are not certain that it will turn out well. If we are dealing with hysterical patients we can usually succeed, especially if they have had similar attacks before, but for the first time we must be on the lookout, and watch the patient, and not make too good a prognosis. For we can never tell what is coming and a fatal issue may occur without an organic lesion, if there is a paralysis of the intestine.

Five or six months ago I had a patient who complained of much distention in the abdomen and vomiting. He was a young man, about thirty-three years of age, and was quite sick. He had to be brought in from the country for treatment. On examining the vomited matter it was seen to be intestinal. I was afraid from the start that there was a very serious trouble, and had him admitted to the hospital. The next day, after washing out the stomach, we did not get good results, although we succeeded in getting his bowels to move. The vomiting went on. Several other men were called in consultation, three surgeons, and two other physicians, besides myself. I was the only one who said it was a condition of intestinal obstruction and peritonitis. The patient had no fever, and no one agreed with me. One of the surgeons said there was no peritonitis, and that the abdomen felt soft and good. I wanted the patient to be operated upon, but the surgeons were so sure that an operation was not indicated that I agreed to wait. We waited another day; the surgeons came again, and had the same opinion, and waited again; but ultimately the temperature began to rise. Then there was another consultation, and the surgeons decided to operate, because there was no other issue. I was present at the operation, but after opening the abdomen so little was found that nothing was done. I saw that the colon was filled up, but nothing was done. The patient continued to vomit, and then began to vomit fecal matter; his abdomen quickly filled up with fluid and twenty-four hours after the operation he was dead. That was a case of paralysis of the intestine, without any mechanical lesion. Everything was examined, but nothing was found. The condition was simply due to some disturbance which I could not explain in any way; but it was there. That man could not pass wind. It was a case of meteorism. If he had been operated upon sooner, and the intestine opened, perhaps he would have been saved, but we cannot say. Anyway, these cases of meteorism are always serious.

We shall now discuss the treatment of meteorism. First, the primary form. There is no obstacle, so far as we can see. If we have to deal with an hysterical patient we may give valerian, etc., then wash out the stomach, or simply put in a tube and liberate the incarcerated gas; that sometimes gives much relief and may cure the attack. If the gas is in the intestine, irrigation may be used, a quart of water with a teaspoonful of essence of peppermint. Then, again, a rectal tube may be left in the bowel so that the gas can escape when it wants; and, third, atropine may be administered either by mouth or subcutaneously. That is one of the best remedies I know of for these spasms. Usually there is a spasm in one place and a spasm in another, and incarcerated gas in between. Atropine acts well in such conditions, and if we give 1/60 grain of atropine once or twice a day we may get good results, even in that form of meteorism which appears as a secondary condition and is due to a mechanical obstacle. Then the primary condition has to be treated, and if there is a suspicion of intestinal obstruction, invagination, or intussusception, operation should be done. Intestinal obstruction is frequently due to small growths which have occluded the intestine. All of these varieties should be treated by operation, and not allowed to go on too long. Often it is difficult to decide what the matter is, so one should be careful not to make too good a prognosis.

20 East Sixty-third Street.

THE DIAGNOSIS OF GENITOURINARY TUBERCULOSIS.*

By JOHN W. CHURCHMAN, M.D.,
NEW HAVEN, CONN.
PROFESSOR OF SURGERY, YALE MEDICAL SCHOOL.

The most interesting point in connection with genitourinary tuberculosis is the question of the route taken by organisms in reaching the urine from the blood. Much experimental work has been done on this subject, the early investigations having been carried out with finely divided physical particles, like charcoal. The results of these experiments have been variable, but it is now pretty well established that the normal kidney is somewhat permeable to organisms. To establish this conclusion, however, beyond any doubt has been and will probably remain impossible, by purely experimental methods, for no experiment can be devised which is entirely above criticism; for example, the anesthetic which must necessarily be given to the animal may be held responsible for minute lesions in the kidney and, therefore, conclusions drawn from experimental animals might be attacked as indicating not the permeability of the normal, but of the abnormal kidney.

*Read at a meeting of the New York Academy of Medicine, February 3, 1916.

The two diagrams which I show of experiments I have recently made to determine whether organisms found in the urine reach it *via* the ureters or *via* the blood stream, indicate how difficult experimental study of this question is. As the first one shows, the conclusion seemed inevitable from my

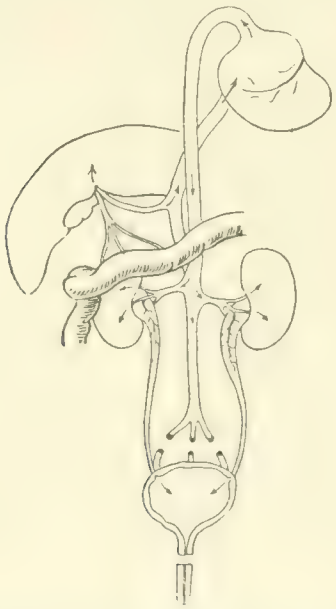

Fig. 1.—Diagram showing an experiment in the guinea pig to determine the course of organisms from the circulation to the urine. The bladder has been dissected free from all connection with the body except the ureters. Organisms injected into the portal vein are readily recoverable from the urine.

early experiments that organisms injected into the portal vein reach the urine in this animal *via* the ureter; but the second figure, which indicates a control experiment, shows that such a conclusion would not have beeen justified on account of an error in technique, which really vitiated the first experiment. It seems altogether likely that the normal kidney is permeable for organisms, and that this permeability includes the tubercle bacillus; but this is difficult to prove absolutely.

With regard to the course of organisms in kidney and bladder lesions, there is one popular misconception which should be mentioned. It is usually overlooked that the mouth of the ureter is an extremely efficient barrier to the passage of organisms upward In the normal bladder, as every cystoscopist knows, the ureteral orifices are not open, and it is a mistake to suppose that urine dams back readily from the bladder to the kidney. If one injects the bladder in the cadaver with fluid, the injection can be carried to the point of bladder rupture without a drop of fluid passing up the ureter. The experiments, however, of Lewin and others in the living animal have shown that during the function of the ureter itself there may be some back flow. I have recently seen a patient who died of complete urinary obstruction, and at the autopsy the bladder was found filled with bloody urine, but the ureters distended with clear urine—a positive indication of the efficient barrier offered by the ureteral meatus.

With regard to tuberculosis one can say positively that infection upward from bladder to kidney is so rare as to be excluded from consideration. The evidence for this statement is on the clinical side quite convincing, and the experimental work of Walker and others on animals has confirmed this conclusion.

The first important point to be emphasized in the diagnosis of genitourinary tuberculosis is the fact that, contrary to a widespread notion, renal tuberculosis may occur in a person otherwise perfectly healthy. This point should be emphasized, for I am constantly seeing cases in consultation, in which the statement is made by the patient's physician that kidney tuberculosis has not been suspected because the patient is in perfectly good general health.

The second important point is that in renal tuberculosis, renal symptoms are the exception and not the rule. I have been repeatedly told by the physician that a case of cystitis could not be tuberculous because genitourinary tuberculosis was always renal, and that in this case there were no kidney symptoms. In a fairly large series of cases of kidney tuberculosis which we have had recently in the New Haven Hospital—all of them advanced cases—not a single one has given symptoms on the part of the kidney.

The third important point to emphasize is the fact that an impalpable kidney not only is no indication of the absence of renal tuberculosis, but also is no proof of the absence of an enlargement of the kidney from this disease. Here again the physician often goes astray and tells the patient that as the kidney cannot be felt it therefore is not enlarged and, consequently, not diseased. I refer, of course, to patients who are thin enough to be readily palpated, and in such patients a kidney, the site of advanced tuberculosis, may be quite impossible to feel. Specimens which I have emphasize this point. One enlarged kidney was not felt, though the patient was a thin man easily examined. On operation the kidney was found to be practically an intrathoracic organ and did not descend below the ribs. In a second case, our inability to palpate the kidney was due to the fact that the advanced tuberculosis here took the form of caseating foci, which led to

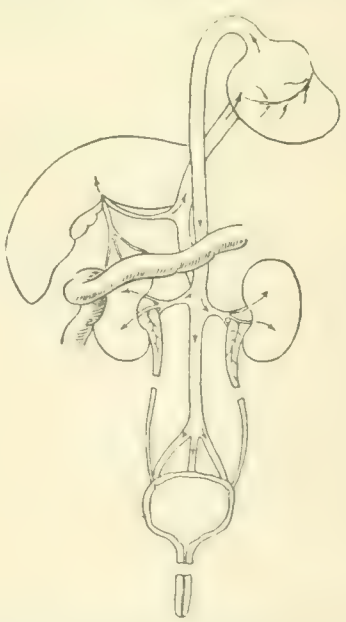

Fig. 2.—Diagram showing an experiment similar to that in Fig. 1. The circulatory connections of the bladder are intact but the ureters have been divided. Organisms injected into the portal vein reached the bladder probably from small vessels injured by the ligatures.

a great diminution in size of the organ, and it could not be felt simply because it was so small.

The sign depended upon in making the diagnosis of renal tuberculosis is, of course, the presence of tubercle bacilli in the urine. I used to speak with a good deal of confidence about the frequency with

which these organisms can be found in cases of renal tuberculosis, but I have in the last year seen three cases, all proven to be tuberculosis of the kidney by microscopic examination of the tissue removed, in none of which were we able to find tubercle bacilli in the urine. I will say, however, quite positively that this experience is rather exceptional and that in the vast majority of cases of renal and vesical tuberculosis not only can the organisms be found, but they can be found with great ease; and I am more impressed every year with the cases sent to me for diagnosis, in which this could readily have been made by the family physician if the very simple urinary examination had been made.

I have been recently much interested in the granules described by Much. Everyone who has made cultures of the tubercle bacillus is familiar with the changes which they undergo in morphology, and it has seemed probable that these morphological changes are accompanied by changes in staining characteristics. The granules described by Much are interpreted by him to represent types of the tubercle bacillus which do not possess the ordinary acid-fast character so well known. These granules were stained blue by a method which includes the use of carbol-methyl violet and a modification of the Gram stain; but they do not stain by the Ziehl method. In a case in which I have recently done a nephrectomy we were unable to find the organisms by careful search of the urine stained in the usual way. The kidney was the seat of caseating tuberculosis, the ureter was tuberculous from pelvis to bladder, and the bladder was the site of an advanced ulcerating cystitis. The urine stained for Much granules by the method recently published by Meader showed a large number of these bodies. I am, of course, unable to say exactly what the significance of the Much granules is, but I think that the study of the urine will throw an important light on this point, as we do not have here the contaminating streptococci to contend with, which were present in the sputum.

I think it is important to emphasize the fact that in the female the diagnosis of renal tuberculosis may often be made by a palpation of the lower end of the ureter *per vaginam*. I have recently seen two cases in which this sign was of vital importance, and those who are not familiar with the fact would be surprised at the readiness with which an enlarged ureter can thus be felt.

The cystoscope, of course, usually makes a positive diagnosis of this disease for us, and the cystoscopic findings in bladder and kidney tuberculosis are too well known to need mention. I may speak of one little trick which is of great value in catheterizing the ureters. Sometimes a ureter which can readily be seen cannot be catheterized because it enters the bladder at an unusual direction, and I have this year seen a number of cases in which this difficulty was overcome by passing the right catheter into the left side, and *vice versa*.

So far as the *x*-ray is concerned in the diagnosis of renal tuberculosis I have not found it of much value, except in one type; namely, that which is characterized by the presence of calcified nodules in the kidney. Here the shadow may indicate the diseased side when there are no other signs which point to it.

In hospital work we are not able to get a great deal of assistance in the diagnosis of renal tuberculosis from animal inoculations for the reason that a guinea pig inoculation is usually not of value until five or six weeks have elapsed after the inoculation has been made, and I find that hospital patients cannot stay in the hospital for this period, and very often fail to report again if allowed to go home. In private practice, of course, the state of affairs is different and any doubtful case can be cleared up by animal inoculations.

With regard to treatment I think it should be emphasized for the encouragement of the general practitioner that in spite of the many difficulties met with the outlook in the surgical treatment of renal tuberculosis is extremely good. It is important to say this because I find the general practitioner rather inclined to be very pessimistic as to this disease. One extremely encouraging feature is the fact that some of the worst cases with advanced lesions do best. I have now under observation a woman who was operated on four years ago for tuberculosis of the kidney which had almost entirely destroyed the right kidney, had led to a general ulcerative cystitis, which had made life almost impossible for her, and had resulted in a very grave undermining of her general health. Nephrectomy was done and she is now, four years after the operation, in perfect health, having more than regained her normal weight and being absolutely free from all symptoms.

The most difficult cases we have to handle are those in which it is impossible to catheterize the ureters and therefore impossible to determine which side is diseased and whether the other side is actually healthy. Another difficult group includes those in which there is existing tuberculosis somewhere else in the genitourinary tract, but even of these we should not despair. I have recently removed the kidney from a patient, who four years previously had had the epididymis removed for the same disease, and he is apparently going to get well.

59 College Street.

FAITH-CURES.*

By J. ALLEN GILBERT, Ph.D., M.D.,
PORTLAND, ORE.

THE validity of the subject of this brief paper is questioned by many. It is perfectly natural that a larger percentage of objections to such a conception should come from the ranks of the medical profession than from any other class of professional men because it strikes not only at the fundamental tenets of medicine as such but at bread and butter as well. The average physician is "vernünst" anything which encroaches on his field.

"Cure" is always belated prophylaxis. If this statement is accepted, there will probably be no objection to the corollary that everything which will cure disease would have prevented it if applied at the proper time. Consequently the real problem consists in a sufficient understanding of the disease to forestall its activity. This leads to the very kernel of our subject.

That which faith will cure is the product of psychological processes which underlie that very same process of faith. Under medicinal methods the mode of attack is by opposition. Counteract, correct, cure are the slogans. Under methods of faith eliminate, ignore, entrust offer the escape. One is offensive, the other is defensive; one attacks, the other parries the thrust; one kills, the other runs

*Read before the Alumni Association, Med. Dept. University of Oregon, 1915.

for its life; one assumes responsibility, the other shifts the burden. Any condition that can be cured by faith has been caused by faith. *Vice versa*, any condition that has been caused by faith can be cured by faith—homeopathic psychology, if you please. This fact arises out of the very nature of psychology. Psychic life is a process and not a fixed quantum to be bandied about and dealt with in terms of quantity. If you ask what or where an idea is when it is not in consciousness, the only rational answer is that it is not at all; and, naturally, is nowhere. If by proper association a quiescent step in the process is again started, our consciousness undergoes a modification which we recognize as a former experience. Facts of which we are conscious for a moment immediately lapse into the subconscious unless they are sufficiently akin to the oncoming experience to be retained as an integral component of the existing process. Consequently, the past as psychic residuum can be modified only by a control of the elements which will go to make up the next conscious experience.

There is no psychic experience without its physical counterpart, and no physical disturbance without its psychic equivalent. Hence every experience which leaves its impress on psychic life, undergoes a continual modification, readjusting itself to the influx of new and varied physical stimuli. The reverse of this proposition must necessarily be true, viz., that every psychic state must find its complementary modification in the physical organism, leaving certain modifications of cells of more or less permanency according to the intensity of the modifying stimulus. If interaction of mind and body is admitted, the possibility of faith being a therapeutic agency must be admitted also. If, for example, psychic embarrassment is accepted as the causative agent in the production of a blush, the whole realm of psychotherapy is opened up and its limitations are marked by only two elements: (1) The possible intensity of the psychic emotion, and (2) the possible sensitiveness of the physical organism in which said emotion is to find its reflection. In fact, they run *pari passu*. By varying these two elements in relation one to the other, all degrees of physical and psychic disturbance can be obtained, from physical and psychic inertia to a most serious state of mental or physical shock. Where excessive emotional activity is correlated with extreme physical sensitiveness an unusual stimulus from either the physical or psychic may even wreck the combination, leaving on your hands a complete physical and mental wreck. No such calamity need be expected in the so-called phlegmatic individual. Here the governor is so regulated that an unexpected speeding of the engine is a physical and psychic impossibility. In such an individual there is comparatively smooth sailing. The powers of inhibition have such complete control of the situation that an outsider is unable to detect anything that would indicate that the inner flow of conscious life was not running in an even unvarying stream. Between two such individuals can be found all gradations and variations of physical and psychic reaction to external stimuli.

We know far more than we know that we know. Rarely a man is found who is able to retain the power of control over most of his experiences of the past. For the average man most experiences have a brief conscious existence and very soon sink into the subconscious, not to appear again until an appropriate association recalls the experience. Though dormant, as it were, their modification of the conscious content is not to be ignored. Let the proper conditions be induced and the more prominent experiences will be reinstated for a moment, only to sink again beyond conscious control. By this process we accumulate a storehouse of latent experience which will emerge to full consciousness only under proper associations or conditions. Many of the so-called subconscious data continue their effect upon our everyday life even when we are entirely unaware of any past experience which would correspond to these subconscious states. Like the ticking of the clock, they so lose themselves in the general mass of stimuli which envelop us that we lose them in the general confusion, and only those of major interest attract attention. Let the clock suddenly stop, however, and we immediately become aware of the dropping out of an element of consciousness which was essential to our mental composure. It may even be some time before we are able to detect the underlying cause of the mental disturbance or uneasiness caused by the stopping of the clock, but we know something has happened to disturb our mental equilibrium. Start up the rythmic ticking of the clock again and the mental machinery starts running smoothly as before; but, no sooner is the ticking of the clock reinstated as an element of our conscious content than it drops out of consciousness once more and we are unaware of its existence, though its absence demonstrated beyond a doubt that its presence was necessary to unimpaired activity of mind. It is said that in its wild state the rhinoceros is accompanied by a small bird which sits upon his back and warns him of approaching danger. He wanders about entirely unconscious of his little companion who lives upon the vermin to be gathered from his back, but let this little picket guardian be removed and the animal immediately becomes restless and uneasy, and his whole mental machinery becomes disordered, though he may be said to be unconscious of the bird so long as it is present. There is more truth than fiction in the story of the old woman who grew accustomed to the firing of the sunrise cannon and slept undisturbed through the noise only to find on removal of the camp that she was awakened by the cannon *not* going off at the usual time.

The same phenomenon is to be found by the race track. "Get his goat!" is an expression known to almost every street waif, and yet but few realize the full physiological and psychological significance which underlies the expression. The trick of stealing the race horse's goat was an effective means for defeating the racer the next day. In the presence of his usual companion, the goat, the nervous system of the horse was in a state of equilibrium due to the accustomed companionship of the goat, though it is safe to say that the latter formed no integral component of the conscious content of the horse as the hours passed. However, remove the goat and the equilibrium was destroyed. Restlessness and uneasiness robbed the racer of his night's rest, and the opening of the race next day found the victim of the trick unfit. In prize-ring circles the principle is well understood that if you can "get your opponent's goat" the fight is won.

In the same way many little insignificant experiences creep into or fall out of our daily conscious life, and they get their victim's goat. They disturb mental equilibrium and composure. The result is a neurasthenic, irritable, uneasy, and unfit for his usual responsibilities. Most neurasthenics are neurasthenics not because of some great shock, but be-

cause of the presence of some insignificant nagging stimulus of which they are not fully conscious. They know not whence their disturbing influences arise. Their real trouble lies within themselves, and they are entirely unconscious of its presence. Faith restores their goat. When the difficulty is unearthed and the victim is able to face his own subconscious experiences, the difficulty vanishes immediately. The unconscious becomes the conscious and is incorporated as an integral component of consciousness, subject to the general laws of inhibition which make rational mental life a possibility.

Many of us are narrow, bigoted and intolerant, because of teaching received in our boyhood. We have forgotten the teaching as such, we have passed on and left the conditions of those days behind us. We have forgotten those lessons as present conscious data, but they have not forgotten us, as it were. We do many things without knowing just why we do them. We fret and fume to-day because of some trivial, psychic shock in years gone by, and absolutely forgotten so far as recognizing in these past experiences any causal relation to our present disturbed mental state. Like sand in our bed, they disturb our rest but do not hurt us sufficiently to arouse us to a full conscious realization of their presence. A little psychotherapy under such conditions will help us to a consciousness of their presence and induce us to shake the sheet of them preparatory to a prolonged quiet rest.

The average neurasthenic cannot tell what is the matter with him. He does not know. He has no means of finding out, and yet in the majority of cases the trouble lies within himself. Certain elements in the subconscious have an effect upon him to such an extent that they undermine his inhibitive powers and destroy mental equilibrium. Any element having sufficient influence to effect the individual can usually be brought into full consciousness if the proper methods are used, and in a large percentage of cases this is all that need be done to remove their baleful influence. The main error made in the treatment of such conditions lies in assuming that all individuals are built over a common mould and that the treatment applied will have like effect upon all individuals treated. He who reaps any benefit from faith as a means of cure is unfortunate in having the psychological characteristics which made the condition possible for which the curative process is to be invoked. Many people are sick because they are unable to inhibit or ignore injurious subconscious influences. Others are sick because they are unable to allow the subconscious processes to work to the betterment of their condition, unhampered and unhindered by fear and anxieties of full conscious life. In the great majority of cases faith is but psychological relaxation and in this condition the lower physiological processes are undisturbed and consequently do their work perfectly with a resulting normal health. Various sects express this psychological principle in different ways. The religious enthusiast—including the Christian Scientist—does the best he can and lets the Lord take care of the rest. Those who object to pinning their faith on the Lord do the best they can and let the rest "go to the devil." In either case the individual lays his plans, does the best he can, and under proper relaxation the subconscious does the rest. They are all expressions of faith in the consistent undercurrent of reality which will bring things around to a proper pass if one will only give it a chance. It is all a matter of mental adjustment.

Nothing will illustrate this principle better than the phenomenon of somnambulism. When the lower centers are allowed free play the somnambulist will pass through all sorts of dangerous situations and return to bed entirely unaware of his perambulations, the danger he has encountered, and the risks he has run. Intercept him in the midst of his dangerous feats, and disaster is the sure result. Why? The lower centers, if left alone, perform their functions without any conception of relation, and the result is automatism. Let the higher centers get in control, and the relation of things so disturbs the nervous equilibrium that nothing works right. Fear disorganizes the automatic mechanism. In full conscious life the man who never "loses his head" is the man that wins the day in a complicated situation. Such a man simply inhibits or ignores disturbing influences and forges ahead to the attainment of his one end in view. He has lost himself in the thing he is doing and the thing does itself. What is more, it does it naturally and without confusion. Give the conscious a job, and it may forget the job in the contemplation of self. Give the subconscious a job, and that job is completed in spite of adverse circumstances. Faith consists in trusting the job to some one else than yourself, and he who does not realize the powers within himself creates those powers outside himself. Confidence in such a power simply renders quiescent the disturbing influences which prevent the natural working out of the desired end.

All conditions in which mental attitude controls the physical processes can be cured absolutely if the normal mechanism of physical and psychic life can be reinstated. The cure has consisted in the removal of the fixed idea which has control of the situation. This fact is only too manifest in such demonstrations of the efficacy of faith as can be found in abundance in the history of the baths of Lourdes and shrines of similar character. Paralyses disappear like magic because of the faith engendered by the halo of mystery; and cures are accomplished beyond a doubt. But what is the nature of the paralysis and the other conditions that are cured? Usually the condition is the result of a fixed idea, and naturally when the fixed idea is removed the condition disappears. Once this is accomplished and the inhibiting, fixed idea is removed, the physical organism, previously held in abeyance, resumes its normal function. Frequently the patient's own self occupies his attention so fully that he sees nothing else. If he can be taught to ignore and forget himself, the cure is accomplished. He is enabled to forget himself and trust in an external agency by the atmosphere in which he is thrown.

History is replete with the wonders performed at the various shrines. Merely to laugh at all such demonstrations reveals an inexcusable ignorance and bigotry. The thing to do is to search for both the condition and the cure. These principles have nothing to do with religion as such. Therapy and religion have been closely associated because of the fact mentioned above, that when a man does not realize or loses control of the powers he has within himself there is always an appeal to an external source of help. This principle is to be found in its incipiency in the fetich worshiper who sets up his fetich, prays to it, and then destroys it if his petitions are not granted. We need not go to past ages to find the same principle. Analysis of prayers which emanate from pew and pulpit reveals disappointment and at times even irritation on the part of the suppliant in the face of thwarted petitions,

even though the suppliant may close his appeal with "Thy will not mine be done." Through the feeling of helplessness in the face of the multitude of attacking agencies which beset us it is perfectly natural that the appeal for help should be to some power higher than ourselves. Religion furnishes this higher power, whatever may be our views or belief regarding the same, and hence we find religion and therapeutics closely associated. As our knowledge of natural forces has increased our appeal to supernatural agencies has decreased. We have learned that God helps him most who helps himself best.

This brings us to another phase of our subject, viz., to the extent to which faith-cure as an external agency is efficient in a given individual, to that extent did he fail to avail himself of the principles underlying so-called faith-cure as a prophylactic measure. He who is able to benefit by faith-cure could have prevented the condition for which faith was invoked if he had only understood himself. In other words, he whom faith will cure will find within himself the means not only of causing but of removing the condition against which faith is invoked. The real benefit of a faith-cure is in getting hold of one's self. The very essence of psychotherapy consists in getting the patient in position to avail himself of all the powers within himself. At times this end is best reached by dependence upon external powers or influences. But even by this method the gain obtained is by relaxation and submission. Thus the various metabolic processes are given their normal functions, mental and physical relaxation is obtained, and health is the result. To be sure, he who is ignorant of the real method of cure and the psychological principle underlying the same, attributes the cure to the external power in which he puts his faith, whereas the real cure consisted in allowing his own normal functions to have their normal play, undisturbed by baleful influences. Without the mental relaxation essential to a cure, the various functions of the body have been kept in a continual state of confusion, militating against one another, and naturally the result is a disordered physical organism.

The phenomena evoked in a good hypnotic subject illustrate beautifully the possibilities of positive suggestion upon a sensitive subject. Under hypnosis the subconscious becomes accessible, and where the subconscious can be controlled the power of suggestion is very strong. Any suggestion becomes real and is acted upon. At times these subconscious states become sufficiently intense to occupy the field fully to the exclusion of conscious data, and the result is an entirely dissociated personality. This process may and does occur in all degrees of intensity from mere absent-mindedness to a complete change of personality.

The aim of psychotherapy is to manipulate the psychic states of the individual in such manner as to allow the psychic process to follow normal channels. This is the very essence of faith-cure. Just this week there came to the office the daughter of an old lady whom, as the daughter says, the doctors had all given up as incurable. None of them seemed to know what was the matter with her. One gave one diagnosis, and another, another diagnosis. Finally the patient deserted the medical profession, and called in a divine healer. By the time the third treatment was administered the old lady could feel electric currents surging through her body, and today she is as well as ever. Did any advertisement for a patent medicine ever have a clearer ring as to its efficiency as a cure-all than this tribute to the efficiency of divine healing? What healed the woman? It is folly to say that no change in her has taken place. It is equally foolish to attribute the cure to the treatment as such. In fact, there was no treatment, as physicians interpret that term. The divine healer knew less of what was the matter with her than the physicians themselves. Out of his blatant quackery emanated nothing but crassest inconsistency. His partnership with the divine smelled more of hell than of heaven. His self-confidence was exceeded only by his ignorance. Yet he succeeded when the medical profession failed. Why? Because he tapped the subconscious and the subconscious is more credulous than either he or his patient. He pressed the button, and the subconscious did the rest. Quacks often perform cures that baffle staid science in its adherence to physical dogmata. He in his ignorance understood neither the condition of the woman nor the cure he had accomplished. Doubtless he considered himself the instrument of God in the dispensation of health. His very claim as a divine healer leagues him with the mysterious and the supernatural. His own ignorance grows fat upon the ignorance of the public. His self-confident quackery finds its correlate in the credulity of a superstitious public, and back of superstition lies ignorance, mainly ignorance of one's self. The patient in her helplessness did all in her power as a conscious individual to regain her health. She availed herself of every means known to her in an attempt to get well. In her extremity she gave up and surrendered herself to the healing powers of an external agency over which she had no control, and to which she submitted herself completely. It cured her. What is this "It"? Call it faith, if you choose; but it is evidently submission to something other than the conscious content of the individual as that individual has known herself for the past years. That complete surrender of self to an external agency robbed her of disturbing influences and allowed normal processes to establish a normal health.

It is needless to multiply instances illustrating the principle. Every physician has encountered them to his own embarrassment and humiliation. To say that the various cults do not perform cures, and as real cures as redound to the glory of the medical profession, is but to shut our eyes to the truth. To attach the principle to religion and make pilgrimages to shrines simply ignores the psychological principle involved in the cure and which finds exemplification in every individual. He who carries *from* a shrine cure for his ailment carried *to* that shrine both the cause of his ailment and the means of cure for the same. In other words, shrines and their deities will cure nothing that mental attitude cannot adjust. "Ah, there's the rub!" Then how is the mental attitude to be obtained? If the shrine is necessary, go to it. Many, however, get the cure in the seclusion of their own study, facing themselves without shrine or deity. Others need a helping hand, for they themselves do not know what ails them. Here comes in the mission of psychanalysis. By its help the subconscious can be investigated and frequently in the subconscious is to be found the whole cause of a wrecked life, while the individual is entirely unaware of the same. In fact, the subconscious offers an extremely prolific source of therapeutics, and when the medical profession uses hysteria as a diagnostic dumping ground it is not surprising that the sects, isms, and cults grow fat upon the ignorance and credulity of the public, to the dis-

comfiture and embarrassment of the medical profession. Psychic life is more than a mere evanescent effervescence from brain tissue, and by an analysis of the psychic life of the individual many unsuspected causes of disease can be unearthed. These causes and conditions are amenable to treatment, but they cannot be reached by the knife and pharmacopeia.

THE AMERICAN METHOD OF CATARACT EXTRACTION.

By JUAN SANTOS-FERNANDEZ, M.D.,

HAVANA, CUBA.

We intend to be brief in this communication and shall develop our opinion without falling into tiresome details, but missing nothing that would be pertinent to this paper, derived either from our own experience or from the observation of the work of the best ophthalmic surgeons of Europe and the United States. The latter have created a distinct method of their own which could be fairly called the American method of cataract extraction.

When we began to study the diseases of the eyes, the primitive method of couching the cataract had been abandoned definitely, but there were some who were still afraid to resort to the method first described by Daviel in 1752, and seconded by Mery, Du Petit, Saint Ives, and others.[1] De Graefe's imagination thought to solve the difficulties that were attributed to the corneal flap extraction by means of his method of peripheral lineal extraction with iridectomy. In this way the corneal flap was greatly shortened because in the peripheral lineal extraction the sclera was also engaged and by subsequent iridectomy, the delivery of the lens was made easier. Before his premature death at Berlin in 1870, the illustrious master was able to see that his method, although it might pave the way for future work, would not supersede the classic method of Daviel in which a flap of half the cornea was dissected up. For thirty years after De Graefe's initiative, the most noted surgeons of the last half of the 19th century, among whom were Jacobson, Stellwag, Carrion, Panas, De Wecker, Galezowski, Critchet, Weber, Horner, Pagenstecher, and others whose names do honor to the history of Ophthalmology, described many procedures based upon the idea of Daviel and on the initiative of De Graefe, having in mind the intention of obviating the real or supposed dangers of the large flap of Daviel.

Those fears were lessened or partly extinguished by the almost simultaneous discoveries of the application of local anesthesia and of antisepsis based upon the work of Pasteur; and from now on the percentage of statistics was very favorable as concerned the loss of the eyes after the uncomplicated extraction of mature cataract.

Later on for a score of years ophthalmic surgeons made many efforts to avoid another obstacle that still persisted and which consisted in the dangers provoked by the increase in intraocular tension, caused by the cortical material of the cataract remaining in the eye, but not reaching the degree of glaucomatous tension. But as the cortical material, when swelling, reopened the borders of the corneal incision, even six or eight days after the most perfect operation of simple cataract extraction, not seldom this caused partial or total herniation of the iris. To avoid this has been the special care of oculists in recent times; this may have been done by means of irrigation of the anterior chamber or in some other way.

One of the first precautions has been to operate only upon ripe cataracts without any cortical material, but even this does not always prevent the accident. The absence of cortical material is not enough to guarantee the absence of other complications or to render an operated eye immune from the dangers that arise from the increase in intraocular tension and from hernia of the iris.

Conservative surgeons especially believed that irrigation of the anterior chamber, thus clearing it of any cortical material, would be sufficient to remove the dangers that were feared, but others less timid had recourse to iridectomy because in consequence of the partial removal of the iris the dreaded increase in intraocular tension could not cause eventration or other complications.

Following again a conservative opinion, that of avoiding iridectomy, suture of the cornea,[2] without omitting the irrigation of the anterior chamber, was suggested, although there has been more or less opposition to the latter procedure.

This appeared to have solved the problem, especially when others substituted, as being more rational, the making of a conjunctival flap for corneal suture,[3] a device that had been practised by Desmarres, but with another object in mind. The conjunctival flap holds together the borders of the corneal wound, the same as suture of the cornea, and equally avoids prolapse of the iris, being besides of easy practice as well as free from any complications. It has been tried more or less by numerous ophthalmologists, among whom are Landolt, Snellen, Morax, Czermat, Wecker, Fuchs, Axenfeld, Blanco, de Lapersonne, May, Weeks, Arnold Knapp, and others. It seemed as though the question could be limited either to the corneal suture or to the formation of a conjunctival flap, without excluding in both methods irrigation of the anterior chamber if necessary; but at this time one of the more ardent defenders of corneal suture, Dr. Valude of Quinze Vingts,[4] Paris, associate of Chevalereau and Kalt, who had been practising it since 1894, declared himself vanquished and acclaimed the combined extraction method, being convinced, after having had experience in all, that it was the safest procedure.

We do not doubt this in the least, and we have seen it more than once in our own practice; but we have always regarded it as a non-conservative and complicated method, because iridectomy is harder to perform than the simple extraction, since in this latter operation the only instruments required are a lid elevator, a knife, and the fixation forceps. Even the assistant can be omitted, who is otherwise indispensable in the operation of iridectomy if we do not want to expose ourselves to the danger of a laceration of the iris when the patient is not obedient or is oversensitive.

The combined extraction method followed by irrigation of the anterior chamber was seen by us frequently in New York in 1909, when we accepted the courteous invitation which was tended us by the American Academy of Ophthalmology and Oto-Laryngology, and we have alluded to this practice several times in our own papers.[5] At this time we saw the combined extraction with conjunctival flap done by all the ophthalmic surgeons of New York, as if by common agreement,

and iridectomy was done only when the cataract was immature.

This unanimity in a large number of surgeons could have been due only to the fact that they have obeyed their own experience, anticipating themselves to what was later done in some parts of Europe; and it clearly shows by a forced psychological deduction that they felt the necessity of returning to the ideas of the two masters of the 18th and 19th centuries, Daviel and De Graefe. We believe, therefore, that we are justified, as we said before, to call the cataract operation, as it is practised in the United States, the American method of cataract extraction. In this operation we have never seen the escape of the vitreous because this is an accident that the American surgeons take great care to avoid. The combined extraction is slower and requires greater ability on the part of the surgeon. It also slightly affects the roundness of the pupil, that in some patients is almost unnoticed, but these objections are of small importance when we consider the certainty of the recovery of vision with the smallest possible risk of injuring the eye.

In order not to lengthen this paper unduly we shall mention only three cases that show very evidently the security afforded by iridectomy and the danger run when it is not practised.

Case I.—The patient was an engineer who wanted the operation on his left eye done before maturity, in order to avoid the continued growth of his right cataract. Although we feared to operate because of the rapid development of the cataract, we nevertheless did operate, resorting to the combined extraction as a precaution. At the end of four days the wound was healed, but when eight days had passed he complained of not seeing. We could not explain this phenomenon, but with the ophthalmoscope we were able to discover a pyramid of cortical material on the posterior capsule. This was absorbed in course of time without the slightest inconvenience. This could not have occurred if iridectomy had not been done.

Case II.—In this case we operated upon the left eye of a colleague whose right eye had also been operated upon before by us. This simple extraction was easily done, and for eight or ten days the patient was feeling well, but one morning he told us that he had suffered a short and severe pain during the night. We suspected what had happened: the pupil was slightly irregular, and not rounded and on the next day the iris was found to be prolapsing, and it took sixty days to combat it because we did not want to excise it, being afraid of infection.

Case III.—This case clearly shows the advantages of the conjunctival flap. The patient was a lady not over 45, who had a simple extraction made without any difficulty. We dissected the upper conjunctival flap without being afraid of its size, for the larger the better. For four days after the operation the patient felt well, but the anterior chamber was filled with cortical material. We trusted in the flap and in the absence of any inflammation and let her go home on the fourth day, for she lived in another town. She came back in 30 or 40 days, when the cortical material was found to have disappeared, and later on she obtained perfect vision.

From what we have said we can gather the following: There is a unanimous tendency towards practising the combined extraction operation, and while this is generalized we can make the following conclusions:

1. Although cataract operation has reached a high degree of perfection it has slight inconveniences that often give rise to the fear of an unfavorable result following even the most skilful operation. The fear of complications, however, may be dismissed when to the combined extraction operation is added the formation of a conjunctival flap.

2. In any case of old senile cataract with no cortical material, simple extraction is enough if a conjunctival flap is also made.

3. Suture of the cornea in cataract extraction may be resorted to by those surgeons who are accustomed to it and in cases in which they consider it necessary.

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THE MARANTIC STATE.*

By CRAWFORD R. GREEN, A.B., M.D.,
TROY, N. Y.

The term marasmus, to indicate a disease, has disappeared from modern medical nomenclature and no longer appears in good repute as a cause of death. Marasmus to denote a syndrome, however, may lay some claim to respectability, though its synonyms—infantile atrophy, infantile wasting, or the marantic state—are doubtless preferable. In the previous generation, marasmus, the disease, covered a multitude of diagnostic errors, and marasmus, the syndrome, is still confounded by a wealth of ignorance. What we do not now know about this condition will be pointed out clearly enough, no doubt, at some future time; for the present, it presents so much of mystery, that it quite suffices that we humbly confess to no small degree of ignorance regarding it.

The marantic state as an underlying cause of death doubtless plays more havoc than any available methods of investigation could possibly disclose. The underlying disturbance of metabolism which has caused a child to become atrophied and weakened is very often unrecognized as primarily referable to the digestive tract. Erroneous pathological reasons are assigned for the wasting; perhaps the bronchial cough, which almost every marantic child develops, is seized upon to make a possible (or passable) diagnosis of tuberculosis, or perhaps the conclusion is jumped at that the wasting is due to unproved syphilis or congenital heart defect. The child may die of pneumonia, or measles, or whooping cough with no appreciation on the part of its attendants of the fact that the child would not have died had it not been robbed of its natural resistance and weakened by inadequate nutrition—inadequate becomes unassimilable.

We need not here enter into the attempts that have been made to explain this wasting. It is of interest to note, however, that there are those who would have us believe that it is due in all cases to high fat feeding—high fat being a relative term, for very low fat may be very high in a given case. It would be well if this were so, for many of the marantic babies we meet have wasted as a result of protracted fat indigestion that one would readily

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believe it, if it could be proved to be the case. But what of the marantic babies one sees so frequently in dispensary practice that have had no food but condensed milk—that is, no fat at all? These condensed-milk fed babies form a goodly percentage of all the marantic cases, but their presence in the records of a given practitioner is determined largely by the social condition of the cases that he sees. The condensed-milk fed baby, however, though he receives no fat, does receive an excess of sugar. Experience and reason would, therefore, lead to the conclusion that the excess of an ingredient, and not a particular ingredient, in the baby's dietary is the underlying cause of the marantic state. Nature struggles along valiantly trying to assimilate an excess of some nutritional element. Sometimes she succeeds, for far more babies get along with excessively high fat or sugar than do not. Sometimes she fails, an explosion occurs, and unless the condition is at once recognized and the cause removed, we soon have the typical picture of wasting and severe digestive disorders of both stomach and bowels, and at length the patient belongs to that class that has been so aptly designated "mournful looking little old men and women."

What has happened in these cases is simply that the power of the infant to assimilate a certain element has been so greatly overtaxed that it has reached a point where it cannot assimilate the ingredient at all, unless given in minute quantity. To the unknowing the treatment seems superlatively irrational. The patient is emaciated to the last degree, its body is but skin and bones, and the casual observer would naturally conclude that above all else it needs fat. Fat indeed it sorely needs, but animal fat unfortunately it cannot take, and, so long as it is given, the child will assimilate no food. There can be no sadder picture than that of the young mother trying this food, that food, and even some other food, doing in turn all that all the neighbors are ever ready to advise, and yet consigning her child to the grave for the want of a little—just a very little—knowledge that none of her advisers possess! The cemeteries contain hosts of these babies that need never to have died in infancy at all.

The salvation of the marantic child depends upon feeding it no fat. This is true of the condensed milk marantic as well as the high fat marantic, for the marantic condition itself seems to preclude fat assimilation, whatever the primary cause of the wasting may be. Skimmed milk is the sheet anchor of treatment. It makes no difference what other ideas we may cherish as to what to dilute it with, or how many fads and fancies about special foods we may harbor, every result we accomplish will be derived from feeding food devoid of animal fat. No patent food, nor malt soup, nor malted milk, nor whey, nor any other preparation can have the slightest value unless given without cream.

There are but two constant rules for feeding marantic babies. They are: (1) remove all or nearly all the cream, and (2) keep the sugar low. The feeding of marantic babies will vary with every case. One may require plain water with milk and another may need barley gruel; one may need malt sugar and another milk sugar; one may need a laxative and another an astringent; one may require but little food at a feeding and the other much—but all of them need *freedom from fat.*

If skimmed milk is to be used, the baby should first be put upon a formula containing less skimmed milk than normally it would take of whole milk or top milk at its weight. The skimmed milk should then be slowly increased until the normal amount is being received for the given weight. Then, after some days, slowly, cautiously, watchfully work in a little cream—ever so little at first—perhaps skimming off all the cream from the quart bottle except half an ounce. Then in a day or two work in another half ounce and keep working it in, a little at a time, until the tolerance for it is again acquired and the baby can digest whole milk.

Not infrequently so much digestive disturbance is present that skimmed milk cannot be digested at first, no matter how we may dilute or modify it. In these cases, whey is often useful. If well borne, it may be given plain until improvement begins and then a little cream may be carefully introduced in the whey. One ounce of cream to every 20 ounces of milk increases the fat in the food 1 per cent. After a few weeks of this feeding the digestive conditions have usually so improved and the tolerance for fat so increased that we can change to some appropriate modification of milk. Paradoxically, condensed milk may be of temporary use. In marantic cases due to high fat feeding, condensed milk will succeed when everything, except the wet nurse, will fail. A marantic baby of three months with subacute diarrhea lost steadily on skimmed milk, whey, eiweiss milch, barley, and albumin; given condensed milk (one teaspoonful to four ounces of water at first) it gained ½ lb. the first week, and kept on gaining steadily.

The successful conduct of these cases demands fresh air and sunshine abundantly. Fear, the handmaiden of ignorance, consigns many of them to a life indoors. These are the babies that are most apt to have pneumonia or to become tuberculous. The baby should be outdoors continually during all the sunny part of the day. Most marantic babies get rubbed with oil—the oil tradition is well cherished by the laity. We now know that oil is not and cannot be absorbed through the skin. The practice, nevertheless, is not devoid of merit, for the massage itself is of some value by stimulating the circulation. Olive oil internally—a teasponful three times daily is rational and useful. The vegetable fat, which the child can assimilate, helps to a degree to compensate for the lack of animal fat, which it cannot assimilate. Lately, a method of feeding has been devised which utilizes this principle. I refer to homogenized olive oil and fat-free milk, which is a combination of olive oil and milk in which the oil globules are so treated that the oil makes a homogeneous mixture with the milk. Theoretically this would seem to be an ideal food for marantic babies and practically it has given good service in a limited number of cases upon which it has been tried. Unfortunately, the production of this food requires an elaborate apparatus which is as yet within the reach of comparatively few.

25 Second Street.

Protective Power of Clothing Against Cold and Damp.—Professor Terni thinks that cotton composed of twisted fibers, and having a large content of a much more stable fatty material than wool, can be made up with a very small loss of this fat. Thus can be obtained a material, economical, equal to wool in protection against cold and damp, and with a marked reduction in weight—a fact of importance to those who work while on the move.—*The Lancet.*

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, March 18, 1916.

THE ADVERTISING OF DRUG ADDICTIONS.

THE fact that the application of the provisions of the Harrison Law (which has had its critics and its defenders, and of whose pragmatic value we can probably form no just estimate as yet) unearthed, suddenly as it were, at least a million drug habitués, seems to have been a matter of surprise to many. Of all the speculations which are induced by this disclosure not the least interesting is the question how this vast throng acquired the habit. We are of course familiar with the story, so frequently and carelessly given, reflecting on the family physician. The story of an acute illness, with its attendant pain or insomnia, the exhibition of morphine, the exaltation experienced by the patient, his subsequent convalescence and indulgence in the drug to tide him along until complete recovery, and his discovery coincident with, or it may be even before, the latter event that he cannot now do without the drug.

Now this is all very well and probably accounts for a certain number of cases, but it undoubtedly gives rise to many entirely too sweeping condemnations of the profession. Medical men on their part have published their broadsides against the patent medicine industry, the nostrum with a small percentage of opium being especially attacked. According to them the neurasthenic, the hypochondriac, or the self-pamperer reads the circular, studies the label and prescribes for himself Dr. X's Xellent Xample. He gets therefrom the classical symptoms of narcotism, and the feeling of well-being and self-satisfaction which follows the ingestion of the drug precludes any but pleasant feelings. The dose necessarily increases with the tolerance and sooner or later the patient, for such he is in sober reality now, becomes aware that he cannot live without the drug. Whether he continues to get it in the form of the original mixture or turns to some more direct way is a matter of little moment.

This latter method of acquiring an addiction is held to be of prime importance by some. We have been told by officials in the Internal Revenue Office who deal constantly with addicts that it is estimated that 85 per cent. acquire their habit in this way. Probably this, too, is an exaggeration. There has been too little stress laid upon that aspect of human psychology which is responsible for the desire for something above and beyond the ordinary emotional experiences, the "will-to-power" of Nietzsche even if that power be only a belief-compelling phantasy. Poe has said, "Induction, *a posteriori*, would have brought phenology to admit, as an innate and primitive principle of human action, a paradoxical something, which we may call *perverseness*, for want of a more characteristic term. In the sense I intend, it is, in fact, a *mobile* without motive, a motive without *motivirt*. Through its promptings we act without comprehensible object; or, if this shall be understood as a contradiction in terms, we may so far modify the proposition as to say, that through its promptings we act, for the reason that we should *not*. In theory, no reason can be more unreasonable; but, in fact, there is none more strong. With certain minds, under certain conditions, it becomes absolutely irresistible. I am not more certain that I breathe, than that the assurance of the wrong or error of any action is often the one unconquerable *force* which impels us, and alone impels us to its prosecution."

Admitting that this tendency is present in all of us, and a moment's introspection will forbid that we deny it, why should the vast lay public become so intimately acquainted with these drugs? From the classical "Confessions of an English Opium-Eater" of De Quincey to "Shadows of Flames" by Amelie de Rives we have had volumes of printed material dealing with the drug. At the time the Harrison Law was projected the lay press was filled with special articles on the subject. Following the enforcement of the law highly colored stories appeared, dwelling upon the intense sufferings and the crimes engendered by the sudden deprivation of the drug.

It is a matter of common knowledge that slang allusions to drug addictions pass for humor in many circles, not excluding the highest. It is small wonder then, when he who runs may read full information about morphine and other narcotics, that many have impulses to try them. It is, of course, begging the question to say that these public accounts of opiumism deal almost invariably, in part at least, with the suffering attendant upon drug addiction. This makes but little impression upon such natures as are impelled by an ungovernable curiosity, uncurbed by any very well-defined ethical restrictions, the sort of attitude which is rather well summed up in a cant phrase of the day, "I'll try anything once." Was there ever an addict who believed that the drug could become his master until it was proved to him by signs which he could no longer ignore?

By way of prevention, then, medical men should refrain from disseminating the knowledge of habit-forming drugs except, of course, as they are called upon to do so in the treatment of addictions, should refrain from alluding to them in facetious vein, and should influence where they can, the lay press to do likewise. Others who may help in this direction are those who necessarily, in the course of their daily occupation, obtain a varying amount of this knowledge—the pharmacist, the nurse, the veterinary surgeon, the manufacturing chemist, and the lawyer.

A CLINICAL STUDY OF CHRONIC DIARRHEA.

CHRONIC diarrhea is a relatively infrequent complaint in those places in which amebic and bacillary dysentery are absent, although, as it may arise from other causes, it is present to a greater or lesser extent almost everywhere. In the *American Journal of the Medical Sciences*, February, 1916. Dr. Dudley Roberts has a paper dealing with chronic diarrhea from the clinical standpoint. He gives the history of twenty-two cases of the condition and states that in studying these cases he has been impressed with the number of times that concomitant conditions could be held accountable for the looseness of the bowels. In eight cases examination disclosed a definite catarrhal colitis. In two cases examination showed an amebic ulcerative dysentery, and the diarrhea was cured by ipecac therapy. In three cases there was colitis, and many organisms of the flagellate group were found in the fresh dejecta and gastric contents. Local treatment of the stomach and colon by irrigation resulted in a temporary cessation of the diarrhea and the temporary disappearance of the flagellates, but in no permanent relief. In two cases there was seen achylia gastrica in elderly men with atrophic colitis. In four cases there were periodic outbreaks of acute serous colitis characterized by the passage of enormous quantities of practically odorless fluid rich in serum albumin. In two cases there was a definite pulmonary tuberculosis and a good deal of suspicion, although no positive proof of tuberculous enteritis.

From these observations Roberts is led to the opinion that achylia renders the individual more liable to chemical, mechanical, and microbic injury, which gives rise either to irritation of the colon with undue stimulation of peristalsis or to acute attacks of inflammation or to chronic changes in the mucosa. Roberts' summary is as follows: (1) Chronic diarrhea is a relatively infrequent affection. It may complicate any morbid condition, but in the study of this series of cases the attempt has been made to determine the factors responsible for the disturbance of bowel function. (2) Achylia gastrica occurs in about one-third of all cases, but is to be regarded as a predisposing cause of irritation and inflammation of the colon. The most satisfactory results in diarrhea associated with achylia were obtained by the treatment of colonic stasis by diet and of the colitis by appropriate measures. (3) Colitis is not necessarily accompanied by chronic diarrhea, but, particularly in the nervous, seems to give rise to irritability of the colon, which causes frequent evacuations. (4) Colonic stasis may give rise to chronic diarrhea, and dietetic measures which increase peristaltic activity quiet the apparently already overstimulated bowels. Stasis is probably an important predisposing factor in colitis, for the permanent relief of the colitis depends largely on overcoming stasis. (5) Emotional excitability may at times be a factor in causing diarrhea, but nervous states are rarely to be regarded as the sole cause of chronic looseness of the bowels. (6) Hyperthyroidism frequently gives rise to a chronic diarrhea of moderate severity. It differs in this particular from the severe diarrhea, attended with emaciation and prostration, which accompanies destruction of the adrenal gland. It seems quite probable that the latter condition is more common than has been recognized, and is not entirely dependent on the destruction of the gland substance. (7) Success in the treatment of chronic diarrhea is peculiarly dependent upon the exhaustive study of the case by all diagnostic resources, particularly as a combination of factors is not infrequently responsible for the normal activity of the bowel.

THE THERAPY OF IMMORTALITY.

FEAR of death is perforce the most universal of fears. Hall has selected it from the multitude of phobias which harass mankind for a most interesting discussion of the treatment of "Thanatophobia and Immortality" (*American Journal of Psychology*, October, 1915). The dominant note sounded throughout this discussion is one of supreme pragmatic significance. It fixes attention upon the therapeutic reaction of mankind whereby the race has turned to account this otherwise overwhelming fear and obtained from it an incentive and momentum toward the fullest development of life.

The fear of death is the great negative of the will to live. As such Hall compares its place in individual and racial history with the psychology of reproduction, the opposite pole. Both are extreme experiences and thus both are repressed, from both attention is diverted to accessories, to anything that will prevent or postpone the direct envisagement. Again a concentrated interest in either is first manifested at puberty when life moves toward flood tide. It is then that death manifests itself as a reality, even though the very fulness of life at this time urges the latter's claims more strongly. Advance in age and experience but confirms the fact that death cannot be denied. How then shall the individiual confront this, how has the race met it in the past?

The immortality of the race is older than death. Therefore its demand cannot be denied. It has various modes of expression which in turn enhance and elaborate the genetic instinct. There are four chief forms of immortality by which man has sought to satisfy himself; these Hall has named the nominal, influential, plasmal, and orthodox. The first would perpetuate one's name, craves that remembrance at least shall survive death; the second seeks to live on in some service to posterity though the individual name may be forgotten; plasmal immortality is satisfied in offspring, but has its roots genetically so deep that we are but beginning to grasp its significance in all that immortality means through its source or its irradiations and sublimations; orthodox immortality has long directed attention to another life where death may be denied and the will to live may find its most exorbitant phantasies actualized.

Each one of these, selfishly individual or racial in aim, has served a developmental purpose. Even the most self-seeking form has freed man from that

morbid fear that would have blighted all effort and checked all advance. It has transformed the aspect of death or has centered attention upon and directed effort to achievements that should outlive death. In any form it has given a buoyancy and intensity which have been immeasurable progressive forces. Hall gives other groups of theories of immortality which occupy men's thought. All, however, are expressions in one form and another of the fundamental will to live, of the desire for assurance against its opposite extreme. Individual immortality gives this assurance to some, others find it in absorption into the cosmic whole. Nevertheless the therapies of past beliefs have brought us to a fuller and more intense concentration upon this life, and as a result we are building better for the future of the race, while as we slowly overcome the fear of death we are enabled to turn to it with a truer scientific interest which will reveal important facts which fear and loathing have hitherto concealed.

THE FUNCTION OF MILK IN THE SCHEME OF EVOLUTION.

IMMEDIATELY after birth, and before the processes of digestion are established, if soluble proteins are introduced into the stomach of an infant, a certain proportion will be absorbed; if, however, these proteins are foreign, for instance those contained in cow's milk, they will excite biochemical reactions, and lead to the production of specific precipitins in the blood, and therefore they will not subserve the functions of ordinary nutrition.

Dr. Henry D. Chapin writes in the *Scientific Monthly*, January, 1916, on the function of milk in the scheme of evolution and notes that while the carbohydrates and fats in their composition and reaction to the digestive secretions are a good deal alike in different milks, the proteins are essentially different. It is further to be noted that coagulation of the proteins of milk takes place in different degrees in the different species. Thus we are led to two queries: (1) What is Nature's object in presenting a fluid that always coagulates in the stomach that receives it, and (2) why do the milks of different species coagulate in different ways? An answer will be found in studying the relation between the milk and the particular digestive tract that is destined to receive it. While a certain portion of the protein of all milks coagulates on coming into contact with rennin or rennin and acid, the manner and extent of the coagulation will stand in a direct relation to the proper evolution of the digestive tract of the animal.

The milk of herbivorous animals, whose digestion is principally gastric, forms solid curds that cannot easily leave the stomach; on the other hand, the milk of those herbivorous animals whose digestion is principally intestinal, forms gelatinous curds which easily leave the stomach and pass into the intestine. Woman's milk, which is intended for a digestive system in which gastric digestion is more than that of the horse and ass, but not so great as the cow or goat, curds in flakes that stand between the other two types of milk. Hence, it is a law that coagulation of the proteins of milk always takes place in such a way as most readily to adapt the digestive tract for its future work, as this function needs special preparation. It will be then seen that while a certain amount of protein is present in the milk of all animals and is necessary for tissue building and growth, this protein must not only be coagulable, but must curd in a certain specific way in each species of animal for the proper evolution of their digestive tracts.

The fact then must be emphasized that milk through its protein has a developmental as well as a nutritive function to perform in developing and preparing the digestive tract so that it can digest and assimilate food that must nourish the animal in later life. The directly practical point to be deduced from the study is of course the importance of every human mother suckling her own offspring.

EXPERIMENTAL PRODUCTION OF PURPURA HÆMORRHAGICA.

THE close relationship between a diminution in the number of blood platelets and purpura hæmorrhagica has been well known for many years. It has also been shown that an antiplatelet serum can be produced by the injection of alien platelets into an animal and that such serum contains highly specific antibodies. Antiplatelet serum agglutinates platelets both *in vivo* and *in vitro* and eventually has a lytic effect upon them. Lee and Robertson (*Jour. Med. Research*, 1916, xxxiii, 323) have verified the above results and extended their application. They showed that the agglutination and lysis of the platelets require the presence of complement and that complement is actually used up by the reaction. When whole blood was used the mixture clotted in the usual time but the clot did not retract. Their antiplatelet serum was produced by the inoculation of guinea-pig platelets into rabbits. When guinea-pigs were treated with this serum their blood showed an immediate and marked diminution in the number of blood platelets, which was but temporary since the number was again normal in about three days. Coincident with the reduction of platelets there was produced in the pigs "a condition typical in practically every way of the acute form of purpura hæmorrhagica seen in man." There were numerous and profuse hemorrhages, a greatly delayed bleeding time, and a normal coagulation time, but no retraction of the clot. The authors were unable to gain any information as to the manner in which these hemorrhages were produced by histological examination of the hemorrhagic areas. This is very valuable information and the work, if successfully carried on, may lead to the discovery of some method of therapy which will give better results than any we are able to apply at he present time. Transfusion is only too often without favorable effect and the idea of an anti-antiplatelet serum is a fascinating one.

TYPHOID IMMUNIZATION AND LATENT LUES.

THAT the local and general reactions due to injections of sera sometimes light up latent maladies is not surprising, and, in fact, the presence of damaged organs usually offers a contraindication to attempts at immunization. Among young soldiers, however, there should be no latent disease, unless it be syphilis, and the Wassermann reaction should be used in any suspicious case before accepting the

recruit. Nevertheless, latent cases must now and then pass the examiner, and it is only strange that the awakening of syphilis has not been noticed more frequently after immunisations against typhoid fever. Such an accident is of interest in several ways. The patient is made aware of the existence of his disease, which should readily yield to a salvarsan treatment. On the other hand, he may feel that he has a case for damages through some after-development. In the *Müenchener medizinische Wochenschrift* for December 21, Burdach describes the case of a soldier, aged 40, who was immunized against typhoid fever. The local reaction, instead of subsiding, began slowly to extend itself, and no treatment was of avail. Syphilis was vigorously denied, but the Wassermann reaction was strongly positive. When the man's chest was examined the skin was found intact, but a number of subcutaneous nodules were present in the vicinity of the immunizing injections. Vigorous treatment caused a rapid subsidence of the gummata. The disease had probably been contracted some twenty years before.

News of the Week.

City Death Rate.—During the week ending March 4 the total deaths reported in New York City amounted to 1,603, giving a death rate of 14.97, as compared with 1,628 deaths and a rate of 15.20 for the previous week, and 1,548 deaths and a rate of 14.81 for the corresponding week of 1915. There were thus 55 more deaths recorded during the week than during the same week of last year, but all but seventeen were accounted for by the increase of population. The deaths from heart disease, Bright's disease, influenza, bronchitis, and pneumonia were all increased in number as compared to last year, but less numerous than during the preceding week. The death rate for the first ten weeks of 1916 is 15.94 per 1,000 of population, as compared with 14.78 for the corresponding period of 1915.

Decrease in Tuberculosis Death Rate.—The National Association for the Study and Prevention of Tuberculosis recently called attention to the figures covering tuberculosis contained in the United States Census Report for 1914, which show that the death rate from the disease has decreased from 200.7 per 100,000 in 1904, to 146.8 per 100,000 in 1914, a drop, that is, of more than 25 per cent. in ten years. Notwithstanding this decrease, however, tuberculosis caused about 10.5 per cent. of all the deaths in the registration area. As explaining the improvement in conditions, it is stated that in 1905, when the anti-tuberculosis campaign was definitely started, there were in the United States only 39 anti-tuberculosis associations, 115 sanatoria and hospitals, 20 special clinics, and no open-air schools, whereas, at the close of 1915, there were more than 1,500 associations and over 100,000 persons actively interested in combating the disease, 660 sanatoria and hospitals, 450 dispensaries, and 800 open-air schools.

Measles in New Jersey.—An epidemic of measles among the school children of Orange and of Montclair, N. J., has been reported, due, it is said, to wrong diagnoses and inefficient quarantine at the outbreak of the disease. It is stated, also, that many of the children who were sent out from day schools because suffering from the disease were permitted by their parents to attend the sessions of the Sunday schools. The health departments have consequently issued orders that children excluded from school must not be permitted to leave their homes until the quarantine has been lifted by an official of the department.

Health Department Celebrates.—The fiftieth birthday of the Department of Health of the City of New York was fittingly celebrated by a dinner at the Plaza Hotel on March 9, by 250 members of the department and their guests, among them Commissioner Emerson, Mayor Mitchel, Dr. Stephen Smith, who was Health Commissioner in 1866, former Commissioners Dr. J. B. Cosby, E. J. Lederle, Thomas Darlington, and S. S. Goldwater, Dr. Peter H. Bryce, Provincial Health Officer, Canada; Dr. Abraham Jacobi, Dr. William T. Jenkins, Prof. William H. Welch, Dr. Alvah H. Doty, State Commissioner of Health Hermann M. Biggs, and Assistant Surgeon General John W. Trask of the United States Public Health Service.

The Radium Institute of New York has established a weekly clinic at 205 West Seventieth Street and extends a general invitation to medical men to be present any Saturday afternoon. These clinics will be of service to all those interested in the treatment of malignant and benign growths with radium or such adjunct measures as seem indicated. Opportunity will be given to follow up the histories of all cases, and advice will be given relating to any problem of radiumtherapy that may arise. The institution is provided with adequate amounts of radium element. Screenage and dosage are being checked up by instruments of remarkable precision, and much of the results obtained will be presented in the first semiannual report in May. In addition to the use of radium the institute is provided with apparatus for diathermy and *x*-ray treatments. While it is not true that the institution is based solely on philanthropy, it is nevertheless the purpose of the dispensary or out-door department to give aid to as many as possible at a small fee that will support maintenance. As soon as the work can be fully systematized the entire radium will be kept busy for the full twenty-four hours a day. Certain hours are to be set aside for charity patients, and in giving aid to the class of deserving poor afflicted with malignant growths who are now without hope, the sanatorium expects to relieve much suffering. No case will be turned away, for palliative treatment at least can be offered.

Psychopathic Dispensary.—The attention of physicians of Manhattan and the Bronx is called to the free dispensary for the treatment of psychopathic conditions, especially the milder forms, which is maintained by the Cornell University Medical College in conjunction with the Mental Hygiene Committee of the State Charities Aid Association. The work of the dispensary is done chiefly by the staff of the Psychiatric Institute of the New York State Hospitals and by two social workers on the staff of the State Charities Aid Association, who assist the examining physicians at the clinic and when desirable visit the patients in their homes. The cooperation of physicians throughout the city is most earnestly desired in this campaign for the prevention of insanity.

College Increases Requirements.—At a meeting of the Trustees of Columbia University, New York, held on March 6, in addition to the decision to admit women to the College of Physicians and Surgeons, the medical department of the University, as soon as suitable provision could be made, as was

noted in this column last week, the Trustees also voted to increase the entrance requirement to the college to at least two years of college work aggregating seventy-two points, as rated at present in Columbia College for the candidates for the combined course, the requirements to include physics, biology, organic and inorganic chemistry, English, and French or German. It was also decided that, contingent upon financial ability and suitable hospital arrangements, the curriculum of the college be extended from four to five years and include for each student one entire year of practical work in a hospital before the granting of the degree of doctor of medicine.

"Baby Week."—At a conference held in the office of the Health Commissioner on March 10 Mayor Mitchel formally designated the week beginning May 6 as "Baby Week" in New York City. Representatives were present at the meeting from the Chamber of Commerce, the Federation of Women's Clubs, the New York Milk Committee, the National Pure Food and Milk Association, and other similar organizations, and a subcommittee was appointed to prepare plans for the week's observance. Baby contests in all the boroughs and the inspection of the city's institutions for infants and children were among the features proposed.

Charter for Hospital.—The new Broad Street Hospital, situated at 109 Broad Street, New York, has applied to the Secretary of State for a charter, and will be opened as soon as this is granted. The committee in charge has received from various sources in the financial district sufficient funds to permit the equipment of the hospital in a most thorough and efficient manner, and to insure the continuance of the work.

Award Hygiene Prize.—The prize of $1,000 offered through the American Social Hygiene Association by the Metropolitan Life Insurance Company for the best pamphlet on social hygiene for girls and boys has been awarded to Dr. and Mrs. Donald B. Armstrong of Stapleton, N. Y. The paper will soon be issued by the company as one of the health and welfare series published for the benefit of its policy holders.

Civil Service Examination.—The New York State Civil Service Commission will hold a competitive examination on April 8, 1916, for the position of superintendent of the Suffolk County Tuberculosis Hospital, at a salary of $2,000 to $2.500 and maintenance. The examination is open only to physicians who are at least twenty-one years of age and residents of and licensed to practice in New York State, and have had at least three years' experience in the practice of medicine. The examination will cover questions on the practice of medicine, tuberculosis, and hospital management, and experience and training. The hospital is located at Holtsville, L. I., several miles from a railroad station. Persons desiring to enter the examination must file application on blank form E-10 in the office of the State Civil Service Commission on or before April 4, 1916. Blanks may be obtained on application to the commission at Albany, N. Y.

Quarantine Transfer.—Governor Whitman of New York in a speech before the Bronx Board of Trade of New York City on March 11 urged that popular support be given to the measure now before the Legislature by which the control of the quarantine station at the Port of New York will be transferred to the Federal Government.

Public Health Education.—The New York State Department of Health has opened up a new channel for public health education by securing from five railroads in the State permission to post health bulletins in their stations. The railroads are the New York Central, the Delaware & Hudson, the Lehigh Valley, the Erie, and the Pennsylvania. The department hopes in this way to reach thousands of persons with short talks on the prevention of disease. The first bulletin posted calls attention to the danger of communicating measles, scarlet fever, diphtheria, whooping cough, tuberculosis, and similar diseases, by coughing, sneezing, and spitting, and to the danger in the use of common drinking cups, soiled towels, etc. The second bulletin will be a large map of the State of New York showing in which counties suitable provision is made for tuberculosis patients.

Cost of Insane.—The State Hospital Commission in a recent report states that the care of the 36,664 insane patients in the New York State Hospitals during the fiscal year ending October 1, 1915, cost the State $6,865,366. The average cost per patient was $210.89 per annum, or 57.75 cents per day.

Conference of Alienists and Neurologists.—The Chicago Medical Society announces that the fifth annual meeting of alienists and neurologists of the United States will be held under the auspices of the society at La Salle Hotel, Chicago, on June 19 to 23, 1916. Details of the program, etc., may be obtained on application to the secretary of the conference, Dr. W. T. Mefford, 2159 Madison Street, Chicago.

Nurses Graduate.—The annual commencement exercises of the Mount Sinai Hospital Training School were held in the Nurses' Home on March 7, twenty-one nurses receiving diplomas from Dr. Nathan E. Brill.

Typhus Victims.—It is reported from Laredo that Drs. Kolitzky and Rusk, who, with Dr. Baehr, left New York the latter part of January to study typhus fever in Mexico, have contracted the disease.

Dr. Malcolm Seymour of Boston has been appointed State Medical Director of Massachusetts, to fill the position made vacant by the resignation of Dr. Horace D. Arnold.

Professor Girard Dead.—The death was reported recently of Dr. Charles Girard, professor of clinical surgery at the University of Geneva, Switzerland, in his sixty-seventh year.

Centenarians Dead.—Mrs. Mary Hickey, the oldest resident of Binghamton, N. Y., died at her home in that city on March 5 at the age of 108 years. Until a week before her death, it is reported, she spent much of her time piecing bedquilts, and doing it without the aid of eyeglasses.

Patrick Grogan, who was with Gen. Winfield Scott at the taking of Mexico City in 1847, died at his home on March 6, aged 101 years.

Obituary Notes.—Dr. ANSON L. MARCY of East Orange, N. J., a graduate of the Hahnemann Medical College and Hospital, Philadelphia, in 1873, died at his home on March 9, aged 65 years.

Dr. JOSEPH C. CHARBONNEAU of Worcester, Mass., a graduate of the Victoria University Medical Department, Toronto, in 1874, died at his home, of heart disease, on February 9, aged 65 years.

Dr. BENJAMIN FRANKLIN RICHARDSON of Lynn, Mass., a graduate of Harvard University Medical School in 1886, and a member of the American Medical Association, the Massachusetts Medical So-

ciety, and the District Society, died at his home, after an illness of five weeks, on February 15, aged 53 years.

Dr. MILTON EDWARD BAXTER of Jersey City, N. J., a graduate of the Jefferson Medical College, Philadelphia, in 1909, and a member of the Medical Society of New Jersey and the Hudson County Medical Society, died at his home, from pneumonia, on February 22, aged 35 years.

Dr. DAVID ALLYN GORTON of Brooklyn, a graduate of the New York Hygeio-Therapeutic College in 1858, died, on February 22, after a short illness, aged 84 years. Dr. Gorton was a Fellow of the New York Academy of Medicine, and for many years was editor of the *National Quarterly Review* and also of the *Medical Times*. He founded the Eugenic Society of America and was often called the "Father of Eugenics."

Dr. CHARLES E. SCHOLES of Lynn Grove, Ky., a graduate of the University of Tennessee, medical department, Memphis, in 1892, and a member of the Kentucky State Medical Association and the Calloway County Medical Society, died at his home, on February 3, after a brief illness.

Dr. RICHARD S. GRIMES of Lincoln, Neb., a graduate of the Bennett Medical College, Chicago, in 1878, died at his home, after a long illness, on February 14, aged 63 years.

Dr. JAMES PRESCOTT CHAMBERLIN of South Weymouth, Mass., died at Palm Beach, Fla., from pneumonia, on March 3, aged 85 years.

Dr. WILLIAM B. MCCOY of College View, Neb., a graduate of the Starling Medical College, Columbus, Ohio, in 1897, died on February 21 at his home, from pneumonia, aged 60 years.

Obituary.

WISNER ROBINSON TOWNSEND, M.D.

NEW YORK.

Dr. WISNER ROBINSON TOWNSEND of New York, one of the best known of the orthopedic surgeons in this country, secretary of the Medical Society of the State of New York, and until recently secretary of the Board of Trustees of the New York Academy of Medicine, died suddenly, as the result of an accident, on March 12, aged 58 years. Dr. Townsend was born on Staten Island August 5, 1857, and was graduated from Columbia College in 1877 and from the College of Physicians and Surgeons, New York, in 1880, serving later as an interne at Bellevue Hospital. Since then he had practised continuously in New York. He was at the time of his death associate surgeon to the Hospital for Ruptured and Crippled, consulting orthopedic surgeon to the French Hospital and the S. R. Smith Infirmary, a member of the American Medical Association, the New York State and County Medical Societies, the American Orthopedic Society, and the Society of the Alumni of Bellevue Hospital, and a fellow of the New York Academy of Medicine and the American College of Surgeons.

Dr. Townsend had recently suffered from diabetes and from attacks of giddiness, one of which had, a few days before his death, made it necessary for him to abandon an operation which he was performing at the Hospital for the Ruptured and Crippled. It is believed that during another such attack and while attempting to obtain air, he fell from the window of his apartment to the courtyard below, death resulting instantaneously.

Correspondence.

X-RAY TREATMENT OF RINGWORM OF THE SCALP.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—In an article on the "*X*-ray Treatment of Ringworm of the Scalp" in the MEDICAL RECORD of August 7, 1915, Drs. Mackee and Romer describe in detail the "five application" method for depilation of the whole scalp. They state that this method "was originated by Kienböck, and is exceedingly accurate, as is shown by Adamson, Pirie, Sequeira, and many others." This is perfectly true; to Kienböck we owe the clever idea of irradiating the whole scalp in five applications. But I feel that I may claim, not only to have helped to show the accuracy of this method, but also to have rendered it more practicable, and to have introduced it into general use in this country, to be adopted afterwards in France and in America. Indeed, the technique which Drs. Mackee and Romer give as that now in use in Dr. Fordyce's Clinic is precisely that which I first published in 1909, and their description of the method, about which they say "there is nothing original, it being the result of the work of many investigators in the same field," is, with alterations of phraseology, word for word, that which I wrote in my paper to which I have just referred —even to the reproduction of a quaint printer's error, which makes "sine of the angle" into "size of the angle."

To Sabouraud and Noiré above everyone else we are indebted for our present accurate methods of treating ringworm by *x*-rays; but by Sabouraud's original method depilation of the whole scalp in circular areas necessitated from ten to a dozen applications for each patient. In 1909, having occasion to apply *x*-rays to a large number of children in an institution, I sought for some way of reducing the number of exposures for each case, and I came upon an article by Kienböck in the *Archives of the Roentgen Ray*, No. 83, Vol. XII, 1907, in which he briefly described his ingenious method of irradiating the whole scalp, in cases of favus, in 5 or 6 applications, in the following words:

> Favus: The technique consists in a complete irradiation of the whole scalp, divided into five or six separate areas. Of these, three are in the middle line—the vertex, the fore part of the head, and the occipital region—and one, the temporal region, on either side. A medium soft focus-tube should be used, at a focal distance of 16 to 20 centimeters. The dose should be 6 × to 10 × (3 H to 5 H), a dose which should be reduced in the case of children. The face and neck should be guarded by lead shields, as in the accompanying diagram (Fig. 2). [The figure shows a head with four points marked: 1, toward the forehead; 2, on the crown; 3, on the occiput; 4, just above the ear.]

I proceeded to give this method a trial, but it soon became obvious that in order to render it more accurate for use as a routine treatment of ringworm, it would be necessary to measure carefully the distance between the five central points of the areas of application. This distance was fixed at 5 inches (with the anti-cathode 6½ inches away), and in order to maintain accuracy of direction for each application these points were connected by the guiding lines on the scalp; and converging wooden pegs were fixed round the aperture of the tube-shield, in order to keep the tube at a fixed distance from the area under treatment.

I believe that it was owing to attention to these

details that the method became really practicable and that my introducion of the method, by publication of this technique, led to its adoption by others and to its now general employment.

H. G. ADAMSON, M.D.

17, DEVONSHIRE PLACE, LONDON, ENGLAND.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE "WIND OF THE BULLET"—CONCUSSION OF NERVOUS SYSTEM—SCHOLARSHIPS—ARTIFICIAL LIMBS—EXHIBITION OF INSTRUMENTS, CAMERA AND SPECULUM—LABOR OBSTRUCTED BY OVARIAN CYST—RUPTURE OF BLADDER—CHORIONEPITHELIOMA—VESICULAR MOLE OCCURRENCE.

LONDON, March 19, 1916.

THE war has naturally revived interest in the medical and surgical questions involved. Among them is that popularly ascribed to the wind of the bullet. There is nothing surprising in the fact that men may be made deaf by the explosion of a shell near them, just as occurs from time to time through other sudden and violent displacements of air. The auditory sense is the medium of entrance, but the whole nervous system has to sustain the shock and appears to be affected simultaneously. In severe cases concussion of brain or spine may be caused, and it is said many soldiers have been killed without being actually struck by a bullet; at any rate, many have been found insensible and have continued in that state for hours or even days without any wound or any outward mark. On the other hand, there are numerous instances where slight but definite injury to the surface accompanies the most serious symptoms of a general or internal character.

Twenty-five scholarships and exhibitions aggregating about £2,000 in value will be open for competition in May at the University and Kings' Colleges and the East London College. Fourteen, aggreating about £1,200, will be offered in July at the several medical schools.

At a conference in connection with the Exhibition of Artificial Limbs organized by Queen Mary's Auxiliary Hospital, Sir William Watson Cheyne, president of the Royal College of Surgeons; Sir W. R. May, director-general Royal Naval Medical Service, and Surgeon-General Russell, representing Sir Alfred Keogh, Director-General Royal Army Medical Service, were the leading speakers. The chief points emphasized were the importance of fitting the artificial limbs as early as it was possible for them to be worn and of instructing the recipients as to their use. Sir A. May said a month's delay might throw the patient back a year. It was referred to orthopedic surgeons to report on the type of limbs that should be supplied in view of the work to be done. The awards of the committee of orthopedic surgeons were announced.

At the Obstetrical Section of the Royal Society of Medicine Dr. H. Spencer showed a "speculum-camera," a combined Fergusson speculum and camera fixed together by a catch, for taking photographs of tumors and other conditions of the vagina and cervix. Illumination was obtained from six electric lamps surrounding the lens; an exposure of 20 to 30 seconds sufficed. Dr. Spencer also showed a wire-fed tubular needle for use in closing vesico-vaginal fistulæ. This was a modified cleft-palate needle, and he said he had used it for several years. Another instrument he showed was a needle-holder for vaginal hysterectomy and deep pelvic work, designed for ligaturing in deep confined spaces. It was held by a slot at an acute angle with the handles, and as this slot was not extended to the end of the jaw, could be introduced and withdrawn in the same direction by one instrument.

Dr. Salisbury then read an account of three cases of labor obstructed by ovarian cyst. In one the abdomen was opened, a dermoid the size of an ostrich's egg withdrawn from the pelvis, not without some difficulty, and it was ruptured in the process. A dead child was delivered *per vias naturales* with axis-traction forceps. A good recovery followed. In another case the midwife sent for a surgeon, but before he arrived a living child was born weighing 7½ pounds. The patient was removed to hospital, the abdomen opened and a semi-solid multilocular cystadenoma of the left ovary 2½ pounds in weight removed. It had previously ruptured and much blood and mucoid matter was present in the peritoneal cavity. Patient recovered without interruption. In the third case the patient was admitted to hospital in labor. There was a hard mass in Douglas' pouch, diagnosed as ovarian dermoid. The abdomen being opened, the mass was not very accessible and cesarean section was performed by which a living child was delivered. The tumor was then removed and the patient made an uninterrupted recovery.

Dr. Spencer said the first case was treated in the way he had advocated for 18 years, and yet he considered many unnecessary cesarean sections had in that period been performed. He thought it was time they were discontinued for such cases. In the third case pushing up the tumor in the Trendelenburg position, as shown by Bossi to be quite easy, was the best treatment. The knee-chest position under anesthesia might be better still and should certainly be tried before resorting to cesarean section. As to the size of the tumor, it was likened to an orange and to a cocoanut. It was important as to tumors obstructing labor to know the exact size. Likening them to familiar objects was convenient during clinical examination, but when removed by operation their dimensions should be recorded precisely in inches or centimeters.

Dr. Frances M. Huxley read a case of fatal rupture of the bladder during the puerperium. The patient was delivered by forceps. The bladder was not catheterized previously, but all went well until the ninth day, on which, after a stretching movement of the arm a sudden violent abdominal pain came on with vomiting and collapse. Next day she was admitted to hospital with well-marked signs of peritonitis and fluid in the cavity. No urine had been passed for 30 hours; 40 ounces withdrawn on admission and 34 ounces 8 hours afterward. Stimulants were given, but the case steadily progressed to a fatal end. At the post-mortem there was found rupture of a thin-walled bladder forming a jagged slit at the summit of the fundus; no bruising nor any signs of sloughing. It seems almost certain from the history that the rupture took place on the ninth day when the patient made the sudden stretching movement. Forceps had been used, after which atony of the bladder remained, and it was distended when the sudden contraction of the abdominal muscles sufficed to cause the rent in the wall, at the site of which the specimen showed thinning.

A short communication from the president was

read on chorionepithelioma following vesicular mole, and these questions were added to the paper: (1) With what degree of frequency does vesicular mole occur more than once in the child-bearing period of any woman? (2) What is the earliest period at which it is found well marked after the expulsion of such mole? (3) Does it perforate the uterine wall with any degree of frequency before expulsion of the mole? (4) What constitutes the difference between malignant vesicular mole and benign cystic degeneration of the chorionic villi? Might the resisting power of the uterine wall be a factor of some importance? Dr. Routh remarked that 30 years ago if a woman had a vesicular mole a recurrence was possible if she again became pregnant. His experience did not support this, for he had never met with a case of such recurrence.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 2, 1916.

1. Relation of Dulness to Cardiac Outlines. George Cheever Shattuck.
2. Neurological Surgery in a War Hospital. Elliott C. Cutler.
3. The Present Status of Gallstone Diagnosis by the Roentgen Ray. Frederick W. O'Brien.
4. Bridging a Gap in Out-Patient Service. Hilbert F. Day.

1. Relation of Dulness to Cardiac Outlines.—George Cheever Shattuck has attempted by teleorentgenography to check ordinary light percussion, using it objectively with reference to sound, disregarding resistance, and abstaining, as far as possible, from allowing knowledge of anatomy or other evidence to influence the result. Before taking the *x*-rays, the outlines of slight diminution of resonance (*i.e.* slight dulness) were determined by light percussion and marked with wires stuck to the chest wall with adhesive plaster. The accompanying pictures were taken from *x*-ray plates taken with the tube at 6 or 7 feet from the plate to avoid magnification by giving nearly parallel rays. The plate lay against the patient's chest, the tube was behind him. The patient was standing and the pictures were taken at mid-respiration, not full respiration, because the latter alters the relation of the heart to other structures. Shattuck's outlines of dulness do not correspond with the silhouette outlines of the heart, as shown in the *x*-ray. The reasons for this are: first, relative dulness near the heart may be produced by structures other than the heart. Second, slight cardiac dulness, even when the heart is of normal size, generally extends toward the axilla, so that outlines which follow closely the borders of slight dulness fall of necessity upon a curved surface. He considers that the following conclusions seem warranted regarding ordinary percussion: First: It easily reveals gross abnormality in cardiac dulness to right or left. Second: It may suggest slight abnormalities which must then be confirmed or disproved by other means. Third: When percussion indicates slight cardiac enlargement, or no enlargement, palpation, auscultation, blood-pressure, or history may provide further evidence of importance which can be used to check the results of percussion. Fourth: When doubt still remains, teleoroentgenography or the orthodiagraph may be of service; but it should be remembered that variations of heart size are dependent on many factors, and that the average man does not exist. Moreover, the errors of these methods in the hands of one who does not appreciate their difficulties, when applied to the heart, are large. Fifth: Percussion is especially unreliable for finding slight enlargement of the aortic arch, for determining the level of the apex, and for discovering hypertrophy of the left ventricle when there is little or no dilatation. Palpation in the left lateral position is often helpful for solving the last two problems, and accentuation of the aortic second sound, or increase of blood pressure should not pass unobserved. Sixth: It is not worth while to attempt by *ordinary* percussion methods to make a silhouette outline of the heart. It is better to note the relations of dulness in terms of interspaces and anatomical lines, and to compare the findings with a subjective standard based on experience, than to judge of enlargement by measurements of *ordinary* percussion outlines and comparison of them with orthodiagraphic standards. Seventh: The attempt to make silhouette outlines of the heart by means of special methods of percussion has shown, in the hands of a few, results which are good but more or less uncertain.

3. The Present Status of Gallstone Diagnosis by the Roentgen Ray.—Frederick W. O'Brien gives a résumé of a great part of the literature on this subject extending from March, 1913, to September, 1915. The consensus of opinion from such writers as Holland, Cole, George, Case, Pfahler, and Beck of this country, and Mathias and Fett, Haenisch, Edling, and Panner of Europe, is that in at least 50 per cent. of the cases of gallstone condition, the stones can be diagnosed, and well, by the Roentgen ray. O'Brien gives a description of his technique in his Roentgen ray work, and says that success in gallstone diagnosis even may extend to the method used in the dark room. A satisfactory developer is of the greatest importance, and plates that are too dense to be read may be reduced and in that way gallstone shadows detached in the process of reduction that would not be likely to be found in any other way. A description of the various types or kinds of stones and the interpretation of their shadows is given. The Roentgenographic appearance of gallstones will vary according to the amount of lime salts present. Differentiation must be made from shadows caused by food remnants, bismuth remains from treatment or residue from a meal, calcified costal cartilages, calcified mesenteric glands, and, chiefly, renal stones. When no direct evidence of gallstones is found, a negative diagnosis should not be rendered until the indirect evidence of gall-bladder disease has been looked for by serial plates and Roentgenoscopy. This done, a positive or negative diagnosis of gallstones may be made with safety.

New York Medical Journal.

March 4, 1916.

1. Gall-Bladder Diseases. Charles H. Mayo.
2. Gallstone Disease. Benjamin T. Tilton.
3. Cerebrocerebellar Ataxia. Alfred Gordon.
4. Progress in the Treatment of Skin Diseases. George M. MacKee.
5. Recovery of *Streptococcus Viridans* from New York Street Dust. William C. Thro.
6. Methods of Examination in Gastrointestinal Cases. William V. Ewers.
7. Bronchiectasis. Earl H. Mayne.

1. Gall-Bladder Diseases.—Charles H. Mayo, in discussing the etiology, symptoms and treatment of this condition, says that the etiology of diseases becomes clear only as the bacterial or toxic causation is appreciated. Symptoms are the expressed reactions of the protein cells of the body against disease by infection or toxin in developing immunity. Undoubtedly the greatest advance in modern medicine is the knowledge that practically all diseases are the result of protein changes, usually from infection, and that some degree of bacteriemia exists in all infections. The very existence of life itself means a constant fight against its destructive agents until we finally succumb to them. Mayo further speaks of the work of Rosenow in reproducing gall bladder disease, and even stone formation in animals, by means of strains of bacteria grown from diseased

gall bladder and injected into the animal's blood. This is called specific selective affinity. Strains developed from the gall-bladder carried through artificial media develop gastric ulcer in an increasing proportion. It is known that gallstones long since removed from the bladder may retain living bacteria for years. He shows in what different ways or by what avenues the infection reaches the gall bladder, and gives the symptoms of the various pathological conditions that may result. In his treatment of gall-bladder conditions he advises careful, easily digested diet; taking hot water before meals as of benefit in cholecystitis by starting the emptying of the gall bladder and the flow of bile before food enters the stomach and gas formation begins, leaving the gall bladder with a temporary reserve capacity within the limits of unconscious distension following the meal. A knowledge of the structures and function as well as the mechanics of delivery is essential to the proper surgical treatment of these diseases. The following conclusions are presented: Cholecystitis is an infective disease of the gall bladder. The bacteria are in the tissues of the gall bladder. Infection may be mild, acute, chronic, or recurring. Gallstones may occur in mild infections. Cholecystostomy or cholecystectomy without stones or local evidence of infection will not improve the symptoms for which the operation was made. Gallstones may cause mechanical obstruction. Cholecystostomy (with removal of stones, if present) gives high percentage of cure only if the infection has subsided or has been maintained by stones. Cholecystectomy with or without stones in diseased gall bladders or existing cholecystitis gives a high percentage of cure. Reflex gastric symptoms are caused by the infection. The infection may, through local peritonitis, cause adhesions to bowels or stomach or of the liver to the abdominal wall. Symptoms of mild gastric trouble may be nearly constant, increase with exacerbation of infection and subsidence of attack, much like those of ulcer. The etiology may be a small local focus primary in the mouth or secondary in the appendix. Typhoid bacteriemia may be the etiological factor.

5. **Recovery of Streptococcus Viridans from New York Street Dust.**—William C. Thro says that in view of the almost universal presence of *Streptococcus viridans* in infections of the oral cavity and of the respiratory tract and its almost constant presence on the tips of the roots of teeth extracted from patients with chronic infectious arthritis, the recovery of this particular organism from the out-of-door dust seems a matter worthy of investigation. That this dust is inhaled in large amounts no one will deny. *Streptococcus viridans* has also been isolated from New York street dust by the New York Board of Health, as was stated in the *Weekly Bulletin*. In the investigation carried on by Thro the dust was collected on a balcony at the level of the second floor of a building on First Avenue near Twenty-eighth Street. In the beginning several methods were tried for placing the material on the culture media, but the third method was the most successful. In this the dust was swept off the stone columns and the top rail of the balcony, and after being diluted in normal saline, was streaked on plates of North's media. After twenty-four hours' incubation the colonies were fished off and placed on slant tubes of North's media. The cultures were stained later with Gram stain. Several other microorganisms were found, but no attention was paid to them. Of the streptococcus-like colonies that were fished off and found to be Gram positive, seven produced green pigment in human blood agar plates. Of these, two had very long chains up to eighty in number, but the remaining strains occurred in twos, fours, and groups None of the strains of cocci were encapsulated. Other tests followed out proved these cocci to be of this group. Six of the strains were injected subcutaneously, as broth cultures, into white mice, but all of the mice recovered. One strain was inoculated subcutaneously into a half-grown white rat, which died in sixteen hours. The finding of *Streptococcus viridans*, a very common bacterium in infections of the mouth cavity and of the respiratory tract, seems then to have been demonstrated beyond a doubt.

Journal of the American Medical Association.

March 4, 1916.

1. State Health Organization. Charles V. Chapin.
2. Some Essentials to the Development of Efficient Health Organization. J. W. Kerr.
3. Hay-Fever, Its Cause and Prevention. William Scheppegrell.
4. Pollen Extracts and Vaccines in Hay-Fever. Solomon Strouse and Ira Frank.
5. The Treatment of Hay-Fever with Calcium Salt, with a Report of Twenty-six Cases. Harold Wilson.
6. The Spleen: Its Association with the Liver and Its Relation to Certain Conditions of the Blood. William J. Mayo.
7. Cauterization and Fulguration of Bladder Tumors. Howard A. Kelly and William Neill.
8. Precordial Pains of Cardiovascular and Extracardiac Origin: Clinical Varieties, Etiology and Therapy. Selian Neuhof.
9. Certain Aspects of Infantile Paralysis, with a Description of a Method of Muscle Testing. Robert W. Lovett and E. G. Martin.
10. Action of Pituitary Extract. R. G. Hoskins.
11. An Unusual Case of Mesenteric Transplantation. Vicente Castro.
12. Double Induced Pneumothorax. Edward von Adelung.
13. Congenital Anterior Curvature of the Spine: Report of Case. Samuel Kleinberg.
14. A Case of Spontaneous Rupture of the Malarial Spleen. W. E. Leighton and Fred Moeller.
15. Report of Two Hay-Fever Cases Treated with the Pollen Extract. Margaret L. Noyes.
16. Paper Clip in Bronchus Seventeen Years Removed by Superior Bronchoscopy. Edwin Beer.
17. Report of a Case of Tetanus, with Complications. J. S. Gaumer.

3. **Hay-Fever: Its Cause and Prevention.**—William Scheppegrell states that from the standpoint of the number of patients affected, hay-fever ranks among the first of the non fatal diseases. He describes the symptoms, which are only too well known, and under diagnosis says that some physicians still believe that hay-fever is a local manifestation of some constitutional condition, notwithtanding that the majority of patients with similar conditions have no manifestations, and that when pollen is not present, they do not occur. The etiology of this condition was unidentified for a long time. When patients developed an attack in the neighborhood of weeds, the conspicuous goldenrod was at once suspected, and the ragweed with its insignificant green flowers unobserved. Again, the goldenrod is an insect fertilized plant, while the ragweed is a wind fertilized plant. Goldenrod is responsible for only a small percentage of cases. Besides the ragweed, of which two main varieties, the wormwood and the giant, are the most important, there are ten other plants indiginous to the Southern States, the pollens of which produce hay-fever. They all have the same characteristics: they are wind-pollinated; very numerous; flowers are inconspicuous, with no bright color or scent because insects are not to be attracted, and the pollen is formed in great quantities. The development, duration, and conclusion of hay-fever are synchronous with the pollinating period of the ragweeds, and any elevation under 6000 feet may produce the weeds and the disease to susceptible persons. It would appear that there is a wide difference in the degree of susceptibility of different individuals to the pollen. An attack would develop, therefore, only when the exposure overcomes the resistance of the subject and only to this extent. When the attack has been developed once, clinical experience shows that the susceptibility of the patient is increased, indicating that resistance has been lowered. The manner in which pollen excites reaction is dif-

ferent in individuals. Thus, any pollens with prickly coatings fail to produce irritation, while the pollen of ragweed is without spikes but develops marked reaction. It has been asserted that the pollen, under the influence of the nasal secretion, germinates and sends out its germ tubes, thus producing the irritation. This germination takes place only in the presence of sugar, which is absent in the nasal secretion, and is inhibited by sodium chloride, which is present. The process of germination usually takes about two hours, while the local reaction of hay-fever may take place in a few minutes. The majority of hay-fever patients present no unusual abnormal intransal condition except during the attack, and operations for nasal obstruction, unless indicated for other reasons, have been seldom successfull in their intended results, and are rarely advisable. Any of the various treatments for hay-fever have not met with conspicuous success, and the sure means will be in the eradication of the weeds causing the disease. The American Hay-Fever Association has given its first attention to the eradication of ragweed, and the United States Department of Agriculture has assisted and is furnishing valuable information for this work. In New Orleans an organized campaign is being carried on through the State Board of Health, the City Public Works Department, and the Women's Civic League to rid the city of ragweed. The statement that a town is free of hay-fever will prove an advertisement that will easily repay the cost of destroying the hay-fever producing weeds.

5. **The Treatment of Hay-Fever with Calcium Salt.**—Harold Wilson, attracted by the reports of Emmerich and Loew on the very favorable results secured by them from the prolonged administration of calcium chloride in the treatment of hay-fever, began to make a trial of this drug for this condition during the season of 1915. Twenty-six patients were treated; of these, twenty-two received the calcium chloride exclusively, and four patients, who had been under treatment by means of pollen solution injections, were given the drug when their hay-fever symptoms began to develop more or less severely. Twenty-two patients gave a positive ophthalmic or cutaneous reaction to ragweed pollen; four gave a negative reaction to ragweed. Treatment began in June with seven patients; in July with four; in August with fifteen, and in September with two. No patient took the drug for more than eight or ten weeks before the expected attack, and in most cases the period was much more brief. In some of the most favorable cases here reported, the relief came almost at once, or after taking only a few doses. For most patients the prescription was as follows: Calcium chloride, crystals 100 grams, distilled water 500 c.c. A teaspoonful in sufficient water was ordered during or after each meal. This gives the patient about 3 grams of calcium chloride daily. It was not observed that this amount of the drug was followed by any marked bodily disturbance; in fact, much larger doses can apparently be taken with entire safety. As a result of the season's experiments he has made the following deductions: 1. Some hay-fever patients taking not less than 3 grams of calcium chloride daily, even for a short time, are practically relieved from all hay-fever symptoms. 2. Calcium chloride may be taken in doses of 3 grams daily for an indefinite time without any apparent injury. 3. It is not indispensable in all cases for a hay-fever patient to take calcium chloride over a long period of time in order to secure relief. 4. Calcium salts may be given, even when the nature of the patient's sensitization is not known. 5. The clinical results from the administration of calcium chloride in cases of hay-fever are such as to warrant its further trial.

6. **The Spleen.**—William J. Mayo for many years when doing abdominal operations, has made a careful manual examination of the abdominal contents when no risk to the patient was involved. At times careful physical examination by percussion has revealed apparently the area of splenic dulness, but on the opening of the abdomen the fact showed how fallacious percussion had been. He especially draws attention to the association of the spleen with the liver and to certain conditions of the blood. The spleen is closely associated with the liver in function, deriving its blood supply from the same source, the celiac axis, its vein becomes part of the portal circulation. Investigation leads to the conclusion that the function of the spleen is not only to remove from the blood bacteria and other toxic agents, but also to conserve the food values of broken-down blood corpuscles, especially red cells, sending their remnants to the liver for elaboration into energy-producing substances. There is increased hematin and a relative increase of leucocytes in the splenic vein. The spleen is a sieve selecting certain substances—parasitic, toxic and products of degeneration—and, unable to deal with them, passes them on to the liver for conservation. That the liver may adequately maintain this important function, it has been given the power of regeneration. It is interesting to note how the spleen is controlled in its function. That the spleen does not have an important internal secretion is shown by the fact that its removal does not deprive the body of any important constituent; that it is not under the complete control of the nervous system as shown by its scanty supply from Auerbach's plexus. But the spleen contains a considerable amount of non-striated muscle fiber, and it is probable that this muscle has an important function and possibly is responsible for the digestive rhythmic change in the size of the spleen. The presence of this muscle tissue gives important evidence of the primary relationship of the spleen to the digestive system. The relation of the spleen to the blood has been known a long while. All the red-blooded animals possess a spleen. The blood pictures of the various anemias are often the reproductions of the normal blood of lower animals in which a shorter heredity has given less fixed characteristics than in man. The spleen seems to become the graveyard of wornout corpuscles, especially of red cells. It probably does not act on its own initiative, but as though the red cells were sensitized some other place in the body and destroyed in the spleen. It would appear that the excess of splenic tissue thus formed produces a hypersplenism, and unnecessary destruction of red cells. Mayo refers to the cure of anemias from various causes by the removal of the spleen, and says that this suggests that the spleen, not necessary to prolongation of life, and not causing disease on its own account, is the one link on an otherwise fatal chain which can be easily and safely broken. As the removal of the tonsil may prevent generalized infections, so splenectomy may cure disease conditions of the nutritive system, especially those of the liver and blood. He divides enlargements of the spleen into four groups: (1) new growths, not discussed here; (2) infections in which there may or may not be marked improvement, and two cases are cited of syphilitic enlargement, in which removal of the spleen cured the anemia and produced general improvement; (3) splenic enlargement associated with hepatic disease, in which the common forms of cirrhosis of the liver may be divided into three classes: portal cirrhosis, biliary cirrhosis, and mixed types; and relief may be gained through splenectomy, although in his own cases he considers it too early to know the end-results; (4) the blood, as represented by splenic anemia which, clinically, is an entity. His experience in the removal of the

spleen in three cases of Gaucher's disease—a form of splenic anemia—has shown that in the earlier stages the condition is cured by splenectomy. He mentions nine operations done at his hospital for hemolytic jaundice, and further says that he knows of no other operation which gives more brilliant or striking results. With reference to pernicious anemia, of which he reports operations on nineteen patients, he feels justified in performing splenectomy in selected cases. First transfusion of blood may be necessary.

8. **Precordial Pains of Cardiovascular and Extracardiac Origin: Clinical Varieties, Etiology, and Therapy.**—Selian Neuhof. (See MEDICAL RECORD, January 15, 1916, p. 123.)

9. **Certain Aspects of Infantile Paralysis.** — Lovett and Martin present an account of a combined physiologic and orthopedic study of certain phenomena of infantile paralysis. Their work has been done under the direction of the State Board of Health of Vermont, and carried out both in Vermont and Boston. The inquiry was started in the late autumn of 1914, the Rockefeller Institute, through Dr. Simon Flexner, taking charge of the empidemiologic end of the inquiry and opening a laboratory in Burlington, while to Lovett was assigned the therapeutic side, and the physiological department of Harvard University aided in the study, and a system of muscle measurement was devised by Martin. The general thesis of their paper is as follows: The observations in about 300 cases in Vermont have shown that in all cases, old and recent, infantile paralysis has been found in most muscular groups not to be a paralysis in the sense of a complete loss of power, but a weakening of these muscles. Now weakened muscles can, as a rule, be made stronger by judicious exercise, just as can normal muscles. The therapeutic problem, therefore, requires the closest possible study of such muscles and of the therapeutic means by which their individual power may be increased. It is a very important matter to the parents of a child with a gastrocnemius muscle reduced to only 20 per cent. of its normal power whether this muscle ultimately returns to 40 per cent. or 90 per cent. of its normal strength. At the outset of the Vermont work, muscles were classed as normal, partly paralyzed, or totally paralyzed. With the realization that partial paralysis was the usual form of affection, it became imperative to have some scale by which to work out what should be a precise and improved treatment. The muscle test offers a practical quantitive scale by which the effects of modifications of treatment may be studied week by week and month by month. The test devised consists of estimating the strength of the various muscular groups by means of spring balances. Standard positions for each group are chosen, so that the same position is assumed on consecutive observations. The strength test is based on the patient's power to hold a position against the pull of a spring balance, and the resistance registered on the balance in the standard position represents the muscular strength. The pull is exerted from a sling attached to the member to be tested, and the line of pull is at right angles to the long axis of the limb. The balance is hooked into the sling, and the other end held by an assistant. Two tests are taken and the larger reading recorded. The results have been surprisingly accurate, and consecutive readings on the same patients have been used to check up this accuracy. The muscle groups tested are twenty-two in number for each side: in the leg, plantar and dorsal flexion and inversion and eversion of the foot, flexion and extension of the knee, etc., and in the upper extremity twelve tests. Studies were done on 177 patients, on whom 13,000 observations in 400 series were made, forty-four different muscular groups, twenty-two on each side of the body, being available for study. They found that the muscular affection is much more widespread than ordinarily supposed, thus corresponding closely to the pathology as observed of late years. There is also a predilection on the part of total paralysis for the lower leg, and in the observations on the 150 cases the peroneal and anterior tibial muscles showed of all the muscles the largest incidence of total paralysis. It has appeared that the strength of affected muscles tends on the whole to remain stationary or to improve, and that a loss of strength is not to be expected, and when it occurs it should be investigated. Fatigue, ill-health, and over-use of the muscles influence the rapidity of improvement as well as hot weather conditions. As to the effects of treatment, in the time available for observation the following facts appeared: The chance of improvement in affected but not totally paralyzed muscles under expert treatment by muscle training was about 6:1, under supervised home exercises 3.5:1, under home exercises without supervision 2.8:1, while untreated affected muscles in these patients showed an improvement ratio of 1.9:1. These patients were nearly all affected in 1914, and represent cases at the end of the first year. They are all from the Vermont Group and were treated there.

The Lancet.

February 19, 1916.

1. Hunterian Lecture on Ulcers New and Old, Jejunal for Duodenal Ulcers. Sir John Bland-Sutton.
2. Trench Nephritis. W. Langdon Brown.
3. The Use of Condensers in the Diagnosis, Prognosis, and Treatment of Nerve Lesions. Francis Hernaman-Johnson.
4. Some New Forms of Occupational Dermatoses. R. Prosser White.
5. Some Experiments with the Simpson Arc Lamp. J. H. Sequeira.
6. A Brief Account of a Method of Providing Baths for the Soldier in the Field. H. Norman Goode.

1. **Hunterian Lecture on Ulcers New and Old.**—In this lecture, delivered at the Royal College of Surgeons of England on February 4, Sir John Bland-Sutton describes duodenal ulcer, its situation, and some of its complications. He also points out two unusual features common to this type of ulcer, first, that some of the most troublesome ulcers in the pyloric region can neither be seen nor felt in the course of a gastrojejunostomy, and a small duodenal ulcer can only be detected when it involves the peritoneum and produces a tell-tale scar. Second, in all regions of the body open to observation a chronic ulcer is liable to become cancerous, especially between the thirtieth and fiftieth years; this is the age-incidence of duodenal ulcer, but this cancerous change in duodenal ulcers has never been proved. With reference to the jejunal or peptic ulcer, occurring after gastrojejunostomy, he says a consideration of the structural alterations of the jejunum in the neighborhood of the new stoma resulting from this operation leads to some conjectures of interest. There are no valvulæ conniventes in the first four or five cm. of the duodenum, and its wall is thinner than in the remaining portion. A remarkable transformation occurs in the jejunum when the escape of chyme from the stomach is transferred, in consequence of gastrojejunostomy, directly into the jejunum. The wall of jejunum receiving the impact of chyme ejected through the new stoma becomes attenuated, the valvulæ disappear, and the jejunal walls assume the peculiarities of the supra-ampullary segment of the duodenum. This change entails a liability to ulceration so common in duodenum. After giving an account of indirect operations on the viscera and the technique of pylorectomy, he summarizes as follows: Since the treatment of duodenal ulcer passed into the province of surgery it has become the

routine practice to perform gastrojejunostomy for its relief in the hope that by diverting the chyme through the new stoma into the jejunum the ulcer will heal. If the pylorus is obstructed by the ulcer the results are usually good, becase the chyme must pass through the new stoma; but when the pylorus is patent the chyme flows through it and in some instances ignores the new route. The efflux can be watched with the help of an opaque meal and *x*-rays. It is better whenever practicable to excise the pylorus with the ulcerated portion of the duodenum and rejoin the stomach and duodenum on the principle of an end-to-end anastomosis. If this method could be made safe gastrojejunostomy for the relief of chronic duodenal ulcer with an unobstructed pylorus would soon be abandoned. Experience proves that posterior gastrojejunostomy with an obstructed pylorus is a beneficent operation, in spite of the risk the patient runs of getting a new ulcer for an old one. The new ulcer has been evolved in this generation by alterations in the environment of the jejunum brought about by surgery.

2. Trench Nephritis.—In May last the Medical Research Committee, at the request of the Director-General of the Army Medical Services, made arrangements for a number of cases of trench nephritis to be investigated in wards at the St. Bartholomew's Hospital section of the First London General Hospital, under the care of W. Langdon Brown, who reports the results of the study of fifty-eight cases, although 100 cases were taken care of. He calls this condition "epidemic nephritis," and says that while it could be called "trench nephritis," he has had cases occur in orderlies from base hospitals and others who have not been in the trenches. Exposure has always supposed to have been an important cause of this condition, yet, while the troops were enduring cold and exposure during the bad winter of 1914-1915, there were but few cases of nephritis then. It was not until the weather was better that the disease assumed epidemic proportions. Brown doubts very much if more exposure damages healthy kidneys, but does consider that it will exacerbate chronic nephritis. A point deserving consideration is the comparative rarity of the disease among officers. While many reasons are offered and discussed as the probable cause of this condition, Brown seems inclined to accept the theory of specific infection. Tests were made in the laboratory which bore out this theory. Among the symptoms he cites edema, and the frequency of dyspnea as early symptoms; there was a slight, irregular temperature in the earlier stages, sometimes prolonged where recovery was slow, and cough. There was great variability in the amount of urine secreted. Often it was markedly increased while the disease appeared to be fairly acute—*i.e.* there was hyposthenuria or inability to secrete a concentrated urine. The urine was sometimes bright red with blood, sometimes merely smoky, and often chemical and microscopical tests were needed to detect the blood. He was struck with the fact that in some cases blood continued to be poured out in some quantity long after all other symptoms had subsided, as though the damaged kidney continued to leak blood rather than the presence of a hemorrhage inflammation of the kidney. Casts were present in all but three cases; usually a mixture of epithelial, granular, and hyaline. Blood casts and fatty casts were uncommon, as also were crystals. Catheter specimens showed a rarity of organisms. Albumin was, of course, present. His treatment of these cases consisted in a diet poor in nitrogen, on account of the nitrogen retention, but liberal in carbohydrates and fats for limited periods in the smaller stages. Sometimes this proved of benefit, again it seemed to make little or no difference. Brown draws the following conclusions from his study and investigation of this so-called trench nephritis: 1. These cases are true examples of acute nephritis, as shown by (*a*) the combination of edema with albuminous urine containing casts; (*b*) the nature of the proteins in the urine; (*c*) the tests for renal permeability; and (*d*) post-mortem evidence. 2. The cases have been too prevalent to be merely accidental, and the close similarity of the symptoms suggests a common cause. 3. Exposure, water-supply, metallic poisons, or intestinal toxemia can be excluded as the cause. The prolonged cases showed a high percentage of positive Wassermann reactions. 4. The curve of incidence both in this war and in the American Civil War suggests an infective agent, as does the unequal degree to which the different units were affected. This is supported by the extent to which the glomeruli were involved, as shown by the chemical tests and the post-mortem evidence. 5. So far bacteria have not been found responsible for the infection, though more positive evidence might be obtained from earlier cases. Results suggestive of a possible filter-passer have been obtained, but they are not conclusive. The point of entrance of the infection is possibly the tonsils and upper air-passages. Suggestion is made that there is a specific organism responsible which resembles but is not identical with that causing scarlet fever. 6. The outstanding clinical features of the epidemic are: (*a*) The frequency with which shortness of breath occurred at the beginning; (*b*) the great variability in the duration; (*c*) the tendency to remission and relapse; and (*d*) the ultimately favorable prognosis in the majority of the cases.

4. Some New Forms of Occupational Dermatoses.—R. Prosser White gives an account of some new forms of dermatoses occurring as a result of the war. The increased demand for the production of trinitrotoluene, nitrate of ammonium, and nitroglycerine as ingredients for high explosives for military purposes, has produced an increased number of workers in these materials, with the resultant skin conditions. He describes trinitrotoluene dermatitis as seen on the hands, but it may occur on any exposed parts of the body, or wherever the fine powder falls and sifts through the clothing. The earliest rash is a superficial erythema, but as usually seen consists of patchy, irregular-shaped, slightly raised areas of redness varying in size from a pin-head to a shilling, between which is the normal-colored skin. These spots coalesce by spreading at the edges and by the formation of new centers. The parts most affected are the hands and arms, the neck, the lower part of the abdomen, the inside of the thighs and scrotum, the back above the buttocks, the calves, and between the toes. On exposed and constantly irritated surfaces such as the arms, a continuous sheet of redness ultimately develops. The skin becomes greatly thickened and takes on what Sabourand calls "secondary lichenification." Moisture appears to dispose toward the production of vesicles, which quickly rupture by chafing, especially on the thin epidermis of the scrotum and thighs. In this region the inoculation of pyogenic organisms readily produces superficial ulcers. The character of the desquamation follows the ordinary rules and depends upon the severity of the inflammation and the thickness of the epidermis. Crusting is slight. Hot weather and consequent sweating only increase the trouble. In the nitrate of ammonia dermatitis, the symptoms are slight, consisting chiefly of a mild erythema. In stomonal dermatitis, while there is an erythema, the parts are itchy, and cracks form, into which the powder falls, causing excessive irritation and burning. In all

these cases White first prescribes a paint composed of camphor, carbolic acid, perchloride of mercury, picric acid, and alcohol, to be applied by a swab or brush. Proper ointments are applied at night. Another interesting condition described is wet winders' acroasphyxia, in which the distal ends of the fingers and thumbs become anesthetised, due to a preparation containing formaldehyde, and used in what is termed the "conditioning" of thread.

British Medical Journal.

February 19, 1916.

1. Observations on Gunshot Wounds of the Head. Colonel H. M. W. Gray.
2. Treatment of Maxillary Fractures. V. H. Kazanjian.
3. Dental Cases Among Soldiers. Samuel A. Hopkins.
4. Deformities of the Jaws Resulting from Operation or Injury. Percival P. Cole and Charles Henry Bubb.
5. Hunterian Lecture on Ulcers New and Old: Jejunal for Duodenal Ulcers. Sir John Bland-Sutton.
6. Antenatal Clinics and Prematernity Practice at the Edinburgh Royal Maternity Hospital in the Years 1909-1915. J. W. Ballantyne.

1. Observations on Gunshot Wounds of the Head.—H. M. W. Gray states that the principles and practice carried out, almost without exception, by surgeons at work in the military hospitals mentioned are as follows: That infected gunshot wounds of the skull and brain require more careful consideration and prompt attention than similar wounds of any other part; that we can combat and prevent sepsis best by early and complete operations; that we can prevent permanent disability in most cases by systematically removing foreign material or displaced bone from the surface or substance of the brain whenever these are accessible to legitimate surgery; and further, that, by these precautions, the immediate results in the saving of life and more rapid restoration of function, when that is possible, are better than those obtained by more conservative procedures. He notes that they have seen many cases with extensive superficial injuries with little or no damage to the brain, and, on the other hand, many cases in which an insignificant-looking wound of the scalp and skull was associated with most extensive injury to the brain. The size or condition of the wound, therefore, is no indication of how the case will behave. One is told that edema of the brain, and shock or concussion accompanying a serious injury, are such that operation at an early stage is dangerous. Yet, many patients brought to a clearing station in practically a moribund condition, after immediate operation, in a few hours are able to speak intelligently and to take food. In serious cases delay does not seem advisable. Attention is called to the value of local anesthesia for many of the cases. The solution need be injected only into the scalp tissues and pericranium. The skull, dura, and brain will thereafter be found to be insensitive. If adrenalin is mixed with the solution, bleeding of the scalp is reduced to a minimum. After consideration of these facts, more attention is shown to be needed to the probable mechanical effects of the injury and the potentialities for infection than to worry much over the presence or absence of definite symptoms. The lesion is a traumatic one, the possibility of sepsis is great, and things should not be left to chance or until the development of some particular symptom. Among the points given are that there may be multiple injuries, therefore, always have the whole scalp shaved. The force causing the injury is usually very circumscribed, and its effects likely to be localized in the immediate neighborhood of the part which has been struck. Such localized forces, if they have been great enough to cause depressed fracture of the inner table, result, usually, in definite injury to the brain, which asserts itself by immediate or remote cerebral disability. This may occur in pronounced form, although the dura is uninjured; in rare cases it has occurred even when no fracture of the external table has been seen. Experience has shown that a properly conducted, complete operation gives better immediate results, and tends to prevent troublesome sequelæ more surely than an incomplete one. Death is due, practically in all cases, to the effect of sepsis on the injured brain. Efforts, therefore, must be directed to the elimination of sepsis, and excision of the infected parts is the most rapid and certain way of doing this. Proper technique is essential to success. The objects of treatment can be summed up as follows: 1. To prevent or remove infection, thereby preventing further destruction of tissue. 2. To establish diagnosis in some cases of doubt. 3. To remove all sources of irritation to the brain, if this can be done without causing further serious damage to it. One cannot undo the initial surface wound or cerebral lesion, but one can try to procure a condition which will allow healing to occur more rapidly, more normally, and with les permanent impairment of function. 4. In any case to procure rapid healing of the superficial parts, provided that the brain is safe.

6. Antenatal Clinics and Prematernity Practice at the Edinburgh Royal Maternity Hospital in the Years 1909-1915.—J. W. Ballantyne has given an elaborate account of this work covering the years mentioned and has deduced the following conclusions regarding prematernity work in a maternity hospital: 1. A prematernity department is an essential part of a properly-equipped maternity hospital, and it ought to consist of a pregnancy ward, antenatal clinics, and of prenatal nurses (in the extern work). 2. Among the good results coming from it may be reckoned the saving of lives (maternal and infantile), the relief of maternal suffering, the possibility of supervising antenatal hygiene, and the teaching of the normal and abnormal conditions of pregnancy both to students and to post-graduates. 3. The maternity hospital which has such a department will probably have a higher death-rate, for it will inevitably attract to itself cases of a very grave type; but these patients must be treated somewhere, and they will have a far better chance of recovery in the prematernity ward with adequate nursing and skilled medical treatment than in their own homes. 4. The diseases which will be specially benefited by prematernity treatment will probably be albuminuria, eclampsia before the supervention of labor, hyperemesis, chorea, acidosis, threatened abortion, cardiac complications, anemia, chlorosis, hydramnios, phlebitis, pyelitis, and the *antepartum* hemorrhages before the onset of labor; but the ward will also offer advantages to patients waiting for the induction of premature labor on account of pelvic contraction or previous dead-births from any cause. Less common indications for admission will be found in melancholia, alcoholism, jaundice, gastric ulcer, myxedema, mucous colitis, phthisis, recurrent abortion or fetal death, hematuria, injuries, etc., and, indeed, many other uses for the ward will be found after its opening. 5. Further benefit will accrue from the establishment of a well-equipped laboratory, in which the finer methods of clinical investigation can be carried out, as well as by the securing of the services of a pathologist skilled in the special morbid anatomy of the fetus, embryo, placenta, membranes, and liquor amnii.

Berliner klinische Wochenschrift.

January 24, 1916.

Ogival Palate and Adenoids.—Lublinski affirms that now and then children with adenoids fail to improve after not only the nasopharynx, but the nose itself has

been cleared out. That is to say, the child continues to breathe through its mouth, with all the resulting damage to ear, larynx and trachea. But the reason is obvious, for examination in such cases will reveal a high narrow palate in place of the normal broad, low one. The higher and steeper this palate, the narrower the nose, and the higher its floor. As a result air which enters such a nose enters with difficulty the nasopharynx, which is, at the same time, partly occluded below by the low placed velum palate. It is in such a nasopharynx that adenoids form, and complete the obstruction, so that only the mouth remains for breathing. It is therefore readily apparent that removal of adenoids is only a step in the direction of the restoration of natural respiration. In discussing the mechanism of this condition the author does not mention the relationship which is believed to subsist between high palate and deflected septum. For him the problem, because bound up in the development of the upper dental arch, is one for the oral surgeon, for dental orthopedics. This solution of the problem is not of recent origin—in fact, it goes back at least thirty years. The ordinary devices for spreading the upper jaw in the interest of proper alignment of the teeth also tend to overcome the high, steep palate.

Schlayer's Functional Test of Renal Activity.—Wechselmann refers to the intravenous injection of lactose for determining the efficiency of the glomerulous structure of the kidney, with incidental relation to the use of salvarsan. These lactose injections, however, have often been known to cause a violent reaction—chill, fever and vomiting—so that this superior diagnostic resource has been abandoned in some quarters in which the reaction incidence has been as high as 33½ per cent. In some clinics the intramuscular injection has been substituted. But these reactions can hardly be caused by chemically pure lactose. The commercial product such as has been used throughout often contains fungi and other impurities. The author has been testing his lactose for moulds by using special culture media (maltose agar) and makes use solely of sterile specimens in fresh ampoules. In time these become foul, even when pasteurized. The author finally succeeded in preparing ampoules of aqueous solutions of lactose which are guaranteed not to produce the slightest reaction. Of course this new product has become a proprietary under a trade name. The author has employed it for two and a half years and upon thousands of cases, yet never once has he seen any kind of reaction follow its use. Even in mercurial nephritis has he ever seen bad consequences. The diagnostic value of the lactose injections has been admitted by practically all clinicians who have used it. The author is connected with the Rudolf Virchow Hospital at Berlin, and several colleagues have testified as to the harmlessness om the ampoules. The latter are tested in all conditions in which there might be a renal lesion, and in salvarsan therapy the special indication is to determine first the soundness of the kidneys before injecting the antisyphilitic. It would seem that pure lactose solutions could be obtained without having to depend upon a proprietary article intended for private profit.

Münchener medizinische Wochenschrift.

January 18, 1916.

The Diagnostic Value of Gonococcus Vaccine.—Asch and Adler state that we need badly some test to assure us that the gonococcus is no longer in the system, after a period of intensive treatment with clearing up of symptoms. This need which was sufficiently pronounced before the war, has become doubly so in connection with soldiers before returning them to the hardships of the front. One of the authors (Asch) has practised a diagnostic test for several years. In several hundred of the tests made upon troops, 100 gave positive results (42 acute and 58 chronic cases). The injection when possible was made under urethroscopic control and in any case a bacteriological test was made of the urinary centrifugate, urethral discharge, etc. The therapeutic vaccine injection is only from 1,000,000 to 25,000,000 cocci, but for diagnostic purposes from 50,000,000 to 100,000,000 are required. The intravenous method possesses no advantage over the ordinary hypodermic. As a rule the injections are continued several days after all cocci have disappeared from the urethral discharge. When a positive result is obtained we see in from two to three days a urethral discharge and flocculi in the urine and degenerate forms of gonococci, mostly extracellular. The same forms occur in ordinary cultures; and as ordinarily found in the urethral discharge have both diagnostic and prognostic significance. One of the procreative diagnostic injections may not be sufficient, so that a negative result should lead to 1 or 2 repetitions with increased dosage (even up to 125,000,000). This applies principally to chronic gonorrhea.

Surgical Treatment of Nephritis.—Wilk operated on four soldiers with chronic nephritis because of the extreme gravity of the disease and the failure to respond to medical measures. The men were young and presumably vigorous, and the origin of the disease was a mystery. The men blamed exposure and the author suggested that the food and alcoholic indulgence could have played a part. There was extreme anasarea along with ascites, with urine reduced to 1/3 normal. The presence of red cells in the sediment was sufficient to prove the existence of an inflammatory state. The author even proved the "medical" or bilateral nature of the nephritis by urethral examination. Both organs were equally compromised. Decapsulation was performed in all four cases. But one kidney was attacked, twice the right and twice the left. In each case the operation was successfully performed and successfully withstood. As the capsule was adherent externally, separation was tedious and difficult. The cortex was cyanotic, and in places there were large bullæ containing serum between it and the capsule. The kidneys were from two to three times their normal size, and the capsule had become so tense that they were lobulated. Nevertheless, the capsule readily peeled off, but with considerable escape of blood. Within a few days there was notable improvement in the disease picture. Hematurea, however, was present from the first, and calcium chloride was required to check it. In six weeks the anasarea had entirely vanished, and albumin was present in the urine only in traces. The author is in doubt as to the nosologic status of all of these cases. They may have originally represented a functional disturbance, secondary to inflammation of the pararenal tissue. Under such conditions we can very well understand why decapsulations so promptly relieved the renal disability. Apparently the relief effected in only one of the kidneys was sufficient to unburden the other.

The Medical Student and the War.—Charles M. Benson announces that the medical student will be of more service to the nation if he continues his studies and qualifies in three, four or five years' time than if he joins the army as a combatant at present. Also that the country requires, and will require, more doctors, but is getting, and will get, fewer.—*Medical Press and Circular.*

Book Reviews.

AN AUTOBIOGRAPHY. By EDWARD LIVINGSTON TRUDEAU, M.D. Illustrated. Price $2.00. Philadelphia and New York; Lea and Febiger, 1916.

THE world of medicine owes much to the man whose life is here so modestly and so interestingly set forth, and not the least of its debt is on account of this book. Few men have accomplished so much, even without his handicap of ill health, yet what he did was only what another might do if he had the firm will and strong faith of Trudeau, and this book can but serve as an inspiration to many despondent youths who see, or seem to see, the frustration of all their plans and a ruined and shortened life before them. Trudeau's life was anything but what he had planned to make it, yet one can hardly doubt that it was richer in good accomplished, in happiness, and in fame than would have been the career he looked forward to in his early youth.

But this story of a noble life, so simply told, is not one of inspiration only; apart from the lessons it teaches, it is a tale of absorbing interest, richer in adventure, fuller of action, and more replete with genuine humor than many a work of fiction, and it is moreover a recountal of actual deeds, of the accomplishments of a real man. Even were it none of this, it would remain a priceless contribution to the history of medicine, an invaluable account of that campaign against tuberculosis in which Trudeau was one of the greatest generals.

CHIMIE PATHOLOGIQUE TROPICALE DE LA RÉGION ATLANTIQUE. Dr. G. DELGADO PALACIOS, Professeur à l'Université de Caracas, Venezuela. Membre de l'Académie de Médecine. Avec trois planches en couleurs. Caracas: Lit. y Tip. del Comercio, 1914.

WHILE the symptomatology, diagnosis, and treatment of tropical diseases have received a due amount of attention, the chemical pathology of the torrid zone has not as yet been very carefully studied. In the present volume numerous phases of this subject are considered, particularly those in relation to the intestinal flora and the absorption of decomposition products from this region. Several new varieties of intestinal bacteria are described, one, *Micrococcus oxycyanogenes*, which produces a blue substance termed oxycyanin, which is related to hemoglobin, and others which the author groups under the heading of leucochromogenic bacteria. These produce certain urinary pigments, cholerythrin, pseudo-indirubin, pseudo-urobilin-B, etc., which replace the uroerythrin and urorosein of the temperate zone. The chromogens of these pigments in combination with calcium form a substance which appears in the feces, often in considerable amounts, in the shape of brownish granules which the author calls fecal "carcoma" or wood dust. Some of these substances, notably the chromogen of cholerythrin, may be deposited in the liver, spleen, kidney, and other organs, and their presence is associated by the author with the lesions of certain tropical diseases, especially yellow fever. They are also considered by him to be of interest in connection with the origin of diabetes, a disease characterized in the tropics by a lessened tendency to acidosis and coma. There is much of real interest in the book, and while of course the observations need confirmation, they are highly suggestive and deserve the consideration of workers in this field.

THE HEALTH-CARE OF THE GROWING CHILD. His Diet, Hygiene, Training, Development, and Prevention of Disease. By LOUIS FISCHER, M.D., Author of "The Health-Care of the Baby," "Infant Feeding in Health and Disease," "A Text-Book on Diseases of Infancy and Childhood"; Attending Physician in Charge of the Babies' Wards of Sydenham Hospital, and to the Willard Parker and Riverside Hospitals; Former Instructor in Diseases of Children at the New York Post-Graduate Medical School and Hospital, etc. Price $1.25 net. New York and London: Funk & Wagnalls Company, 1915.

THIS book is designed to instruct the mother when remote from her physician, but like many books on popular medicine it attempts too much. For example, it is stated in the preface that the mother is shown how to recognize measles, chickenpox, and smallpox, although even the experienced physician may at times find some difficulty in making a positive diagnosis of any one of these diseases. Again, the frontispiece, which shows the appearance of the normal throat and the throat in tonsillitis, is decidedly an unsafe guide for the parent, for inspection alone may leave the physician himself in doubt as to whether he is dealing with a case of follicular tonsillitis or one of follicular diphtheria. In spite of its shortcomings, however, this book has many good features, among which may be mentioned the descriptions and illustrations of exercises, and the succinct delineation of the common ailments of childhood. The subject matter is couched in language easily understood by the average parent, and the illustrations are generally good and helpful. The mechanical features of the book leave nothing to be desired.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY. A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and Kindred Branches; with new and elaborate tables. Eighth Revised Edition. By W. A. NEWMAN DORLAND, M.D. Price, $4.50 net; with thumb index, $5.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

THERE is little new to be said of a book which is in its eighth edition, for by this fact alone it has proved its right to existence, and final criticism, favorable or unfavorable, of the work as a whole has long since been passed upon it. In this edition one naturally finds a number of new terms—some of them, however, bearing witness to the reviser's zeal for all-inclusiveness rather than to his good judgment. For instance, one early meets the term *abman*, which is defined as "anything which is believed to act as a carrier for maneffluvium." This definition leaves one no wiser than before, for the compiler neglected to define maneffluvium. Words of this sort belong to the "abracadabra" class, useful in swelling the number of definitions but with no right to inclusion in a dictionary of medicine. The pronunciation of the French terms in this work is so bad as to be positively unneutral.

THE MEDICAL CLINICS OF CHICAGO. November, 1915. Published bi-monthly. Price, $8.00 per year. Philadelphia and London: W. B. Saunders Company.

IN this number there are reports of eighteen cases from the clinics of eight men. One case of tuberculoma of the right cerebellar hemisphere receives well-merited and extended attention at the hands of both internist and ophthalmologist. A case of subacute Landry's paralysis is thoroughly discussed, but on the other hand some of the cases are presented in a very hasty fashion. The publication maintains the character with which is started and necessarily some of its faults, but one must admit that, so far, each number has shown a certain amount of improvement over its predecessor.

"SPEAKING OF OPERATIONS," by IRVIN S. COBB. Illustrations by Tony Sarg. Price, 50 cents net. New York: George H. Doran Company, 1915.

A BRIEF, clever and very funny description of a man's experience with the medical, and surgical, profession, written exclusively from the layman's point of view. It will be found a reliable source of amusement to fill an idle moment.

POST-MORTEM EXAMINATIONS. By WILLIAM S. WADSWORTH, M.D., Coroner's Physician of Philadelphia. Price, $6.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

ONE of the most difficult and exhausting tasks which the pathologist has to perform is the making of a careful and thorough post-mortem examination. The greatest success in the application of knowledge and experience to the problems involved can be obtained only in those instances where the technical ability has been so developed that it has become automatic. The beginner in the post-mortem room finds that he is so busy with the technique of his problem that often important points slip past, and his report is defective to that extent. This book has been written to help the novice at the autopsy table, but the experienced pathologist will find in it much that is of value. The author describes in minute detail the process of making a complete post-mortem examination, telling what to look for and how to do it. In addition there are chapters on Special Conditions and on Medicolegal Post-mortems. The work is profusely illustrated with excellent photographs which really illustrate the point which it is desired to show. The author has a rather dogmatic attitude toward his subject, which is perhaps justified by his wide experience, but his views are generally sound, and his technique excellent. The book is one that should find a place in all pathological laboratories.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Regular Meeting, Held February 3, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THIS meeting was held under the auspices of the Section of Medicine.

The Diagnosis of Pulmonay Tuberculosis, with Special Reference to Early Diagnosis.—Dr. LOUIS V. HAMMAN of Johns Hopkins Hospital, Baltimore, read this paper. He said that ten years ago, when the tuberculosis campaign was started, the cry was, "Tuberculosis is a preventable and curable disease." Indeed, stress was laid mainly upon its being a curable disease. It was assumed that every case of pulmonary tuberculosis had an early stage; that this stage could be diagnosed by the skilful; that early diagnoses assured recovery and therefore, that the solution of the tuberculosis problem depended in large measure upon the diagnostic skill of the medical profession. However, in spite of all their efforts, cases of incipient tuberculosis were almost as rare to-day as they were ten years ago. The question arose as to why the early stage of the disease so persistently eluded them. Did the cause reside in the apathy of patients who delayed presenting themselves for examination, or was the medical profession indifferent? Were the technical difficulties so exact that only a few could master them? Or, finally, did the course of the disease present obstacles that were well nigh insurmountable? Indifference to apparently trivial symptoms, and complacent faith in the healing virtue of time, often encouraged a physician to substitute a routine prescription and jovial reassurance for a thorough examination. Mistakes were due far more commonly to carelessness than to the difficulty of diagnostic methods. The undue emphasis that had been put on the physical examination, by distracting attention from other no less important factors, had rather obstructed than facilitated early diagnosis. The apathy of patients, the indifference of physicians, and the difficulties of methods of examination, partly explained the rarity of incipient tuberculosis, but they did not account for it fully. Pulmonary tuberculosis did not always begin in the insidious fashion that propagandists delighted to picture; quite as commonly it settled abruptly upon the victim, and at once involved such a large area of lung and produced such acute symptoms that the disease had no early stage. There was here no chance to display diagnostic skill, for one was totally ignorant of the subtle warnings, if such there were, that foretold the coming catastrophe. Nevertheless it was well known that such sudden outbursts were always preceded by infection, and that a focus of the disease must have been lying dormant in the lung or in a gland. Perhaps if more attention was paid to the discovery of the latent focus of infection one might by appropriate measures ward off these disastrous clinical manifestations. There was one difficulty in the way of early diagnosis of pulmonary tuberculosis that had no counterpart in any other infection and that was that in all other infectious diseases infection and disease were practically synonymous terms; but this was not so in tuberculosis, where the aim of diagnosis was a nice distinction between infection and disease. As was well known there was an almost universal infection of man by the tubercle bacillus, which acquired clinical importance only when it advanced far enough to give disturbing evidence of its presence. In tuberculosis the problem of early diagnosis was not to discover the first evidence of invasion by the bacillus, but to detect, if possible, the stage when latent infection threatened to pass into active disease. The portents of this stage were not at all easy to discern, and sometimes the transition was executed so rapidly that recognition defied the most alert skill. Finesse in percussion and auscultation did not carry one to the end of the diagnostic road; for the lungs of most adults and indeed of many children showed the scars of numerous lesions, and with the present methods of observation they were unable to determine at what time the injury was inflicted. Slight apical abnormalities, such as slight changes in the character of the percussion note and of the breath and voice sounds were evidence of infection and not of disease and taken alone did not decide the diagnosis. Apical râles, however, had a direct and unquestioned significance in the diagnosis of pulmonary tuberculosis. Definite moist râles at the apex when other clinical findings pointed definitely to the presence of pulmonary tuberculosis practically assured the diagnosis. In making the physical examination it was important to have the patient cough that one might not miss the opportunity of detecting the one conclusive feature of the investigation. Pulmonary examinations were still one of the most difficult fields of internal medicine, and one had no right to expect unusual skill in the ordinary physician; and hence it was important to emphasize factors in diagnosis that were more readily determined, namely, the patient's story and the commonplace instruments, the thermometer and the scales. Hemoptysis was an initial symptom of invasion in nearly ten per cent. of the patients with pulmonary tuberculosis. If the significance of this one symptom were conscientiously regarded it would be a great boon to early diagnosis. There was but one absolutely indisputable evidence of pulmonary tuberculosis, namely, the appearance of tubercle bacilli in the sputum. Unfortunately, this was but rarely a sign of early involvement. Nevertheless, it seemed to the writer that in their eargerness to detect the very first stage of the disease they had somewhat neglected the value of sputum examinations. He had the impression that the sputum was not as carefully and conscientiously searched as it was fifteen or twenty years ago when it played a more important rôle in diagnosis. Even the simple microscopic inspection of sputum had an important diagnostic bearing since a hurried glance usually sufficed to distinguish true pulmonary secretion from the mucoid discharge raised from the nose and throat. Sputum examinations to have value should be performed frequently, if there must be a choice, frequently in the usual simple way, rather than occasionally by the more complicated methods. The Roentgen ray which had done so much to assist them in the correct interpretation of gross pulmonary lesions, had proved of little help in the diagnosis of early pulmonary tuberculosis. The Roentgen ray portrayed slight pulmonary changes, but the clinical interpretation was uncertain, because the Roentgen ray could give no etiological or physiological information that would enable one to distinguish between an active or inactive lesion. In this respect the Roentgen ray had all the shortcomings inherent in a physical examination. The writer then discussed the various immunity reactions and stated that tuberculin would never draw a sharp line between infection and disease, and they had no right to expect it to make this distinction. The subcutaneous test was the most certainly eliminating test, for if a patient failed to react to ten or even to five milligrams of old tuberculin one might feel assured that he had no active early lesion. The intracutaneous test, if performed with appropriate dilutions of tuberculin, had a value almost equal to the subcutaneous test in eliminating tuberculosis. Of somewhat less value was the cutaneous test. For lesions open to inspection a focal reaction at once decided the diagnosis. In the use of the tuberculin tests a high degree of hypersensitiveness spoke for activity; a low for quiescence, but there were many exceptions and wide overlapping, so that great caution must be observed in drawing clinical inference. The early diagnosis of tuberculosis was nearly always a probability diagnosis and the lesson for the physician was that he must act upon reasonable probability and not allow the patient's life to be thrown away as he calmly waited the full verification of his suspicions. The important lesson for the sociologist was that he must see the insuperable difficulties in the way of early diagnosis on a large scale and abandon his efforts to make early diagnosis an essential feature of the campaign for the eradication of tuberculosis.

The Diagnosis of Genitourinary Tuberculosis.—Dr. JOHN W. CHURCHMAN of New Haven, Conn., read this paper (see page 511).

Therapy as Related to the Immunology of Tuberculosis.—Dr. EDWARD R. BALDWIN of Saranac Lake, N. Y., said that the knowledge of immunity processes in tuberculosis had not been applied sufficiently in judging therapeutic methods. The tubercle itself was an expression of resistance and any medication that acts on the tuberculous tissue was capable of good or ill effects. The inflammation which accompanied a new outbreak of tuberculosis appeared to destroy many bacilli, and from the intermittent reactions induced in lupus by various means, healing and absorption occurred. Heliotherapy, artificial light, the *x*-ray, and radium induced reactions in the tubercles similar to tuberculin. Some of the recent chemotherapeutic methods, such as the use of gold cyanide and boric acid-cholin, were supposed to

have a direct influence on the tubercle bacilli, but might act only indirectly, the favorable influence being due to the focal reactions. These reactions are more dangerous in pulmonary than in surgical tuberculosis. No special affinity for tuberculous tissue had been found in iodine, arsenic or copper. There was no satisfactory method as yet of measuring immunity to tuberculosis, but serum reactions and tuberculin skin tests should be studied in conjunction with new medication.

Dr. HERMANN M. BIGGS, New York State Commissioner of Health, said that Dr. Hamman had spoken of the campaign in the study of tuberculosis during the last ten years, and he thought it was unfortunate to have the impression exist that this campaign had extended only over this period of time, because it had existed much longer, both the scientific study and the practical preventive measures that had been introduced by it. In New York City this campaign practically began in 1893, more than twenty years ago. Dr. Biggs said he did not find himself in agreement with Dr. Hamman when he said that no more cases of incipient tuberculosis were recognized now than earlier, for that was at variance with the feeling that most of us had. At Otisville this was not borne out unless one defined the term incipient tuberculosis more strictly than was customary. When he was in charge at Otisville 40 per cent. of the patients did not have the tubercle bacilli in the sputum either at the time of admission or during the time of treatment. A large percentage did not have any considerable amount of disease. Recently he had asked for an opinion from those who worked on tuberculosis as to what had been done and what had been accomplished during the last eight years, that was since the last International Congress on Tuberculosis, and at least three referred to the fact that now the diagnosis of tuberculosis was too often made and when it was not justified. Dr. E. R. Baldwin had written: "In the eagerness to make an early diagnosis of tuberculosis, injustice has been done to some persons by placing the stigma on those who at the worst are only suspected cases. A greater feeling of responsibility is needed by medical men engaged in tuberculosis work and especially by the examiners for public institutions." Dr. James Alexander Miller had written: "Another important feature in my opinion is a more strictly medical problem. It appears to me that we are noting a reaction from our former frequent medical mistakes because of which many cases of fairly marked tuberculosis were overlooked. At the present time I feel that in our eagerness to make early diagnoses many physicians are erring on the other side and that consequently our standards for the early diagnosis of tuberculosis may need revision. If I am correct in this opinion, there are a great many individuals to whom a great injustice is done by having a positive diagnosis of tuberculosis made when the most that is justified is a diagnosis of an old inactive disease." Of course this was a difficult problem. It was not simply a question of tuberculosis being present, but what they really wished to know was whether the lesion was active; was there an active disease present? It seemed to him that the onset which was regarded as the beginning was acute frequently enough; the onset might be as acute as the acute disease. But in a large per cent. of the cases, if they went back carefully in the history, they would find a period of weeks or months in which there were evidences of failing health. Many cases with an acute onset were really not followed by extensive disease. They might have hemorrhages, or pleurisy with effusion, after the acute symptoms had cleared up, but there might be a great deal of inflammatory reaction with acute infection and extension that in large part cleared up. After a few weeks they would find the real tuberculous lesion not so extensive. Therefore, he said he would take exception to Dr. Hamman's statement that the socialists must give up hope of preventing tuberculosis except when an early diagnosis was made. Perhaps too much emphasis had been placed upon early diagnosis. It did not seem to matter what was done in the way of prevention. The English stated that they took this position, that it was not necessary to remove the case from the community because the people were all infected anyway. Whether they were infected a little more or less did not matter. It was a question of environment alone that should be considered. It was a disadvantage to remove these patients even when they had positive sputum. Wright stated that to remove all these people from a community would raise the fear that the remaining ones would become more susceptible, a decided disadvantage. Therefore, they treated the cases among the poorer classes in London in their homes. Dr. Biggs said he had no sympathy with this attitude. People should be treated in accordance with common sense rules and scientific thought. Most of the cases occurring in infants either died or got well before adolescence. Then came greater exposure, greater susceptibility of the pulmonary tissues, and then the disease was a different infection from that which occurred in infancy. Dr. Biggs had no doubt but that the preventive measures being now adopted were most efficient in the actual prevention of the disease.

Dr. HAVEN EMERSON, Commissioner of Health of New York City, said that the figures now available showed that only those patients were sent to Otisville or other institutions who had a positive sputum. And so one might consider the discussion which might take place ten years from now reasoning from the status of the patients at Otisville; then they might not forget the definite changes that had taken place in the sanitary control of the disease at certain periods. Patients with positive sputum should be removed because they might become a menace to their neighbors. At Ray Brook it was formerly difficult to get the early cases; the inmates were in the second and third class of cases. The physicians in New York City were then apparently unable to make the early diagnoses. To-day, however, there was a waiting list at all times of incipient and active cases. This was an evidence of a progressive acuteness on the part of the profession in making a diagnosis of these cases. The specimens of sputum sent to the Department of Health for analysis showed an increasing number that were not positive, and this showed an early alertness on the part of the physicians. They must come to the conclusion that the social control of tuberculosis was possible. Dr. Emerson presented some figures for the year 1915 which were of interest in the social grouping of these patients. If we took 100,000 people on the East Side in the Jewish district, the general death rate was 11.3; that from tuberculosis was 1.11. If we moved over to the colored region with its population of 75,000, the general death rate would be found to be 20.9, that from tuberculosis 3.3. If we went to the upper West Side along Riverside Drive the general death rate would be found to be 13.6, that from tuberculosis 0.8. There we had a difference in similar communities, so far as numbers went, from tuberculosis which varied from 0.8 to 3.3, one community having four times the death rate of another. Among the Irish and Jews the tuberculosis death rate was 3.2. To effect the greatest relief to these sufferers they should have medical supervision; the relief would be greater and more continuous if they depended upon medical standards and not on economic standards.

Dr. WALTON MARTIN discussed the surgical aspect of these cases and said that in the first place in surgical tuberculosis we should consider how the focus of infection originated in the body. In all cases of tuberculosis of the bones one must consider the blood stream infection. It was surprising that the orthopedic surgeon obtained such excellent results by simply giving the parts rest, even without further treatment. In any case, after removing the main focus, the patient should be placed in favorable surroundings, at least for a short time. He called attention to the multiplicity of lesions that one occasionally saw and referred to a man with tuberculosis of the ankle and then tuberculosis of the rib. He went away for six months and returned with tuberculosis of the testicle. He again went away for six months, lived in unfavorable surroundings, and returned with tuberculosis of the seminal vesicles. They were removed and now he was practically well and at his job as a ticket-chopper.

Dr. ALFRED MEYER said that he had had experience with extensive bone lesions and his suspicion was excited that these extensive bone lesions were of bovine origin and he asked that those who had the opportunity of studying cases of bone tuberculosis, not involving the lung, would enlist their aid to help determine if these cases were bovine and not human tuberculosis. Recently Dr. Meyer had learned that in the public schools the examinations were made with the clothing on and he asked how one could reach any conclusions regarding the existence of incipient or advanced tuberculosis if such examinations were made through the clothing. That was to him a faithless method of procedure. It was not due to the ignorance on the part of his colleagues but indifference. It really took three-quarters of an hour to make a proper examination of the human chest, and that meant the stripped chest. Personally he admitted that he gave every person he examined at

least twenty minutes before he attempted to reach an intelligent conclusion. He advised against using auscultation before percussion. All students should be taught the method of continuous percussion, especially if they were trying to ascertain whether the base of the lung was thoroughly aerated. There was a series, a composite picture as it were, produced as the individual took a long breath and let it out again. With regard to inspection, this should be done both in front and behind. The whispered voice was a valuable diagnostic aid. In a general survey of the situation he agreed with Dr. Biggs that an early and careful diagnosis was more frequently made nowadays than it was fifteen or twenty years ago. The pendulum had swung the other way. Dr. Meyer referred to scoliosis occurring in working girls. Pictures of them were spread about for educational purposes. These individuals would lose their sleep, lose their appetites, etc., and they would come to the physician looking the very picture of those afflicted with tuberculosis but without any tubercle bacilli being found. He excluded slight cases of scoliosis. He said that if they would be made to stand straight, with their hands by their sides, and if they were watched carefully, the proper diagnosis would be made.

Dr. JAMES A. MILLER said he was much impressed with two or three matters that occurred to him. In Dr. Hamman's paper he said he was much impressed with the emphasis placed upon the importance of diagnosis and symptomatology. Too much emphasis had been placed upon slight abnormalities of physical signs, he thought. In many of these patients certain obscure signs would all clear up in a short time. He could not agree with Dr. Hamman regarding what he said about making an early diagnosis; the fact was that we rarely saw these individuals in the early stages of the disease. In dispensaries and other institutions in New York last year there were 34,000 cases, and nearly one-half were new cases. Of these 30 per cent. were discharged, after adequate study had been made covering a period of months, with a diagnosis made of other conditions than tuberculosis. Dr. Miller thought there was too much refinement of classification and of what was meant by the symptoms. It did not make any difference whether or not the case was a classical one; give the patient the proper treatment. When the disease was localized, and not far advanced, the sanatorium was the place for these patients. If one compared the dispensaries of to-day with the dispensaries of years ago, he would note that we seldom saw the large numbers of bad cases now that we did then. That in itself was good evidence that we were making some progress; although we might have as many cases, the type of cases differed. With regard to the use of the *x*-ray he agreed that while it was often difficult or impossible to make a diagnosis of early tuberculosis by this method, it might be of value in cases in which there was thought to be a moderate amount of disease as shown by the physical signs. One, too, was often surprised that the *x*-ray showed a great deal regarding not only the extent of the disease but also its character. It gave additional important information as to what was going on in the chest. If the diagnosis was difficult to make in the early stages of the disease in adults, it was more so in children. We all had a feeling that there was a great deal of tuberculosis in children, the early recognition and proper care of which would have a great effect upon the future. Again, we should remember there were a great many non-tuberculous patients that required the same care as the tuberculosis. In spite of what Dr. Hamman had told us in his splendid résumé and of the specific therapy spoken of by Dr. Baldwin, Dr. Miller said, after all the situation was rather pessimistic. One prominent physician had told him that "it did not make much difference about the stage of the diease; at the end they all died." He thought we ought nevertheless to look to the future with hope and with confidence. Much had been done and much was being done to-day in the education of the public. Getting these cases early was most important, and the people should be educated how to recognize suspicious symptoms; they then could come to the physician in the early stages and when the disease offered the best hopes for cure. As to the prevention of tuberculosis in children, with or without the disease or the predisposition to the disease, we ought not to be discouraged.

Dr. HAMMAN closed the discussion. He said he had been misunderstood for he did not mean to say that nothing had been accomplished by the antituberculosis campaign. This campaign got a fresh start ten or twelve years ago. With regards to the early diagnosis of incipient tuberculosis he wanted his audience to understand what he meant by "incipient tuberculosis"; his definition was that of the International Association on Tuberculosis. With such a definition in mind every incipient case of tuberculosis could be diagnosed with absolute certainty. There were two groups of cases, those with tubercle bacilli and those without tubercle bacilli, and it was largely a matter of personal opinion on the part of the physician who first examined these cases as to whether they required sanatorium care or not. This broad measure of prevention was very expensive; it certainly was very expensive to treat say 100 persons when only five or ten of that number had definite clinical tuberculosis. The main point Dr. Hamman wished to emphasize was that the treatment of pulmonary tuberculosis from the broad standpoint of prevention had been a failure. He did not mean to say that patients with tuberculosis did not get well, but his experience had been that patients with tubercle bacilli in the sputum and who were sent to the sanatoria, improved; but when they were sent back to the city, after five or six months in the city, they would break down again and be sent to institutions where the advanced cases were received.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held November 23, 1915.

DR. LEROY BROUN IN THE CHAIR.

Presentation of Specimens. — Dr. HERMANN J. BOLDT presented the following specimens:

1. **Fibroma of the Left Ovary Showing a Distinct Capsule.**—This might be considered unusual inasmuch as such ovarian tumors merged into an indistinct tumor which destroyed all evidence of ovarian tissue. Quite frequently microscopical examination showed a malignant change, or they might be of malignant character primarily. In this instance this was a pure fibromatous condition only. The patient from whom the tumor was removed was 27 years of age and her only symptoms were a heavy sensation in the left iliac fossa and pain of moderate severity upon physical exertion.

2. **Ovarian Cyst Showing Well the Ovarian Attachment and the Line of Excision.**—This method of conservation should be practised whenever feasible in non-malignant ovarian tumors.

3. **Adenocystoma of Large Size on One Side with Tuboovarian Cyst on the Other Side.** — Although the tuboovarian cyst was of small size it was not feasible to do conservative surgery since no vestige of normal ovarian stroma was evident. The only symptoms in this case were increased size of the abdomen and hardness in the region of the enlargement.

4. **Fibromyomatous Uterus Removed by Abdominal Hysterectomy after Six Exposures to X-Ray Treatment Had Failed to Diminish the Profuse Bleeding.**—The patient from whom this specimen was removed had had profuse menstruation for five years and during the last year before operation had lost large quantities of blood for ten days to two weeks. The *x*-ray treatment gave entirely negative results.

5. **Septic Uterus Removed by Abdominal Hysterectomy.**—This patient had been delivered by version, and upon the development of symptoms of sepsis had been curetted. Two days after the curettage Dr. Boldt said he saw the patient in consultation. The microscopical examination showed the microorganisms had invaded the myometrium nearly to the serosa. Curettage could not be too severely condemned in such cases. Death followed the operation on the second day.

6. **Myomatous Uterus Removed by Vaginal Hysterectomy.**—This patient had menorrhea and metrorrhagia that could not be controlled by non-surgical measures. As she was 47 years of age vaginal extirpation of the myomatous uterus was deemed preferable.

7. **Carcinoma of the Cervix Showing Distinct Line of Demarcation.** — The specimen showed invasion of the lower segment of the corpus, thus demonstrating the fallacy of high amputation of the cervix. The specimen also showed the impossibility of determining the primary seat of the disease.

8. **Adenocarcinoma of the Body of the Uterus.**—This specimen showed that type of adenocarcinoma that affects the endometrium without extending deeply into the myometrium.

Dr. ARTHUR STEIN said that in looking over the liter-

ature in reference to the treatment of myoma of the uterus with the *x*-ray he had found quite a number of cases in which *x*-ray treatment had been employed and in which operation eventually had to be performed. In all these cases malignant degeneration was found. He was at present preparing a paper warning against the use of the *x*-ray in the treatment of myoma cases. On the other hand, the *x*-ray had a large field of usefulness in the treatment of hemorrhage at the beginning of menopause where the possibility of malignant degeneration could be excluded by the use of the curette. When these cases were treated by the *x*-ray one usually saw a quick stoppage of menorrhagia.

Dr. LEROY BROUN said that with reference to the case in which Dr. Boldt had removed the cyst wall and left as much of the ovary as was possible, if the tumors were small he approved of the course that was taken, but if the tumor was large he did not feel inclined to act in the same way, since large tumors were more likely to be papillomatous than were small ones. Dr. Broun said that of late years he had gone back to the old method of using a large aspirating needle and withdrawing the fluid from the cyst, thus reducing the size of the tumor. One could evacuate a tumor in this way so that when the needle was withdrawn not a single drop of fluid escaped. Dr. Broun asked Dr. Boldt if there was anything suggestive of pure fibroma in this case.

Dr. BOLDT replied that a section taken from the center of the capsule showed it to be a pure fibroma.

Dr. BROUN said that as to the use of the *x*-ray in cases of hemorrhage, he felt that this was a sheet anchor in the relief of these hemorrhages. In carcinoma of the cervix Dr. Broun said that twenty years ago he had a feeling that the treatment then employed was a thing of the past and that they should do either a hysterectomy or some form of cauterization. He wished that Dr. Boldt had given them the final results of the operations in the cases of carcinoma of the body of the uterus, because in looking over the records of the Woman's Hospital (but not the final records) he found that of the patients presenting themselves for operation for cervical conditions, about one-fourth of them had carcinoma of the cervix, which could apparently be permanently cured. In his experience about one-half of the cases with carcinoma of the body of the uterus could be placed as possibly permanently cured. The final outcome in these cases unfortunately had not been traced.

Dr. BOLDT, in closing the discussion, said that as to the conservative treatment of ovarian tumors, he felt that the need of surgery depended upon the actual conditions present. The specimen of ovarian cyst which he presented was not a small one and he thought it would have been bad surgery to have taken the ovary out; it was better in these cases to do conservative surgery. As to diminishing the size of a tumor by use of a trocar, his experience had shown undesirable results, and he had come to the conclusion that a large abdominal incision was better surgery. With reference to myomatous uteri he thought that if the ordinary means of treatment failed it was better to subject the patient to extirpation of the myomatous uterus and that it was not desirable to try the *x*-ray treatment. A study of the results of high amputation of the cervix for cancer of the cervix showed that the results were as good as with vaginal hysterectomy which was done in former years. He had been impressed by the fact that adenocarcinoma of the body of the uterus if not far advanced showed not less than 50 per cent. of permanent cures. As to the cases of septic uterus it was better to treat these in a conservative manner, by leaving them alone.

A Peculiar Case of Intraabdominal Abscess. — Dr. HENRY DAWSON FURNISS reported this case, which occurred in a woman, 40 years of age, who came into his service at the Post-Graduate Hospital in September of this year. The patient stated that she had two children and two miscarriages, the last induced. At the time of admission to the hospital she stated that she had missed two periods and that a midwife had attempted to induce abortion but that no fetus or large clots of blood had escaped. The midwife made a second attempt and again the result was only slight bleeding from the uterus. The patient's temperature at the time of admission was 100° F. and her pulse 90. Examination yielded no evidence of attempts at abortion. In the region of the left tube there was a slight tenderness but nothing could be felt. For three days her temperature remained about the same; then it went to 102° and the pulse to 115. At this time she complained of pain in the lower left abdominal region. The leucocyte count was 15,000 with 80 per cent. polymorphonuclears. Further examination showed a mass about the size of a hen's egg in the lower left portion of the abdomen, superficial and more anterior than one would expect with a pus tube. At operation the omentum was found adherent to the abdominal wall on the left side. In breaking this loose an abscess containing about two ounces of pus was evacuated. There was no evidence of any involvement of the tube or ovary. The patient made a slow but uneventful recovery. It was later learned that the patient had been using morphine and had given herself a number of injections into the abdominal wall. This had caused three or four areas of induration. Possibly the abscess was produced by an injection into the peritoneal cavity. Dr. Furniss said that in looking over this history he was inclined to believe that the amenorrhea was due to morphine habituation and not to pregnancy.

A Case of Relaxed Vesical Sphincter with Incontinence of Urine Cured by the Kelly Operation. — Dr. HENRY DAWSON FURNISS reported this case, which occurred in a woman 41 years of age, who at her last confinement had a post-partum hemorrhage and was torn. Since this time she had had feeling as though the uterus was prolapsed. Three years ago she noticed that when she was walking she had some incontinence of urine. Later she became unable to retain her urine when on her feet. A year ago she noticed a hard nodular swelling in the lower part of the abdomen. Physical examination showed a first degree laceration of the perineum, the cervix lacerated and somewhat enlarged, the mass in the abdomen a pedunculated fibroid of the fundus of the uterus. After cystoscoping the patient, upon withdrawal of the instrument it was noticed that the sphincter did not close over the urethra as it should. An operation was performed at which the pedunculated fibroid was removed and a Kelly operation for the urinary incontinence was done. This consisted in making a median incision from near the urethral orifice bakward to the cervix. The bladder was separated from the vagina about one and one-quarter inches on either side. A Pozzi catheter was placed in the bladder and as an attempt was made to withdraw this it localized the sphincter of the bladder. Mattress sutures were so placed that they infolded the urethral sphincter on its under surface as they retracted the sphincter. Two rows of three sutures each of linen were placed under. The wound was closed with catgut. While the patient was in bed for twelve days she had to be catheterized. At present there was no leakage and the patient could hold her urine three hours or longer.

Dr. HERMANN J. BOLDT, speaking of the Kelly operation, said that sometimes it failed entirely, sometimes the results showed some improvement, and sometimes they were good. This could, however, be said of all operations. The operation was one that struck him theoretically as being the best operation, and he thought that he would continue to use it. As to the case of abscess between the omentum and parietal peritoneum he had had one instance, but he had not been able to learn just what the cause was; the pus showed the presence of the colon bacilli which caused suppuration. It was likely that a local inflammatory area was infected by the colon bacilli.

Dr. HIRAM N. VINEBERG said that local infection in such cases as Dr. Furniss had reported occurred when an instrument perforated the uterus. He recalled the case of a woman admitted to the hospital with the omentum in the vagina as the result of an attempt to empty the uterus with some sharp instrument. She had only a slight temperature and made a good recovery. The omentum was excised, the rent in the uterus repaired, and an uneventful recovery followed. As to the operation of choice for incontinence of urine, Kelly's operation gave the best results, but even that failed quite frequently.

Dr. LEROY BROUN said that cases of incontinence of urine due to relaxed vesical sphincter were improved for a time only by operation. Dr. Boldt had described an operation before the Amerian Gynecological Society which he had been using and in each instance the results had been satisfactory. In his opinion this was a thoroughly scientific surgical operation.

Dr. FURNISS said that in the case of the abscess the omentum was not adherent to the uterus. It was well against the abdominal wall and free in the abdominal cavity. In the cases of incontinence he thought one should always take into consideration the amount of

nerve damage that was done. In some the inervation was so damaged that no operation could be successful. Care should also be taken not to tighten the sphincter too much, thus causing a condition analogous to stricture and which might result in serious renal damage.

Uterus Bicornis Unicollis: Abscess in Right Cornu; Amputation; Normal Pregnancy in Left Cornu. — Dr. HARRY ARRANOW reported this case, which had been referred to him for a profuse, purulent, intractable leucorrhea by Dr. William H. Boese. The patient was 27 years of age and gave a history of very irregular menstruation, every five to ten weeks, of five days' duration, profuse and painful at times. She had been operated on at the Presbyterian Hospital for the condition for which she was referred to the speaker. Physical examination showed the os uteri discharging purulent material through an apparently normal os. There were apparently two uterine bodies, freely movable with deep depression between them. There was some fullness and tenderness in the right fornix. Pressure on the right side produced a free flow of pus from the cervix. The patient was admitted to the hospital with the diagnosis of uterus bicornis unicollis. At operation this condition was found. The two horns were of about equal size and development. The right cornu was amputated and the opening at the junction of the two cornua was closed with chromic catgut. The patient improved but still had some discharge. She was again anesthetized and after dilating the cervix she was curetted and the remains of the canal of the right cornu which had been left in the cervix was cauterized. The patient made an uneventful recovery. She shortly afterward married and became pregnant within a few months and was delivered of a normal baby at full term in September, 1914.

Abortion with Expulsion of the Placenta at the Third Month—Full-Term Baby at Nine Months (Probable Twin Pregnancy).—Dr. HARRY ARRANOW reported this case. He was called to see the patient when she was three months pregnant. She was suffering with severe abdominal cramps and profuse uterine hemorrhage. The cervix was soft and the os patulous. A piece of the placenta could be felt presenting at the os. Curettage was offered but refused. The cervix and vagina were packed and in the course of two days two pieces of placenta were removed, the patient ceased to bleed, and the case was dismissed. Four months later the patient returned, showing all the signs of advanced pregnancy. She was delivered of a normal baby on July 5, 1912, six months after the abortion.

Unusual Case of Ruptured Ectopic Pregnancy.—Dr. HARRY ARRANOW reported this case, which occurred in a woman 31 years of age. In the early part of July, 1915, realizing that she was pregnant, she made several attempts at abortion but without success. On August 5 she was seized with sharp pains in the right side and lower abdomen. She went into collapse and was rushed to the Lebanon Hospital and admitted to the service of Dr. Rongy. She presented all the symptoms of a ruptured ectopic pregnancy. There was one thing that did not fit with a diagnosis of ectopic pregnancy, and that was that the uterus was the size of a two months' pregnancy. On opening the abdomen the tubes were both found to be normal. On lifting the uterus a ragged hole was found on the posterior surface of the uterus about three cm. from the right border. The diameter of the opening was about two cm. The immediate supposition was that in the attempt to produce abortion the uterus had been perforated. However, on removing the clots of blood an ovum of about six weeks' development was found lying free in the pelvis. The abdomen was closed in the usual manner and the patient made an uneventful recovery.

Dr. JOHN O. POLAK asked if the case reported was not one of a uterus unicornis with a rudimentary right horn. Unless this was so he felt that the uterine wall was weakened by the extensive resection. He referred to a case in which the woman miscarried at three months but, notwithstanding, the uterus grew larger until it corresponded to full term size, when she had her labor and was delivered of twins, one a well developed child and the other a fetus papyraceous, flattened on the living companion. A large placenta showed the cord single.

Dr. HIRAM M. VINEBERG recalled a case in which a woman had an intraperitoneal hemorrhage and the abdomen was filled with blood. He pulled up one tube and found it perfectly normal; likewise the other. He then thought it woud be better to deliver the uterus, and just behind the insertion of the tube he found a small mass the size of an almond which caused the hemorrhage. Another case also came to his mind in which the surgeon opened the abdomen and finding it full of blood suspected the tubes. Finding nothing he closed the abdomen. The patient died, and at autopsy it was found that she had an interstitial pregnancy.

The Ultraviolet Rays in Gynecology; A Preliminary Report.—Dr. ALFRED HELLMAN read this paper in which he stated that the value of light therapy though possibly not proven from what might be called the laboratory or scientific standpoint had been shown empirically to be of undoubted value by the work of such men as Rollier at Leysin, and Bernhard at Smaden. The vale of the particular rays at the ultraviolet end of the spectrum had likewise been shown. It had been proven that light was a bactericide and penetrated the human and other animal tissues. In many pathological conditions the value of the ultraviolet rays had been shown to be of value as, for instance, in many skin diseases, almost all forms of tuberculosis, wounds, gangrene, sciatica, neuralgia, anemia, chlorosis, leukemia, asthma, arteriosclerosis, gout, rheumatism, and of most interest to gynecologists in ulcers of prolapsed uteri, gonorrhea, menorrhagia, dysmenorrhea, fluor albus, and pelvic inflammations. The field of gynecological conditions to which ultraviolet and other light therapy might be applicable had as yet been very little explored. It was not even mentioned in the textbooks; even those on medical gynecology failed to speak of it. The reader of the paper said the work of Fromme of Berlin, the results of which he had personally witnessed, had stimulated his interest in this subject. In a paper read before the Gynecological Society of Berlin in 1914, and which had not to his knowledge been published, Fromme stated that sunlight therapy derived its great vaue from the fact that sunlight was rich in ultraviolet rays. These rays were rapidly absorbed and their action was chemical, bactericidal and physical (hyperemic). The local action was manifested by reddening of the skin, lasting three or four days and folowed by a gradually darkening or brown pigmentation. Fromme reported 26 cases treated for pelvic inflammation, of which 25 were cured. The other was operated upon and proved to be an ovarian cyst. Dr. Hellman said that the method which he used was based on what he had learned from Professor Fromme at the Charité in Berlin. The apparatus used was the Küntzliche Hohensonne Lampe designed by Dr. Bach and Dr. Nagelschmidt. The burner was a transparent quartz tube eight to twelve cm. in length, on the ends of which were two transverse tubes which contained the mercury electrodes. The electrode vessels were provided with fan-shaped metal coolers with which the heat loss and the current consumption were regulated. On each electrode between the coolers was situated the beaded lead which conducted the current to the lamp. The lamp was suspended in a casing of highly polished aluminum. The upper hemisphere was the casing proper, while the lower half formed a closing cap. This cap was adjustable and had an aperture with a revolving screen behind it. This revolving screen had smaller apertures so that any desired amount of light could be allowed to pass. The entire lamp could be easily raised or lowered on an easily movable upright and tripod. A direct current was enclosed in a perforated nickel-plated casing and suspended from the upright. The resistance was especially constructed to meet the particular demands of the quartz lamp. Mounted on all of this was the switch and the plug to which the lamp was connected. The ultraviolet rays of the lamp which produced the therapeutic results were not at all absorbed by the quartz glass. The patient was placed before the lamp in a reclining position and the part of the body to be rayed was exposed. The eyes of the patient and of any one else in the room were carefully shielded by dark glasses. The lamp was then placed at the desired distance so that the ray fell where needed and the current was allowed to flow. The length of exposure was guided by a schedule suggested by Professor Fromme, always remembering that a brunette could stand in the earlier treatment a longer exposure than a blonde. At the first treatment the patient was placed 75 cm. from the lamp and the exposure was for one and one-half minutes. The second treatment was given on the third day, when the distance was 65 cm. and the exposure two and one-half minutes. Treatments were then given three times a week and the distance gradually lessened until the patient was 40 cm. from the lamp, while the time of exposure was gradually lengthened to twenty minutes. The reader stated that to date he could report eight cases of pelvic inflammation abso-

lutely cured by this method. They were teated ambulatory without any other therapeutic measures being employed, and the diagnosis in each instance was confirmed by three colleagues. After relating the history of these eight cases the reader concluded that this method should be tried in every case of pelvic inflammation of the subacute and chronic variety before operation was advised, and especially if the more generally used methods had been tried.

Dr. JOHN O. POLAK said that Dr. Hellman's paper brought up a new field for gynecological consideration. In the first place one might ask what constituted a cure. They all knew that a large number of inflammatory conditions did clear up and disappear entirely if sufficient time was allowed, even when no violet rays were employed. In both post partum and post abortal infections the condition was often stimulated by manipulation. Many of these patients went from one doctor to another and from one dispensary to another and the condition was kept up by the repeated tamponing and manipulations. With the entire absence of treatment many of these conditions would clear up of themselves. The two points to be emphasized were that the pelvic organs should be left alone and that light and heat should be used as Dr. Hellman had done. Too much importance should not be given to the effect of light in these cases until they knew more about it.

Dr. HERMANN J. BOLDT said that the paper had brought up a new line of thought. He hardly felt that they were justified in accepting what had been said about the merits of the ultraviolet rays at the present time without further experience. As had been said, a large number of these cases if left alone would clear up and do nicely.

Dr. SAMUEL W. BANDLER said that during the reading of the paper the question that suggested itself to him was: "Was any other treatment given during the application of the ultraviolet rays?"

Dr. HELLMAN replied that the patients were told to rest as much as possible.

Dr. BANDLER said that he did not doubt that the therapeutic measure offered was of value but that Nature did more for these patients than anything that they could do. Conservative treatment of any sort helped nature. The giving of light and the ultraviolet rays only helped nature. The cure of pelvic inflammation of a chronic nature was accomplished in much the same way as was that of tuberculosis. An obstacle to improvement in these cases was that they were overtreated as a rule. Many of these patients did better if they were not treated at all. If manipulations of a forceful character were attempted it was natural that the inflammation, if mild or sub-acute, would not improve. This method presented by Dr. Hellman was valuable because it implied the absence of any local therapy which might irritate. It was quite possible that in the violet rays themselves there was something which stimulated the circulation and in that way enabled the patient to overcome and pass off the residual lymphatic irritation.

Dr. LE ROY BROUN said he coud not fall in line with those who had entered into the discussion when it was implied that all treatment of pelvic inflammation had been done away with. Constant manipulation did not result in anything but disadvantage in such conditions, but there was no doubt that the old treatment was in assistance in placing these patients in a more comfortable condition. The employment of local applications at proper intervals was no doubt all right and he did not feel disposed to disregard this entirely. When the properties of the actinic rays were first brought to their attention it was shown that they were of sufficient strength to pass through the entire body. If this was possible it seemed to him that they might be of help in these acute processes that were deeply seated.

Dr. HIRAM VINEBERG said the discussion he had just listened to made him feel that they were all very poor observers. Otherwise how could it be that a therapeutic measure, which experienced men had advocated very strongly, would later be just as strongly condemned? To-night it had been stated that it was very dangerous to employ any local treatment in pelvic exudates, yet he could remember with what enthusiasm Brandt's pelvic massage had been adopted in pelvic exudates, and to his mind it was still a valuable procedure in chronic cases without any fever. One should be very modest in his claims with any therapeutic measure when the diagnosis and results depended upon pelvic and abdominal palpation. However, any therapeutic measure which promised any aid in the treatment of pelvic ailments in women should be heartily welcomed. Whether the deep violet rays had such power had still to be proven, but from what he had learned of the agent in the hands of others he had grave doubts on that point.

Dr. HELLMAN, in closing the discussion, said there was absolutely no heat at all connected with this treatment and none of the results of heat were produced. He had tried to be as conservative as possible in the care of these patients and in his deductions. In the acute conditions he believed it would have been suicidal to have done more than he outlined, for here time was a factor that should be more considered. If anyone would pick up the volume recently published by Rollier he would be impressed with the remarkable results obtained on the mountain tops with tuberculosis patients. If they believed that this treatment owed its beneficial results to the abundance of ultraviolet rays in the sunlight on high mountains they must believe that there was something in this concentrated sunlight treatment. Dr. Kosmak had recently told him that he believed in placing a patient with post partum sepsis on the roof in the fresh air and sunlight as quickly as possible. If the sunlight helped these conditions why should not concentrated sunlight (ultraviolet rays) be of some value? He believed it was a very important factor in the treatment of gynecological conditions.

Emptying the Uterus in the Early Stages of Pregnancy with the Aid of Pituitrin.—Dr. JACOB L. BUBIS of Cleveland, Ohio, presented this paper. He said that in cases in which emptying the uterus was indicated, many physicians having begun to remove a dead fetus or retained placenta, were compelled to stop in the midst of their work on account of the alarming hemorrhage, and either use hot irrigations to stimulate uterine contractions or pack the uterus with gauze and let nature finish the work for them. It was, however, possible to empty the uterus in the early stages of pregnancy within a few minutes with the aid of pituitrin and a curette, the patients losing very little blood and suffering no collapse or shock even in the most severe cases. No hot irrigations were required to assist the expulsion of the fetus or placenta, nor were any hot irrigations or packing used after emptying the uterus. After citing several typical cases the writer summarized as follows: 1. Preliminary packing of the cervix and vagina to induce softening of the cervix and to stimulate uterine contractions was usually unnecessary. 2. No packing was placed in the cervix or vagina after emptying the uterus. 3. The injection of pituitrin was given after the cervix had been dilated, while the patient was under an anesthetic, the dose of pituitrin being one c.c. 4. Very little blood was lost while removing the placenta piecemeal. 5. The uterine cavity decreased in size as rapidly as its contents were removed. 6. No hot irrigations were necessary. 7. The total operation took only a few minutes.

Dr. ARTHUR STEIN stated that the question arose as to whether it was always necessary to employ pituitrin injections in cases of this type. He did not think that any gynecologist had ever seen a bad hemorrhage following curettage if the operation had been done properly and all the uterine contents had been removed. The use of pituitrin was a good thing, but it was not absolutely necessary in cases of abortion. The use of pituitrin in incomplete abortion he did not believe to be entirely satisfactory, and it certainly could not take the place of the curette. An important field in which they could use pituitrin was in giving the injection before doing an abdominal or vaginal cesarean section. They had used it in 22 cases with marvelous results. The operation was practically bloodless after its use. When the operation was started 1 c.c. of the solution was administered and then the uterus would contract and they could proceed with a bloodless operation.

Dr. JOHN O. POLAK stated that he had had 20 cases of incomplete abortion in which pituitrin had been employed without curettage, and spontaneous evacuation had not occurred in any of them. So far as the use of this agent was concerned he felt that in abortion it was ineffectual and retarded rather than favored the evacuation of the contents of the uterus.

Dr. SAMUEL W. BANDLER said he had had considerable experience with pituitrin during curettage. Dr. Bubis had spoken of the use of iodoform packing for the purpose of softening the cervix, but this was not the reason that iodoform gauze packing was indicated. Dr. Bandler said that if one found that abortion was inevitable, then in order to dilate the cervix he advocated the introduction of iodoform gauze into the cervix

and packing the vagina thoroughly with iodoform gauze. Ergotole should then be administered by way of the mouth. At the end of forty-eight or seventy-two hours, when the gauze was removed the ovum would often be found separated from the uterus and could at once be readily removed by the placental forceps. The more he had seen of these cases the more firmly had he decided not to attempt any dilatation of the cervix with instruments. He had curetted many of these cases and bleeding had never been so profuse as to cause him to stop. When the ovum was intact he never used a sharp curette, but always one blade of a placental forceps. If one emptied the uterus and then scraped away what was adherent to the placental site, that alone would make the uterus contract. This contraction was not entirely the effect of the pituitrin, although it might be of some assistance. Dr. Stein had referred to the use of pituitrin in cesarean section, and he had himself, after giving pituitrin, seen the uterine contraction so pronounced that after the uterus was incised there was often some difficulty in extracting the baby. Pituitrin was a wonderful agent in the labor stage, or when the uterus was emptying itself of a baby. It was possible that in an abortion if the ovum was completely separated from the uterus, the use of pituitrin might cause the ovum to be expelled. In inevitable or incomplete abortion ergotole was of the greatest value taken by mouth or by needle during the act of emptying the uterus.

Dr. Hiram N. Vineberg said he would not let such statements go unchallenged. He did not believe in emptying the uterus at the second, third or fourth month by packing with iodoform gauze. To him this was a very dangerous procedure. He knew of at least two deaths that occurred as the result of temporizing with gauze tamponading, one case at the fourth month and one at the eighth week. He knew of other instances in which severe infection had followed such a course. In infectious cases gauze simply dammed back the discharges and was a very dangerous thing, providing a good medium for the growth of bacteria.

Dr. Max Rosenthal reported the case of a woman who entered the hospital after the fetus had died several hours previously with but slight pains, and who was very anxious to return home as soon as possible. There was no dilatation of the os. He told the house surgeon to give her 1 c.c. of pituitrin at 2 P.M., and he saw her at 3 P.M. When he arrived the stillborn baby had arrived. The woman was seven and a half months pregnant. This was the only instance in which the pituitrin worked so quickly. In no case of incomplete abortion had he seen any result from the administration of pituitrin in really expelling the fetus.

Dr. Bubis, in closing the discussion, said that in cesarean section if the pituitrin was given after the abdomen was opened it did not in any way interfere with the delivery of the child. It should be borne in mind that in country practice one could not always return and remove the packing although it was best in cases of retained placenta to remove it as soon as possible. He always used the sharp curette and had never experienced any trouble with his method. A placenta at three months or more would often cause considerable bleeding when an attempt at removal was made. The uterus would be found quite flabby, and if great care was not used it might be penetrated by the instrument; with the use of pituitrin one had practically a firm wall on which to work.

THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting, Wednesday, February 2, 1916.

Dr. William J. Taylor, Vice-President, in the Chair.

Pharmaceutical Superstitions. — Dr. Horatio C. Wood stated that the clinical usefulness of any drug could not be determined alone by empiricism or laboratory investigation, but should be based rather upon a combination of reason and experience. The belief of Churchill, who introduced the compound syrup of hypophosphites that consumption was due to deficient oxidation in the body, and that the hypophosphites would correct this fault was said to be incorrect. The hypophosphites were eliminated unchanged and had practically no effect upon the system. Basham's mixture, used by many as a sort of specific for nephritis, while containing iron which might be indicated in cases of diseased kidney with anemia, could have no action upon the kidney itself. Basham had distinctly recommended it for its chalybeate action. The astringency of the preparation interfered with its value as a hematinic. Neither this nor any other preparation of iron, the author said, exercised any real curative action in Bright's disease. Lithium had been introduced by Garrod with the idea that it would increase the solvency of uric acid in the blood and thereby prevent the deposit of urates in the joint which he believed to be the cause of the gouty symptoms. In the doses in which they could be given to human beings, however, without causing serious poisoning it had been shown that lithium salts did not increase the solubility of sodium urates. The action of lithium could not be explained by its diuretic effect since its salts were no more active diuretics than the corresponding salts of sodium of potassium. The widespread use of lithium Dr. Wood declared to be dependent chiefly upon the beneficial effect of the so-called lithia waters, but these waters contained such small amounts of lithium that in order to get a dose of five grains a person must drink 30 gallons of water. Manifestly, therefore, the benefit was due to the water and not to the lithium. The use of opium as a local remedy was said to be based upon superstition; the combination of lead water and laudanum used as an embrocation was declared to be highly irrational; while opium was mildly irritant, there were other drugs much more valuable for counterirritation. The use of the opium suppository in pelvic disorders was said to have no reasonable foundation, its action being purely systemic, quieting the pain of the irritated bladder as would a hypodermic of morphine. The aromatic spirit of ammonia, so widely used as a circulatory stimulant, it was shown could have no direct action upon the circulation. Ammonium salts when administered by the mouth were immediately carried to the liver where they were broken up into urea and hence never reached the heart. When given hypodermically they were carried to the heart before going to the liver and therefore might exercise a stimulant action. Even this effect, however, lasted only about ten minutes and could therefore scarcely be of practical value. The beneficial effects observed to follow the oral administration of ammonia were regarded as probably reflex from irritation of the gastric mucous membrane and were quite analogous to those seen from the use of smelling salts.

Overactivity as a Potent Factor in the Etiology of Some Functional and Organic Nervous Diseases.—Dr. Alfred Gordon presented the results of his study from the standpoint of the principle of nervous exhaustion in this series of cases comprising functional and organic nervous diseases. It was observed that individuals suffering from the same disease did not have the same parts of their body affected. Inquiry had been initiated regarding the cause of this variability. Cases of occupation neuroses, lead intoxication, pernicious anemia, progressive muscular atrophy, poliomyelitis, paresis and tabes had been studied from the above standpoint. He was not in accord with the principle first enunciated by Weigart and Roux upon the energy of cells surrounding a diseased cell and later clinically and experimentally elaborated by Edinger. In connection with the occupation of the patient and the greater efforts used by one part of the body than by another, attention was called to the effect of overfunction of organs upon their early morbidity. Dr. Gordon believes that a body potentially diseased, or under the influence of a disordered metabolism through the presence of a toxic material would develop morbid phenomena primarily in parts functionally exhausted. Early treatment with removal from the usual occupation at the earliest possible moment tended to prevent localized morbid manifestations.

A Study of Signs and Symptoms of Autonomic Disturbance in Pulmonary Tuberculosis.—Dr. Myer Solis-Cohen observed that while little attention has been paid by writers upon tuberculosis to the manifestations of autonomic disturbance, the larger number of cases of pulmonary tuberculosis showed autonomic disturbance. Of the 109 patients forming the basis of the study 37 were males and 72 females. The ages ranged from ten years or under to seventy years and the various stages of pulmonary tuberculosis were exhibited. The autonomic phenomena observed in the patients were: Dermographia in 92 per cent of males; 82½ per cent of females. Enlargement or prominence of the thyroid gland in 72½ per cent of males; 77½ per cent of females. Tricolored nails in 54½ per cent of males;

69½ per cent of females. A showing of the sclera above or below the cornea upon opening the eyes widely in 63 per cent of males; 48½ per cent of females. A similar showing of sclera without widening of the palpebral fissure in 50 per cent of males; and 60 per cent of females. Sweatings exclusive of night sweats in 33½ per cent of males; 54 per cent of females. Migraine in 11 per cent of males; 62 per cent of females. Flushing in 22 per cent of males; 56 per cent of females. The production of a black line by drawing silver across the face in 28½ per cent of males; 44 per cent of females. Urticaria atacking at some time 25 per cent of males; 46 per cent of females. Subjective symptoms of cold 16 per cent of males; 27 per cent of females. Elevation of the eyebrows upon opening the eyes widely 42 per cent of males; 26 per cent of females. Asthma presented at some time in 17½ per cent of males; 20½ per cent of females. Burning, especially of one side of the face or one part of the body in 6 per cent of males; 24½ per cent of females. Angioneurotic edema in 10½ per cent of males; 28 per cent of females. Bleedings or tendency to bleeding, exclusive of hemoptysis in none of males; in 29 per cent of females. Subjective sensations of heat in 6 per cent of males; 26½ per cent of females. A showing of the sclera above or below the cornea on fixation in 23 per cent of males; 11 per cent of females. Hay fever in 12 per cent of males; 6 per cent of females. In connection with the general nervous and vasomotor symptoms other than those enumerated it was noted that of the 47 patients exhibiting nervous symptoms (12 males and 35 females) 23 were between the ages of twenty-one and thirty years, 43 were in the incipient stage of the disease, 27 were latent cases and 23 gave a tubercular family history.

Dr. Horatio C. Wood, Jr. protested against Dr. Cohen's use of the word "autonomic," which term he felt was used at the present time with an unfortunate degree of ambiguity. Dr. Cohen had apparently used the word as synonymous with sympathetic. In this country, however, Dr. Wood said that physiologists and pharmacologists divided the sympathetic system into two parts,—the sympathetic proper, and the autonomic system. Most of the phenomena to which Dr. Cohen had referred were vasomotor phenomena, and the blood-vessels, with the exception of those of the face, Dr. Wood said, were supplied from the sympathetic proper and not from the autonomic system. In his opinion it would have been much more in accordance with the common use of the word to have spoken of sympathetic phenomena rather than autonomic phenomena. How migraine could come from either the sympathetic or the autonomic system was not clear to Dr. Wood, since neither of these systems of nerves had any connection with the nerves of sensation. The thyroid gland nerve supply, it was observed, was at present purely hypothetical.

Preparedness of the Medical Department for War.—Lt. Col. H. C. Fisher states that attempts have been made to place medical property with the organized militia, but before reserve supplies are isued to a State the Governor must certify the requisition that he has facilities for caring for the same. In some instances units have been broken up to such an extent that it has been impossible to collect the property pertaining to them. This would be a serious matter in time of actual hostilities.—*The Military Surgeon.*

Intracranial Hemorrhage without Symptoms of Compression.—Lam and Law report a case of a man, aged thirty-two, who was thrown from his bicycle by collision with a cart and his head knocked against a post. He was admitted to the hospital an hour later in an unconscious condition and died ten days later. At no time did the patient show any symptoms of compression, except an attack of vomiting two hours after admission and the unconsciousness from which he could be partially aroused. A small, superficial scalp wound was present over the right parietal eminence. Autopsy revealed a very fine fissure extending from the right parietal bone, downwards and forwards, into the greater wing of the sphenoid in the middle fossa of the skull. An extradural blood clot, 2½ in. by 2 in., corresponding to the temporal lobe of the brain was found, but the brain showed no flattening at this point. The membrances and surface of the brain were congested and edematous, but the interior showed no changes. Such a case presents difficulty in diagnosis.—*The Lancet.*

Miscellany.

Sanitary Condition of Bottled Waters.—The Bureau of Chemistry of the United States Department of Agriculture has for several years been investigating the sanitary conditions in the production and distribution of bottled mineral and table waters, which are offered for sale in interstate commerce and are, therefore, subject to the Food and Drugs Act. It has recently conferred with a number of sanitary experts and bacteriologists regarding a desirable standard for judging the condition of such waters. As a result of the investigations and conferences, the conclusion has been reached that the tolerances established by the Public Health Service of the Treasury Department for waters served on interstate carriers are none too rigid for application to bottled waters sold in interstate commerce or imported from foreign countries. These standards are as follows: (1) The total number of bacteria developing on standard agar plates, incubated for twenty-four hours at 37° C., shall not exceed 100 per cubic centimeter, provided that the estimate be made from not less than two plates showing such numbers and distribution of colonies as to indicate that the estimate is reliable and accurate. (2) Not more than one out of five 10-c.c. portions of any sample examined shall show (by the method of the Public Health Service) the presence of organisms of the *B. coli* group.

Treatment of Trachoma.—The Annual Report of the Surgeon General of the United States Public Health Service states that the best solution of the trachoma problem has been found to be the establishment of small hospitals for the treatment of the disease in localities in which it is prevalent; and that the service, therefore, now maintains five trachoma hospitals in the three States of Kentucky, Virginia, and West Virginia. In the past fiscal year 12,000 cases of the disease were treated, and in addition the hospitals have been used as centers for educational work. Doctors and nurses have been sent out from them to visit the homes of the patients and explain how the development and recurrence of the disease may be prevented. In Kentucky alone, during the year, 1,308 such visits were made. In Kentucky also, surveys were made in sixteen counties, and of 18,016 people examined 7 per cent were found to be suffering from trachoma. A special feature of the work has been the giving of lectures and clinics before medical societies in various counties where trachoma hospitals could not be established. Patients were operated on in the presence of physicians and the most modern methods of treatment were demonstrated.

The Disposal of Municipal Sewage.—A sewer district in the city of El Dorado, Ark., constructed a septic tank for disposing of sewage. An owner of land near the septic tank brought suit for damages, alleging injury to his property. It was proved that offensive odors emanated from the tank and that a stream which flowed through the plaintiff's land was polluted. The evidence showed, however, that much of the pollution of the stream was caused by unnecessary flushing of the tank. The court held that the sewer district was liable for the amount by which the value of the plaintiff's land was depreciated by reason of the construction and operation of the septic tank, but that no damages could be recovered against the municipal authorities because of the acts of employees in unnecessarily flushing the tank.—Public Health Reports, Nov. 19, 1915.

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PATHOGENY OF DIABETES AND FECAL DISINFECTION.

BY G. DELGADO PALACIOS, M.D.,

CARACAS, VENEZUELA.

PROFESSOR OF PHYSIOLOGICAL CHEMISTRY AT THE UNIVERSITY OF CARACAS.

THE primitive phenomenon of the pathogenic mechanism of diabetes mellitus is to be found in an *excess above normal of ammoniacal and acid fermentations of the large intestinal contents.* In accordance with this conception diabetes must be considered as a disturbance of metabolism of fecal origin.[1] This does not mean that the cause of the disease is exclusively external because there are also internal propensities that predispose the organism to the production of this ammoniacal and acid dyspepsia. This fecal intoxication of the organism satisfactorily explains not only the principal symptoms and anatomico-pathological changes of the disease, but also its great variations, like the absence of diabetic coma in certain countries (Venezuela), a fact chemically and clinically well established. The excess above normal in the simultaneous production of ammonia and volatile fatty acids explains the polyuria, the acidosis, the glygosuria, the presence or absence of diacetic acid in the urine, the calcariuria or exaggerated loss of calcium in the urine, etc. The physiological influence of the pancreas upon digestion and upon certain phases of carbohydrate metabolism becomes more or less impaired as a consequence of this persistent fecal intoxication, which tends to degenerate the islands of Langerhans. The favorable influence of prolonged fasting and restricted diet may be explained by their disintoxicating effect upon the digestive tract. Fecal disinfection is nevertheless the radical treatment of diabetes, both preventive and curative.

Polyuria and Acetonuria.—In the common conditions of human life, a part of the urea, small as it may be, proceeds directly from intestinal putrefaction; that is to say, it is the product of chemical transformations which take place outside the normal tissue catabolism. This part of the urinary urea must receive the name of extraphysiological or putrefactive urea.[2] In certain well-determined conditions this putrefactive urea is accompanied by the excretion of a corresponding proportion of acetone. In diabetics the putrefactive polyuria and acetonuria reach a high degree. In this connection it must be remembered that Minkowski[3] foresaw the existence of putrefactive urea in experimental diabetes, when he refused to accept the name "diabetes without glycosuria" that was proposed by Hedon to designate the cachexia that sometimes follows the partial extirpation of the pancreas without carbohydrate disturbance.

If a solution of an ammoniacal salt of a volatile or inferior fatty acid is introduced into the rectum and its entire absorption permitted, the result to be observed is that the twenty-four-hour excretion of urine and the amount of urea increase. When butyrate of ammonia is the salt employed the urinary acetone greatly increases. If the rectal injections are continued for many days the polyuria and acetonuria reach a high degree. In two series of experiments the following variations were observed: volume, from 1 to 3 liters; urea, from 10 to 18 grams; acetone from 5 to 245 mg.

To prove that really there is present in the normal large intestine, in a given moment or during a certain time, a greater amount of ammonia and volatile fatty acids than the quantity which goes out with the feces every twenty-four hours, a direct method has been employed, which consists in the quantitative estimation of these compounds in spontaneous stools and those provoked by saline and drastic purgatives. The difference between the two series of determinations referred to the same subject gives the quantities of both compounds that have passed into the liver, and there been transformed into urea. The conclusion to be drawn therefrom is that, in the common conditions of human life and in normal subjects, an average of 300 mg. of ammonia is produced every twenty-four hours in the large intestine as a result of putrefactive processes (in some cases this quantity has amounted to twice as much), and that this ammonia, after having been absorbed into the blood, appears in the urine as 0.5 gram or even 1 gram of putrefactive urea. To this daily amount of putrefactive urea corresponds normally the production of several milligrams of acetone when the putrefactive salt produced in the intestine is the butyrate of ammonia or certain other fatty salts of ammonia. The average quantity of volatile fatty acids produced and absorbed, free and combined, in twenty-four hours amounts in normal persons to 5.4 grams expressed as acetic acid.

These quite remarkable figures are not exaggerated if we consider the intensity of intestinal putrefaction, the quantity of material there modified, the intestinal stasis, and the degree of fecal reabsorption. Some data concerning this subject are here given. More than 25 per cent. of the total organic matter of the feces is composed of residual bacteria.[4] The bacteria absorb up to 46 per cent. of the total fecal nitrogen and metabolize a greater amount of it.[5] Most of these bacteria are killed in the struggle for life between them and the organism; therefore a minute fraction of the total fecal bacteria microscopically visible can be brought to development on artificial culture media.[6] The residual alimentary material remains in the large intestine for three-fourths of the twenty-four hours.[6] The small intestinal contents travel with twenty-five times

more rapidity than the large intestinal contents.[7] The fecal matter contains five times more water and three times more nitrogen when it passes the ileocecal valve than when it leaves the rectum.[8]

Computations based upon experimental investigations in dogs and on man give figures for both compounds even more remarkable than those referred to.

Vaughan Harley's experiments[8] permit to form an idea of the volume of fecal aqueous extract and putrefactive nitrogen that fecal reabsorption carries daily into the blood. The method followed by this investigator is the comparative analysis of urine and feces of dogs after removal of the large intestine with that of normal dogs on precisely the same diet. The conclusions from these experiments which are of special interest for us are: (1) The increase in quantity of feces is principally due to the increase in quantity of water, the total quantity being nearly five times as much as in the case of normal dogs. (2) The quantity of nitrogen in the feces is increased to nearly three times as much as in normal dogs. (3) Ten per cent. at least of the nitrogen of the diet is absorbed in the large intestine. The normal weight of the whole in the case of a man on the mixed diet indicated by Schmidt and Strasburger,[9] is 251.1 grams for three days, with 77.79 per cent. of water. A simple calculation shows that in man near *one-third of a liter of aqueous fecal extract passes into the blood every twenty-four hours.* The quantity of proteins and nitrogenous compounds that have not been digested and absorbed in small intestine form a nitrogenous stock three times larger than that which is found in feces. The difference between these two quantities is eagerly destroyed and utilized by putrefactive bacteria, and it is only the products of the catabolism of these bacteria, principally the ammonia, which are absorbed into the blood and disappear from the large intestine. In the mixed diet proposed by Schmidt and Strasburger, the amount of nitrogen which must disappear by fecal reabsorption must be 1.6 grams, the total diet nitrogen being 16 grams. If we accept that only 25 per cent. of this nitrogen is absorbed as ammonia, the quantity of putrefactive urea produced every twenty-four hours would amount to 0.8 gram. This proportion of 25 per cent. is not exaggerated. H. Fischer[10] has found that a meat diet stool obtained by means of a laxative (Stool No. VI) and abandoned to its spontaneous putrefaction for twenty-four hours developed 47.6 per cent. of ammonia-N as compared with the total nitrogen of the stool. Had H. Fischer made the quantitative estimation of ammonia in that stool as soon as it was evacuated he would very probably have changed his opinion regarding this ammoniacal putrefaction. The after-putrefaction of a stool really occurs but very slowly and late, after the second day;[11] the greater part of determined ammonia was evacuated with the stool. This experiment, however, is very interesting because it gives us the opportunity of studying the whole production of ammonia when a stool is obtained by means of a laxative; that is to say, when the nitrogenous and putrefactive matter is not yet exhausted within the intestine. The observed high proportion is not surprising if we remember there are in the intestine some bacteria, like the *Proteus vulgaris*, which produced up to 36 per cent. of ammonia-N of the decomposed albumin-N.[12]

The above figures are confirmed by some direct investigations on patients with cecal fistula. The observations of Macfadyen, Nencki, and Sieber[13] was carried out on an old woman of 40 kilos weight, and those of Ciechomski and Jakowski[14] were also on two women. The average weight of the diarrheic stool which issued almost constantly from the cecal fistula in the last two cases and in the former one, when the patient was submitted to two different diets, is given in the following table:

	Variations	Average Weights, Grams
No. 1 (C. and J.)	80–680	380
No. 2 (C. and J.)	220–400	310
No. 3 (M. N. and S.)	230–550	390
No. 4 (M. N. and S.)	390–515	452
Average		383

In order to obtain an idea of the amount of material which disappears in the large intestine the normal stool of Schmidt and Strasburger can provisionally be accepted as a term of comparison. This computation thus established is only approximate, and probably must be higher because the test meal as given by Schmidt and Strasburger is more abundant than that which was used by Macfadyen, Nencki, and Sieber in their woman patient. The following table shows the percentage and quantity of each compound in the ileum stool and in the rectal stool:

Ileum Stool. Weight: 383 Grams

	Percentages	Amounts, Grams
Water	95.00	363.85
Solid extract	5.00	19.15
Nitrogen (of the solid)	6.08	1.16
Carbohydrates (of the solid)	45.00 (as acetic acid)	4.30
Sugar	2.50	4.79
Acidity (as acetic acid)	0.15	0.57

Rectal Stool. Weight: 83.7 Grams

	Percentages	Amounts, Grams
Water	78.40	65.60
Solid extract	21.60	18.10
Nitrogen	5.50	0.99
Carbohydrates	2.59 (as acetic acid)	0.23
Volatile acids H. Ury)	.....	0.91
Sugar	0.00	0.00

Differences: Amounts Absorbed in the Large Intestine

Water	298.20
Acetic acid	8.52
Nitrogen	0.17

Some observations are necessary for the right interpretation of this table. The proportion of absorbed acids is too large because the ileum stool does not always contain sugar (in two of the four studied cases). It must be observed that the Macfadyen, Nencki, and Sieber woman received 60 grams of sugar, and this substance appeared also in one patient of Ciechomski and Jakowski. When the diet contains much sugar, this substance reaches the cecum, but there it disappears very soon by fermentation, because the feces never contain sugar. When the quantity of sugar in the diet is excessive, or when, and this is very important, a large quantity *is injected into the blood*, the feces contain sugar as soon as diarrhea is produced;[15] that is to say, when fecal concentration is not produced. This is a sure indication that sugar is always excreted

into the cecum in these conditions: it is passed out when diarrhea carries it out; when not, it disappears by fermentation and absorption. The carbohydrate estimated by Macfadyen, Nencki, and Sieber was a whole determination obtained by difference, while in the test meal the determination refers only to that attackable by HCl at 2 per 100. The nitrogen absorbed is too low because the test meal is more abundant and rich than the patient's diet. Nevertheless this comparison is very illustrative though made between two dissimilar cases.

It is easy to infer what a profound perturbation intestinal putrefaction induces in the human organism. The putrefactive urea in reality is nothing other than the hepatic product of residual ammonia from catabolism of bacteria, while the physiological urea originates from the residual catabolism of tissues or of physiological digestion process. The size of bacterial growth taking place constantly in the intestinal contents depends, as is the case in the development of every living thing, upon the quantity of food on which it thrives. If the alimentary residues are abundant, the intestinal stasis prolonged, and the defensive or antiseptic natural power of the intestinal walls weakened, then the intestinal flora reaches its maximum degree of development. All these conditions reach their maximum degree in diabetes.

A normal intestine is that which, besides the bactericidal activities of its epithelium, effects the elaboration, absorption, and expulsion of the remainder of the food, in order that the least possible of waste material is left for the bacteria. The intestine, however, has a certain capacity that can be surpassed by the excessive quantity of ingesta. This has been recognized by many medical authors and in a practical way by many laymen. In order to diminish the quantity of bacteria produced in the intestine a food easily assimilable must be ingested and, above all, the quantity of food must be restricted. In this way Strasburger found in a woman patient, who for a long time had ingested daily 1 liter of milk and one or two biscuits, that the quantity of dry bacteria in her intestine amounted to 2.95 grams; that is to say, a little more than a third of the value found in normal conditions. In diabetes, on the contrary, the polyphagia compels the patient to eat many times above the digestive capacity of his intestine; he eats more for the nutrition of his intestinal bacteria than for the nutrition of his own organism. An abundant residual waste accumulates in the intestines and the stools are very large. It is easy to understand that in these conditions the bacterial, both fermentative and putrefactive, must reach their greatest development; consequently the production of ammonia and volatile fatty acids must be very abundant, provided the excess of nitrogenous substances and carbohydrates and the bacteriological conditions are favorable, as always happens in this disease. Medical authors agree that diarrhea is a very uncommon symptom in diabetes; on the contrary, constipation appears later in the disease, and when obstinate, in Tyson's experience,[16] is an unfavorable symptom. This condition is decisive because fecal reabsorption cannot take place without a concentration of the feces. The fecal putrefaction and reabsorption are more pronounced when intestinal stasis is present, which may exist although defecation occurs every twenty-four hours. Fecal reabsorption can occur, but only to a slight degree, when diarrhea exists. In this case the retention of the food and its products in the entire intestine is a question of only four or five hours.[17] When extensive intestinal stasis exists putrefaction takes place also in the small intestine.

Fecal reabsorption is very pronounced during constipation as has been established by direct analysis of the feces. While the healthy adult daily excretes 0.99 gram of nitrogen, the habitually constipated patient under the same diet excretes only 0.52 gram. Thus, in constipation the percentage of nitrogen is the least in comparison with other conditions.

N-percentage in constipation (S. and S.)	4.57 per cent
N-percentage in constipation (H. Fischer)	4.56 per cent
N-percentage in diarrhea (S. and S.)	6.74 per cent
N-percentage in healthy adult (S. and S.)	5.00 per cent

The percentage of utilization of cellulose from the total amount ingested reaches also its maximum during constipation, as the following figures show:

Healthy adult	57.9 per cent
Chronic habitual constipation	81.4 per cent
Fatty diarrhea in pancreas disease	20.9 per cent
Diabetes with normal gastrointestinal tract	78.9 per cent

I have determined the percentage of soluble calcium (expressed as CaO) contained in the aqueous extract of feces compared with the total calcium of the feces and have found the following comparative figures:

Healthy adult	10 per cent
Poliuric calcariuria with constipation	4.2 per cent
Poliuric calcariuria without constipation	50–60 per cent
Diabetes by means of a laxative	95.7 per cent

The above stated led to the conclusion that the retention of feces in the large intestine during constipation produces an advanced degree of concentration, so that water is reduced 60 per cent., and with it all soluble or destroyable compounds tend to disappear from the feces.

The watery diarrhea-like stool from the small intestine, which pours almost constantly in the cecum, carries a rich material for the putrefactive bacteria metabolism of the large intestine; this material consists of nitrogenous waste products three times greater in amount than that which passes out, a small proportion of sugar and peptone, lactic acid, and some other fermentative products, which must be finally reduced to a fifth part of their primitive weight or volume. Consequently, in the common conditions of human life, with three or four daily meals, the contents of the large intestine are in a state of continuous putrefaction. A purgative causes the expulsion of the contents of the large intestine during a certain time, eight hours for example, and supposing that this action does not interfere with the putrefactive process, the quantitative estimation of the putrefactive products in the ejected material can give but a slight idea of the amount produced and reabsorbed in twenty-four hours. The supposition that this quantity must be three times greater than the actual estimation is manifestly below the reality. Probably the multiplication of the quantity determined in a spontaneous stool by four is a surer way of approaching the reality. H. Fischer has found with his method of laxative and after-putrefaction of the stool that the quantity of ammonia in the feces calculated in the dry solid becomes five times greater under the same diet; thus: Meat diet (average of three cases) 593.1 mg.; laxative stool and after-putrefaction, 3,094.8.

Our investigations by means of purgatives have been made during fasting, that is to say in the morning. The only time I have used a purgative at

noon, after breakfast, I have obtained in a normal person a proportion of ammonia twice as much as in the others (case B de T.). Five diabetics have been investigated by this method. Three of them have given the following quantities of ammonia and volatile fatty acids calculated as acetic or butyric acid.

	Ammonia, Mg.	Volatile Fatty Acids	
		Acetic Acid, Grams	Butyric Acid, Grams
C. R.	425	4.15	6.09
M. T.	511	4.72	6.93
C. G.	574	5.52	8.10
Average	503	4.79	7.04

The urinary volume and acetone were:

	Urinary Volume, C.c.	Acetone, Mg.
C. R.	2377	328
M. T.	3518	398
C. G.	3027	245

The same computation as above gives for twenty-four hours the average figure of 1,500 mg. for the ammonia or 2.66 mg. of urea; and 14.37 grams of acetic acid or 21.12 grams of butyric acid. The urine did not contain diacetic acid or β-oxybutyric acid, as is the rule in the country.

The fourth case investigated was in a patient suffering from severe diabetes, with very abundant polyuria and glycosuria. The purgative produced only a pasty stool of natural consistence. The following table gives the result of the chemical investigation of the feces and urine:

Weight of the stool	1,239.0	grams
Ammonia	0.556	
Volatile fatty acids as acetic acid	9.55	
Urine of twenty-four hours	12,950.0	c.c.
Volatile fatty acids as acetic acid	5.03	grams
Sugar	168.3	grams

In this case the computation must be four times the above stated figures: 2,224 grams of ammonia or 4.76 grams of urea; 38,232 grams of acetic acid or 56.07 grams of butyric acid for twenty-four hours. Very probably there is a miscalculation here, because the urine contained 2,631 grams of ammonia and 40.83 urea. In this remarkable case of diabetes it is not possible to explain the extreme polyuria of 13 liters every twenty-four hours by the putrefative urea, because the colossal amount of sugar excreted in the urine is here the principal factor as a diuretic element. When the quantity of sugar excreted is moderate, from 50 to 130 grams, the diuretic effect of the sugar cannot be invoked because there are many cases in which the volume of the urine may amount to 3 liters with 20 or 30 grams of sugar, and others with 1.5 liters and 130 grams. The patient had had diabetes for one year when I made the analysis of his feces and urine; the daily amount of urine has varied between 7 and 12 liters. He has never had diabetic coma nor has his urine given the Gerhardt reaction. His urine does not contain butyric nor β-oxybutyric acid, only acetic and formic acids. It is an acetic diabetes like every case observed in Venezuela. In the temperate zone diabetes in man is a butyric diabetes, that is to say, the butyric germs are principally the agents. The butyrate of ammonia is produced in the intestine in the tropical Atlantic region, but as a consequence of the bacterial decomposition of protein. For example, one kilo case may yield 117 grams of fatty acids containing 47 grams of butyric acid. This explains the production of acetone in the urine from butyric acid not produced by direct fermentation of carbohydrates. A similar explanation may be given of the almost complete absence of diabetic coma in the dog and the absence of diacetic acid in his urine.

To vary the experiment the diabetic M. T. was given a rich meat diet with a breakfast of 500 c.c. of milk and coffee, bread and butter. After three days a violent cathartic was administered early in the night. The following is the result of this investigation, which has not previously been published:

	Weight	Ammonia	Vol. Acids
Spontaneous stool	285.0 g.	215 mg.	143c.c.n/10
Diarrhoeic stool	1248.0		
Solids, per cent.	4.1		
Total solids	51.16		
Ammonia-N	1.266		
Total nitrogen	4.320		
Ammonia-N	29.3		
Total-N			
Ammonia	1.538		
Ammonia per 100 g. of solids	3.006		
Volatile fatty acids (acetic acid)	5.35		
Water-soluble calcium (CaO)	0.634		
Total calcium (CaO)	1.006		
Soluble calcium per cent	63.02		

The difference of ammonia multiplied by three produces 4 grams, more or less, of ammonia or 7 grams of urea. Here it must be remembered that the same quantity of ammonia in combination with butyric acid has occasioned a polyuria of 3 liters. I doubt if ever such amount of ammonia will be found in a human intestine. Probably in this case the excessive meat eating and the intestinal stasis were the cause of this remarkable development of ammonia. We must realize that ammonia does not accumulate in the feces and pass into the blood with more rapidity as the water itself is absorbed. The absorption coefficient of ammonia is very high, in comparison with other intestinal gases, at 0° C., and 760 mm. Hg. pressure.

Ammonia	1298.9
Hydrogen sulphide	4.686
Carbonic acid	1.712
Hydrogen	0.020

The experiment which resulted in a revelation regarding the quantum of this intestinal reabsorption of ammonia salts was that established at the beginning with butyrate of ammonia, showing the increased urea and above all the increased acetone. The acetone in this particular case amounted to 398 mg. in twenty-four hours, and this quantity of acetone can be produced by the intestinal absorption of 38.3 grams of butyrate of ammonia or other equivalent salts.

Similar consideration to those stated above are applicable to the production and reabsorption of acids; the quantity that direct investigation may detect is only a fraction of the whole produced. In diabetes a large proportion of volatile fatty acids of external and putrefactive origin, that is to say, of abnormal constitution to the human tissues, invades the organism in an abnormal way, by fecal reabsorption, and passes directly into the liver. When organic acids enter the organism through the stomach and first portions of the intestine they

are principally combined with potassium and sodium. The small quantity of acids produced in these parts by pure fermentative action is also rapidly neutralized by the predominant alkalies of the intestinal juice and are absorbed. All these organic salts are therefore oxidized as fuel material. The acids of the large intestine are produced by putrefactive fermentative decomposition of amino-acids, lactic acid, fatty substances, and by a direct fermentation of carbohydrates and cellulose in a medium almost deprived of alkalies and oxygen. All the available calcium, magnesium, and ammonia are insufficient to neutralize them, and they enter by the enterohepatic way. In the liver they are transformed into sugar, so far as our most advanced knowledge in physiology can establish. The sugar thus formed is a sugar of abnormal origin and constitution. It is a sugar of putrefactive origin that cannot be stored up by the liver as glycogen and cannot be utilized by the tissues, being finally excreted in the urine.

Calcariuria and Lipaciduria.—The substitution of butyrate of ammonia for acetate of calcium in the rectal injections has established the fact that the volatile fatty acids and the calcium of the urine increase simultaneously in relation not only to the normal series but also to the corresponding series of butyrate of ammonia. The volatile fatty acid which increases in the urine is precisely that which is injected into the rectum. The calcium protects the fatty acid from destruction in the organism, although this protection is not absolute—60 per cent, according to my experiments. While the butyrate of ammonia injection is well tolerated that of acetate of calcium produces a catarrhal irritation of the mucosa of the large intestine. In contrast with the diuretic effect of acetate or butyrate of ammonia the acetate of calcium produces a marked oliguretic effect. When both compounds are used together, in certain proportion, the polyuric effect of the ammonia salt predominates. In diabetes this simultaneous increase of fatty acid and calcium is generally, if not universally, observed. Many investigators have repeatedly observed the increase of the one or the other compound in diabetic urine. Rumph, C. A. Herter, and Wakeman have determined in the urine 86 c.c., 200 c.c., even 300 c.c. of decinormal fluid for the adult and 80 c.c. for a five-year-old boy. Neubauer, Gerhardt and Schlessinger, and Toralbo have verified the extreme loss of calcium. The latter has found the extraordinary figure of 2.58 grams for a diabetic who excreted 7,850 c.c. in twenty-four hours. I have myself verified the simultaneous increase of both compounds in diabetic urine.

The simultaneous increase of volatile fatty acids and calcium in the urine, when they are introduced into the rectum, and their simultaneous increase in diabetic urine strongly suggest the idea that the putrefactive fermentation of the intestinal contents in diabetics may be the primary cause of the observed calcariuria and lipaciduria. This supposition is confirmed by the fact that calcium is to be found in the diabetic stool in a higher state of solubility than in the normal stool. While the normal feces contain 10 per cent. of soluble calcium, as compared with the total calcium, the aqueous extract of diabetic feces contains 50 or 60 and even 95 per cent. of the total calcium. It is not impossible, however, that exceptionally in a diabetic patient a proportion far below the solubility of normal calcium may be found, on account of prolonged constipation, during which time a reabsorption of almost all the soluble calcium of the stool may have taken place. I have found an anomalous solubility of 4 per cent. in the stool of a calcariuric and polyuric but not glycosuric patient. Calcariuric patients of this kind have in fact polyuria, calcariuria, lipaciduria, acetonuria, hunger, and thirst, indeed every symptom of diabetes except glycosuria.[1] In the diabetic stool I have always found a very high degree of solubility of the calcium, even up to 95 per cent., and this solubility and the large quantity of fecal extract which passes into the blood in this disease explain the lipaciduria and calcariuia. It is a known fact that diabetics have normal but very large evacuations, and late in the disease they suffer from constipation. The volume of fecal extract entering the blood in diabetics is consequently augmented many times above the normal, in the same proportion that their stools are larger than the normal ones. In the unusually severe case of diabetes referred to, with abundant polyuria and polyphagia, the fecal matter in the cecum and last portion of the small intestine must have reached a volume of at least five liters, as the weight of the patient's stool always exceeded one kilogram. As in this patient the soluble condition of the calcium reached 95 per cent. of the total stool calcium, that is to say, was entirely soluble, it is easy to deduce how large must be the quantity of calcium and volatile fatty acids that reached the urine. In fact the proportion of calcium is greater in the urine than in the feces, a condition the reverse of normal elimination as the following table shows:

Urinary CaO	2.226 grams
Urinary volatile fatty acids	838.5 c.c. n/10 c.c.
Fecal total calcium	1.121 grams
Fecal soluble calcium	1.073 grams
Soluble calcium, per cent	95.7 per cent
Fecal volatile fatty acids	1593.5 c.c. n/10 c.c.

The above figures make evident a large passage of the putrefactive calcium salts from the feces into the urine. This increased elimination of the calcium in the urine above the intestinal elimination has been recognized in diabetes by many authors such as Brugsh, Schlessinger, Allen, et al., but a true explanation of the phenomenon has not been given. This reversed passage of putrefactive calcium salts from the feces into the urine, what I have called "retrograde circulation of the calcium in the human body" [18] exists also in the normal state, but in a very slight degree. This explains the constant passage of a small proportion of volatile fatty acids in the normal urine, where they arrive protected by the action of the fecal calcium. It must be here stated that H. Ury[19] has given another interpretation of the presence of soluble calcium in the feces. A thorough discussion of the question is to be found in my book,[1] pages 103-125.

A large amount of acidity of external or bacterial origin is produced in diabetic intestine by various means: by bacterial decomposition of fatty bodies, by fermentation of carbohydrates, celluloses, and hemicelluloses, by diamidation and decarboxylation of amino-acids. In the stomach and first portions of the small intestine the diabetic organism protects itself from acid intoxication by means of the alkalies of the digestive juices and the alkalies which the food carries with it; in the last portion of the small intestine and in the large intestine, the calcium, magnesium, and ammonia of the feces are present in as large amounts as possible. When the quantity of acid exceeds that which can be combined with these substances the liver produces sugar

in an abnormal way, which is destined to be eliminated in the urine.

Finally many authors have recognized the abundant urinary excretion of aromatic bodies, indican, and other pigments and compounds of putrefactive origin in diabetics. This is easily understood from what has been previously said of the intensity of fecal putrefaction and reabsorption. But the most important for us is that this augmented excretion begins with the first appearance of the disease. To-day it is considered that reduced carbohydrate tolerance is to be found in patients who are in a prediabetic condition. A. C. Croftan[20] has established that nearly all the patients who are in the prediabetic condition complain of a manifold clinical picture essentially dyspeptic and excrete an abnormally large amount of aromatic bodies in the urine, chiefly aromatic sulphates, indican over twenty milligrams per diem, and aromatic glycuronates.

Experimental diabetes in the dog is produced by means of fecal putrefaction and reabsorption. One may say that the dog has been especially selected for the production of experimental diabetes on account of the enzymic and bacterial condition of his alimentary tract, and also that the operation which is performed to produce diabetes is precisely that which is necessary to cause the predominance of fecal putrefaction over normal digestion.

In the dog the salivary gland does not contain diastase.[21] In the pig and in man these salivary glands contain an abundance of ptyalin. In the dog the pancreas is the principal source of amylopsin of his digestive tract, probably of blood and urine diastases, and when the duct of this gland is ligatured the diastase in the feces diminishes considerably.[22] Wakabayashky[24] has shown that in the dog the large intestine juice is 400 times less active than the pancreatic juice and that in the same animal the large intestine juice has from 25 to 50 per cent. the activity of the small intestine juice. In the sense here explained, the dog occupies an intermediary place between the pigeon and the rabbit. Like the dog the pigeon cannot digest cellulose or hemicellulose. Its entire intestinal enzymic activity is dependent upon the pancreas; when the duct of this gland is ligatured in the pigeon a rapid cachexia is developed, during which the animal is absolutely unable to assimilate the carbohydrates. It dies as it would from absolute deprivation of carbohydrates, and the addition of sugar has a marked influence in prolonging its life. When the pancreatic duct is ligatured in a rabbit an opposite phenomenon is to be observed. At the beginning the animal seems to suffer somewhat, but the operation has no permanent effect upon the health or life of the animal because the rabbit has a powerful mechanism to supply the lacking pancreatic juices. On the one hand, the salivary glands are active, and on the other, the animal has a great power of digestion of celluloses and hemicelluloses, and the vegetable food in its crude form brings with it natural diastases which facilitate the digestion of carbohydrates.

Partial pancreatectomy in the dog, with preservation of the pancreatic duct so as to avoid atrophy of the remnant of the gland, gives a more satisfactory reproduction of clinical diabetes than is afforded by von Mehring and Miskowski's total pancreatectomy or Sandmayer's method of slow pancreatic atrophy. If glycosuria does not appear upon a diet of meat and bread a second operation may become necessary to remove a new portion of the pancreatic tissue. The continuation of the diet makes the glycosuria more and more intense. After a severe diabetes has been established by this means, autopsy reveals an "hydropic" degeneration of the islands of Langerhans. Suppose a second operation is performed on this dog as Homans[24] has done, *e.g.* ligature of the pancreatic duct. It has been found that, after duct ligation, on meat and bread no glycosuria appeared, the animal loses weight, and diarrhea appears. It is necessary to combine with carbohydrate feeding the administration of fresh pancreas to obtain glycosuria (the food is thus well digested, and diarrhea disappears). It has been recognized that when the pancreatic duct is ligatured in a dog the amylolytic ferment diminishes markedly so that bacterial *amylolysis* does not take place. The *Bacterium coli* and other fecal bacteria only ferment sugar.[25] Even dextrine is not attacked by them. These premises well established, it is easy to give a satisfactory explanation of the Homans experiment. In the absence of amylopsin the bread is not saccharified and partly transformed into an acid substance by bacterial action, indigestion supervenes, and fecal reabsorption and putrefaction do not take place. The pancreas tissue is found to be directly necessary to produce glycosuria on account of the amylopsin it supplies to the intestine. Let us fix now our attention upon the Rosenberg[26] experiment and the importance it has for experimental diabetes. The pancreatic ducts and the efferent blood vessels are ligatured. The atrophy of the pancreas develops progressively, but life is prolonged for ten months and a half, when eventually the animal dies of pleuropneumonia. All the time the animal has received a diet composed of meat and bread, and has never had dextrose or any form of sugar whatsoever in his urine. Some minute portion of glandular tissue has been preserved at the periphery through the capillary circulation. The question here is why these minute portions of pancreatic tissue left have not been atrophied. The rule is that they must atrophy after so long a time and with the animal on such a diet. They have not suffered because there has been no infection. That is the reason. Rosenberg clearly establishes the fact: "The estimation of the quantity of sulphoconjugated acids when active pancreas is present is near 3.7-3.8 times greater than when it fails, which can be explained by the frequency of stools, which prevents the establishment of an intensive intestinal putrefaction." Here is an experiment which cannot be explained away. The atrophy of the pancreas is almost complete, the animal is subjected to diet of meat and bread, and nevertheless there is no glycosuria. There is no glycosuria because there is neither putrefaction nor fecal reabsorption. The operation of experimental diabetes in the dog is just what is necessary to guarantee a moderate digestion of carbohydrates; the sufficient one to realize the bacterial amyloyse, fermentation, and reabsorption. It is very probable that the action of putrefactive sugar will be the cause of superactivity or hydropic degeneration of the islands of Langerhans, because when this sugar is not produced the degeneration fails.

Brugsch,[27] who has made an exhaustive study of the different operative procedures of the pancreas—ligature of the ducts, extirpation, etc., upon digestion, and who discusses the interpretations of the results made by his predecessors, concludes from his extensive study that "the excision of the pan-

creas or its atrophy produces an extensive disturbance of digestion which cannot be attributed solely to the failure of pancreatic juice in the intestine. The disturbance shows itself by a diminished secretion, motion, and reabsorption in the whole intestinal tract, because the pancreas is a digestive organ, which through its secretion (hormone) or its nervous influence, or both, influences the entire intestinal tract."

Not only in the digestive organ but throughout the whole economy there is a real struggle for life between bacteria and the organism, all food which is not properly digested and absorbed is lost for the organism and gained for putrefaction. Overeating and rapid mastication overcharge the alimentary canal beyond its digestive capacity. The putrefaction increases and the noxious products of bacterial catabolism invade the organism and cause degeneration of the minute structure of the pancreatic gland. This process, a kind of vicious circle, goes on unnoticed until low carbohydrate tolerance appears, and later diabetes.

In accordance with the conceptions here established the pathogeny of diabetes mellitus is a fecal putrefaction and a fecal reabsorption of ammoniacal and acid character. Fully external and bacterial it is curable by bacterial and external methods, viz., prolonged fasting and restricted diet. Prolonged fasting has always been considered as the first of all measures to disinfect the intestinal tract. J. Méricourt[28] says: "There is a remedy more active than diet and purgatives which are not always free from inconvenience, for the renovation of the stomach, the small intestine, the large intestine, and the appendix in their organic integrity from the double point of view of disinfection and repair of tissues. This measure is absolute fasting for some days. But it is necessary that the fast be absolute, that is to say, that the privation of all solid and liquid aliment be absolute. For the washing out of the blood a mineral water may be permitted in sufficient quantity, or injection of mineral sera may be made during fasting. It is understood that the patient will remain in bed and avoid all movement as far as possible in order to prevent the waste of energy and promote repair. This fasting, somewhat painful the first day, is tolerated very easily later, and its duration should be eight days, as a minimum; to be efficient it may be prolonged up to ten or twelve days. This procedure can be varied in accordance with the loss of weight. The result of this practice is very notable; inveterate digestive disturbances are seen to disappear as well as gastroenteritis usually resistant to any form of treatment. Patients come from this period of fasting with their intestine disinfected, restored, entirely new."

As soon as the disinfection of the gastrointestinal tract has been obtained by this method, the *fundamental principle of the diabetic diet* consists in the adaptation of the digestive capacity to the quantity and quality of the food. A man who has become diabetic in consequence of his long-continued faulty alimentation and the loss of a part of his digestive capacity and injury to the pancreatic gland, has, nevertheless, some mechanisms remaining to aid in the digestion of carbohydrates. First, the small quantity of diastases his pancreatic juice contains. The diastases of his salivary glands, small intestinal juice, and large intestinal juice. The diastases secreted by the carbohydrate-digesting bacteria always present in his intestine. The diastases originating from the vegetable cells, and finally the cellulases of bacterial origin. This last mechanism is of the greatest importance for the digestion of hemicelluloses and young celluloses. A diabetic can digest from certain legumes, salads, oatmeal, etc., up to 78.8 per cent. of the cellulose they contain. This digestion is of bacterial origin, but may produce cellobioses, sugar, and other available products. It has been also possible to prepare certain celluloses (from agar) which diabetics can utilize without increasing the amount of sugar in the urine. The importance of all this is that the diabetic can utilize a certain proportion of carbohydrates in the normal way, that is to say, without acid decomposition or disturbance of normal digestion.

Suppose, for example, that a diabetic, after his initial fasting, can digest daily 5 grams of starch and a certain amount of hemicelluloses without sugar appearing in the urine. Suppose this case is one of severe diabetes, but now progressing satisfactorily. Allen[29] says: "Anyone can readily convince himself that, in a suitable severe diabetic who is symptom-free for days or weeks on a fixed diet, the addition of some quantity of butter or olive oil to the diet will bring back the glycosuria, ketonuria, and other symptoms immediately or within a short time. The feeding of fat alone does not cause glycosuria, and there is no proof that the sugar is formed from fat; most probably the sugar excretion results from the stimulating effect of fat upon metabolism. The overtaxing of the patient's metabolism by giving fat beyond the limit of tolerance may be an additional explanation of the failure of keeping certain patients free from glycosuria and ketonuria under former methods of treatment." In accordance with the theory of diabetes here described the fat diet increases directly fecal intoxication and reabsorption. The fat produces intestinal putrefaction and increases the quantity of acids and ammonia. The diabetic finds himself in the same condition as an experiment animal when bile is prevented from entering the digestive tube. Little disturbance ensues provided food is administered which contains but little fat. If fats, however, are given in large amounts, more or less serious digestive disturbances soon develop, and the animal loses weight. In such cases it has been ascertained that whereas normally from 2 to 10 per cent. of the ingested fat is eliminated in the feces, from 31 to 47 per cent. now escapes resorption. The offensive gases which are then passed by the animal are referable to an increase in the putrefactive processes in the intestine. This is, however, not owing to the absence of bile *per se*, but to the fact that the unabsorbed fat envelops the albuminous material and thus prevents its further digestion, so that in the lower portion of the digestive canal, where the putrefactive processes are most intense, the bacteria finds an increased amount of pabulum at their disposal, and an increase in the putrefactive products accordingly results. Thus, the presence of fat, in a defective digestive tract, increases the putrefactive processes. This is the fact. The relative quantities of ammonia and volatile fatty acids in stools following an albuminous and a fatty diet may be compared as follows (H. Fischer):

	Ammonia, Mg.	Volatile Fatty Acids, Grams
Albuminous diet	608–576	2.88–1.70
Fatty diet	939–1015	2.78–6.34

The return of acidosis and glycosuria is also easily explained. The cause is to be found in the fecal putrefaction and reabsorption: bacterial metabolism is what becomes impaired. This question is related to another experimentally studied by F. G. Benedict and E. P. Joslin,[30] namely, the metabolism of a healthy man subjected to the restricted diet of the diabetic. The studies upon acidosis have shown that the metabolism of health may be made to approximate closely that of disease by simple external influences, such as the withdrawal of all carbohydrates and the administration of large amounts of fat. Two persons—H. L. H. and H. H. A.—were subjected to a carbohydrate-free diet, and to the administration of much fat; in some instances they excreted 4 to 5 grams of β-oxybutyric acid per diem. The explanation of this change is simple: the production of ammonia and volatile fatty acids reaches its maximum in the large intestine, probably four times the quantities above stated are absorbed and transformed into urea and β-oxybutric acid. The normal metabolism is unimpaired, but the bacterial metabolism is increased and the result of this is studied by means of the respiration calorimeter. A diabetic subjected to the same diet excretes a greater quantity of β-oxybutyric acid, acids, and glucose because the fecal putrefaction reaches a high degree and the greater part of the acid products of bacterial catabolism is transformed into sugar; this sugar is lost for the organism. The same phenomenon may happen in normal man in certain dietetic conditions, where a certain proportion of putrefactive sugar is formed when the fecal acidosis has surpassed the available bases there present. This excess of acid is transformed into sugar and this putrefactive sugar seems to be easily neutralized or oxidized by the action of pancreatic tissue, and finally disappears. The excess of acid, which is not of butyric origin in the diabetic, is also transformed into putrefactive sugar, a minimum proportion is decomposed, but the greatest part is eliminated. It is a fact that the diabetic organism cannot destroy β-oxybutyric acid or diacetic acid like the normal organism. It is also a fact that the diabetic organism cannot accumulate glycogen like the normal organism. Very probably both chemical actions are governed by the pancreas. Because of the destruction of pancreatic tissue and more especially the hydropic degeneration of the islands of Langerhans both these chemical actions fail. The normal pancreatic tissue becomes gradually exhausted fighting the consequence of normal constant intestinal putrefaction until finally diabetes is constituted.

When a normal man is fasting there is always a certain amount of feces produced and this stool contains always microorganisms. The dry solid of the stool amounts to 3.93 grams per diem. The proportion of nitrogen is 6.46 per cent. and 42 per cent. of this nitrogen is transformed into bacterial nitrogen. The relative proportion of bacteria is the following (Schmidt and Strasburger):

The healthy adult by test meal	5.3 grams of bacteria
A very restricted diet 1 liter milk and 1-2 biscuits.	2.95
A fasting man per diem	1.33

In the fasting man the proportion of nitrogen in the stools reaches its maximum. The stool does not contain any carbohydrate and an anaerobic fermentation takes place in the large intestine. In this condition it is not surprising that a certain proportion of acetone should be produced by the reabsorption of butyrate of ammonia. When a diabetic is fasting the excretion of a certain proportion of sugar into the intestine develops a certain antiketoplastic power, on account of the presence of the fermentative bacteria in the large intestine. Let us study this antiketoplastic power.

The perfusion of the liver by blood containing certain substances (Embden) or the ingestion of the same substances by diabetics (Baer and Blum) have shown that the liver is the seat of the formation of acetone substances and there is a certain law in this formation. Acetic acid, propionic acid, and methylpropionic acid do not yield acetone. Butyric acid and other acid of hydrocarbon side-chains, directly derived from butyric acid, yield acetone, α- and β-methylbutyric acids, α- and β-ethylbutyric acids, but not α-methylvalerianic acid. Besides, all normal acids, superior homologues of butyric acid, with even carbon atoms, such as caproic, caprilic, capric, lauric, etc., yield acetone. All these acids in combination with ammonia give acetone when they are formed in the large intestine and pass directly through the liver by fecal reabsorption. For the production of these compounds an anaerobic putrefaction, such as may be produced by proteolytic bacteria, is necessary. If the meat and fat diet is changed and milk and sugar are taken, the proteolytic are substituted by acidophilic bacteria.[31] The same thing happens if sugar is added to the culture media of *B. prodigiosus* or *B. typhi*, the production of ammonia decreases.[32] Thus the carbohydrates modify the intestinal putrefaction and fecal products, and finally diminish the compounds that give acetone. This is the explanation of the antiketoplastic influence of carbohydrates when they appear in the intestines by excretion in diabetics, by ingestion, or by enema. They do not appear in the normal fasting man.

Notwithstanding the experiments in depancreatized dogs treated successfully with prolonged fasting and starvation diet against experimental diabetes the curative action of these measures is not clearly understood unless it is admitted that its action is produced by the disinfection of the intestine. On the contrary, the successful action of these disinfecting agents upon both experimental and human diabetes is a proof that the disease originates from some infection of the digestive tract.

Reasoning along these lines it is also easy to give a satisfactory explanation of the curative action of calcium upon glycosuria and diabetes, upon which Max Kahn and Moritz H. Kahn have recently called attention.[33] As has been established, diabetes produces a profound perturbation of the calcium and sodium metabolism of the organism, the two important opposite ions whose physiological equilibrium maintains the normal carbohydrate metabolism. The primary intestinal acidosis of putrefactive and fermentative origin engages the intestinal calcium in abnormal chemical combinations, unavailable for tissue metabolism and mostly eliminated in the urine. Consequently, the organism of diabetics lacks available calcium to counterbalance the glycosuric action of the predominating sodium ion. The fact is that the direct supply of assimilable calcium salts diminishes or makes disappear the glycosuria in the majority of cases.

Fasting and a very restricted diet are the best dietetic treatment of diabetes. But the radical treatment, both preventive and and curative, is fecal disinfection. If diabetes is a disturbance of metabolism of bacterial origin the disinfection of the

intestine is the radical treatment. This may be obtained by different means: chemical antiseptics, surgical procedures, dietetic and hygienic measures, and biological antagonism. The biological antagonism ever present in the human intestine is the checking or retarding influence that the development of one species of bacteria has upon others. The best known and utilized antagonism of this kind is the checking effect which the acidogenous *Bacillus bulgaricus* produces upon putrefactive bacteria (Metchnikoff). In the tropical Atlantic region, the quantity of acid which exists in the feces is half the normal quantity which exists in the temperate zone, if determined by the same methods, and nevertheless in the former region there are many persons who reach an advanced old age in good health. This fact implies the existence in the tropical Atlantic region of some other form of biological antagonism than that described by Metchnikoff. The agent of this antagonism in the author's opinion is *Micrococcus oxycyanogenes.*[1] This bacterium attacks only the nitrogenous substances, it is not acidogenous, but is moderately ammoniacal. It produces a pigment, the *oxycyanin*, similar to the hemocyanin of poulp blood. The oxycyanin, colorless, but spontaneously turning blue when its solution is agitated in the presence of air, is not a noxious substance, not albuminous in character, and is resistant to heat and chemical influences. The *Micrococcus oxycyanogenes* owes its properties to this singular coloring matter above mentioned. When putrefactive bacteria develop luxuriantly on nitrogenous medium the addition of *Micrococcus oxycyanogenes* destroys all bad odor and noxious compounds in a few days. The methodic ingestion of this microorganism effects an absolute disinfection of fecal matter which becomes green and entirely odorless. The pigment produces the same effect more rapidly but less persistently. All putrefactive compounds disappear from the urine.

Arteriosclerosis is also connected with intestinal putrefaction and the reabsorption of putrefactive calcium salts. Prolonged fasting and restricted diet give the same good results here as in diabetes; but fecal disinfection is the main treatment of the disease.

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118 EAST 116TH STREET, NEW YORK.

SMALLPOX AND VACCINATION.*

BY W. M. KENNA, M.D.,

CENTRAL VALLEY, N. Y.

ASSISTANT PHYSICIAN DR. MACDONALD'S HOUSE.

THE primary and essential object, it would appear to the writer, of the request for some remarks on the history of a disease with which you are all so familiar, was, very likely, to lull the auditors into a somnolent or lethargic state of mind and into a condition of inertia and anergy, so to speak, as a protection against the storm of discussion concerning smallpox which, if signs be true, may break out later in this meeting. For, in the matter of variola, the medical atmosphere in this vicinity is just at present surcharged with electricity of rather high potentiality.

Smallpox, it is generally accepted, existed in Eastern Asia long before its appearance in Europe. Up to Jenner's time it was always a devastating menace to society and, next to the plague, was the most fatal of all diseases to which the human flesh is heir. The history of smallpox, since Jenner's epoch-making discovery of vaccination, has had associated with it, even up to the present time, always the endemic growls and the periodic and acrimonious onslaughts of the antivaccinationists. The trials of the profession of yesterday, in this respect, are the tribulations of the present medical generation.

If Dr. Jenner were to appear before us today he would no doubt shake his head sadly and murmur: "Well, 'twas ever thus"; and, in all probability (such is the tenacity of purpose of some ob-

*Read before the Middlesex County Medical Society.

structionists to human progress) if he should again make an appearance a century hence, some such remark would still be pat and apropos.

The history of smallpox as related to vaccination since Jenner's time in spite of the fact that the disease still exists, may well be pointed to as an everlasting honor to the medical profession in its altruistic efforts to overcome and to stamp it out.

Those of us who have never seen a case of smallpox, or have never been intimately connected with an active and pestilential epidemic, little realize the horrors and trials of such a calamity. And were it not for the beneficent influence of vaccination, which has done so much to hold the disease in check, it had been the lot of many more medical graduates to study the disease at much closer range. Let the complaining wiseacres of the present generation pause for a moment in their whinings about the dangers of vaccination; and let them desist from their invidious sneers at the medical profession for its insistent and consistent encouragement of that prophylactic measure—let them, I say, in an open frame of mind turn back but a few pages of history and remind themselves that in the eighteenth century (not so many years ago) between fourteen and fifteen millions of people died of smallpox; let them recall, for instance, more specifically that during the years 1707-9 in Iceland, in a population of 50,000, this disease was responsible for the demise of 18,000 individuals; and, finally narrowing down to even a still smaller geographical area, let them cogitate upon the fact that in what was accepted as an unusually healthy town in England there was, at one period, only one person in fourteen of the population who had not had smallpox.

Let such examples be well digested—and many other examples of this type might readily be referred to—and let the minds of those opposed to vaccination carry, for the nonce, the images of these facts and allow the picture of the conditions existing since the inception of vaccination to be placed in parallel contrast, as it were. Then it would seem there could not reasonably be more than one opinion in regard to the merits and the benefits of vaccination with its successful antagonism to this scourge of humanity. And besides, even admitting the looseness of the much scorned statistics; even accepting a modicum of accuracy in this respect; and moreover, even not refuting the oft-quoted expression that "figures will lie," the evidence that since the introduction of vaccination there has been a great lessening of deaths from smallpox is overwhelming.

Take, for istance, the matter of mortality from the disease in children. It is a well-known fact that in nearly every country at the present time the children are vaccinated more generally than the adult population; that is to say, a relatively small proportion of adults is revaccinated. Now the death rate from variola among children before the introduction of vaccination was enormous. We see, during the period from 1580 to 1760, that of every thousand deaths, 961 were in children under ten years of age; again in the year 1774 in Chester, England, all of the 202 fatal cases were in children under ten. Still again, over 17,000 of some 36,000 deaths occurring in several places during the prevaccination period, were in children less than two years of age. These are facts in history. Smallpox was then, indeed, essentially a disease of childhood, like measles and whooping cough; while today, it may be properly referred to more especially as an infection of adult life, this being due to early vaccination. In other words vaccination has practically eliminated smallpox as one of the expected physical vicissitudes to which those of tender years are susceptible; and it furnishes us, in a concrete way, with one of the weightiest and one of the most powerful arguments in favor of its continuance.

In this country children are now very generally vaccinated, owing to the requirements in this respect which obtain in the various schools. But during adult life there occurs only an occasional compulsory vaccination, and most adults submit to revaccination merely when a smallpox scare arises in their immediate vicinity. Therefore, in the United States it is mostly during adult life that individuals are subject to the baneful effects of the disease under discussion. As a matter of fact our adult population, for the most part, even though they have been vaccinated in childhood may be deemed (through the loss of immunity) practically unvaccinated. Germany is unique in this respect. There the strict regulations prescribe that not only primary vaccination in infancy must take place, but also revaccination in adult life; and, as a result, that country is now almost entirely free from smallpox, and its hospitals provide merely nominal accommodations for the same. Indeed, so infrequently is it met with that Dr. Baumler, of Freiburg, remarks in a recent paper that there has been no opportunity to observe the disease in his clinic (one of large clientele) for the previous nine years. It seems customary in the foreign countries to be much more rigorous in the matter of compulsory vaccination among adults than it is in our own, and their authorities look to it that not only is vaccination performed in young children, but that a follow-up method is observed; and people reaching the adult stage find they must submit to a revaccination as a protection to themselves and to the communities of which they are members. As an example of the indifference of the Anglo-Saxon race generally in the matter of revaccination, one may point to the fact that in an epidemic in Canada occurring lately, of fifty-eight patients who were stricken with smallpox, every one had been born either in the British Isles or Canada, or in the United States; and either had not been vaccinated at all or had not been revaccinated.

One of the arguments which the antivaccinationists have always used is to the effect that even if a person should be vaccinated this fact does not really prevent his acquiring smallpox. What these obsessionists forget, or perhaps intentionally overlook, is that, although this may be true, yet there is a striking difference in the possible intensity of the disease in the vaccinated and in the unvaccinated. Dr. Hanna of Liverpool has recently emphasized this point by the exhibition of a remarkable series of actual photographs in which the obvious loathsomeness and the hideousness of the infection in those who had not been vaccinated were contrasted with the apparent mildness of the eruption in the cases of those who had received the benefits of vaccination.

The opponents of this procedure practically affirm that the medical profession for years has bolstered up the statistics in smallpox hospitals and in other places where there have been numbers of cases, and by juggling the records has made the results appear to be falsely favorable to vaccination. Puerile and

contemptible though such statements are, they have been sufficient, with the assistance of other inanities, to cause a rallying to their flag of many thoughtless people who, misguided in the adoption of their premises, have from time to time violently and vehemently given vent to their opposition to vaccination.

Medical history is replete with incidents which might refute their claims. One of the strongest offsets to their vaporings has been demonstrated lately by Dr. Hanna. He has carefully analyzed a series of undoubted cases of smallpox, some 1,163 in number. The cold facts are these:

That among 943 patients who had happened to be vaccinated in infancy there were 28 deaths, or about 2 per cent. mortality. On the other hand, of 220 patients who had not received vaccination, there was a percentage of deaths of about 27.2, showing a rough ratio of about ten times greater mortality among the unvaccinated.

Another argument which the antis are fond of using is that possible blood poisoning may result as a sequela of the operation. In this they do have a certain basic argument of truth, for given an existing abrasion of the skin there is always present the possibility of a septic infection. However, with our present day knowledge of aseptic technique, and with the observance of due surgical carefulness, this danger has been reduced, we may truly say, to a minimum.

In fact, almost all cases of septic infections following vaccinations may be attributed to neglect in the after-care of the vaccinated lesion on the part of the patient or, in the cases of children, to the carelessness of those whose duty it is to look after them.

As to the contamination of vaccine during its preparation in the various commercial laboratories, we know that such an accident is rare, considering the enormous amount of vaccine used every year. The laboratories are under the strict surveillance of the United States government; frequent tests are made to determine the purity of the products; analyses often are made of vaccine bought in the open market; a special license is required before manufacture is allowed; and in a word, every precaution is used that the virus may be surely made free from extraneous substances of a harmful nature.

Many fallacious ideas have been held as to the injurious effects which may follow vaccination. One of the old-fashioned views was that a child when subjected to the inoculation of the lymph might forever afterward wear the expression of a cow. Almost all diseases and abnormalities from ingrowing toenails to baldness have been laid at the door of vaccination and ascribed to its evil and baneful effects.

It is a surprising fact that many people to-day still believe that vaccination as now performed is but a modification of the old arm-to-arm method; and it is possible that the inherent fear of contracting syphilis which exists in most persons forms the basis for much of the active opposition to vaccination. Of course the fact that calf-lymph is now used, and, moreover, the pregnant fact that calves are not susceptible to syphilis render absurd any such fear.

As to the lesion of vaccination itself, in the United States army a perfect scar is considered to be about one-half inch in diameter and to be free from the hard scar indicative of other infections. Army surgeons are persistent in following up a "non-take" in a recruit who shows no scar, and vaccination is repeated every two weeks until successful. In the case of reenlistment, the only excuses from vaccination are (1) that the recruit has had smallpox, and (2) that there is undoubted evidence of two "successful takes."

The question has been often debated, "What in reality is smallpox?" Dr. Ashburn, in a recent monograph, has made an attempt to define it. He gives as an answer which he says defies any theoretical or practical criticism that "smallpox is due to a dual and divisible virus, one part of which causes vaccinia and the specific smallpox eruption, the other part being necessary for the production of the contagious, generalized, mortal disease, with a distinct preeruptive stage and initial rashes." Further, he states, "vaccinia therefore protects against the pox stage of smallpox rather than against the whole disease."

In concluding his remarks the writer wishes to quote part of a conversation which a physician related recently. It was in reference to the possible dangers from vaccination. A patient of his had become a doubting Thomas—was on the fence, so to speak—and had interviewed the doctor concerning the matter. The latter explained that of course there was a remote danger of infection. But he added: "Every year there are a certain number of people who suffer from sunstroke; therefore let's put the sun out of business."

CONTINUOUS TRANSFUSION; THE PRODUCTION OF IMMUNITY. AN EXPERIMENTAL STUDY.

By ALFRED KAHN, M.D.,

NEW YORK.

(From the Laboratory of Experimental Surgery, Bellevue Medical School.)

DIRECT transfusion of blood has been known for centuries, but its successful practice dates only from a comparatively recent time, this being due to approved technique and invention. Direct transfusion is the transference of blood from one subject to another. Continuous transfusion is not only the transfusion of blood from one subject to another but transfusion of blood from a second subject back to a first, the blood vessels being so arranged that there is a continual circulation back and forth—a swapping of the blood. Continuous transfusion was not to my knowledge mentioned in the history of medicine until October, 1912, and then in a theoretical article which was published by the author only in synopsis.

These experiments were done: First, in an endeavor to develop this method; second, to put the method to some practical use—hence the animals were infected in various ways and then afterward an endeavor made to immunize them.

Experiments.—Developing of technique: In experiments 1 and 2 animals were not infected; the vessels were merely joined for a continuous transfusion. In the first case, dog 76 died under the anesthetic. In the second experiment, a clot formed in one of the vessels, but we succeeded in getting a slight flow throughout the circuit before the clot formation.

In experiments 3 to 31, inclusive, the dogs were infected by opening the peritoneal cavity and inserting either (1) a small quantity of dust; (2) gauze

TABLE OF EXPERIMENTS

No. Experiment	Date	No. Dog	Object of Experiment	Nature of Experiment	Result	Remarks
1 Donor Inf.	1/10/14	76 75	Develop. Technique.	Crossed. Transfused.	No result.	Dog died under anesthetic.
2 Donor Inf.	1/17/14	86 87	Develop. Technique.	Crossed. Transfused.	No result.	Clot formed preventing transfusion.
3 Inf.	1/27/14	95	1st. To infected dog. 2nd. Transfusion continuously to produce immunity. Death before transfusion could be done.	Laparotomy incision. Peritoneal cavity opened. Dust placed in peritoneal cavity.	Dog died Jan. 30. Peritonitis.	Transfusion not attempted. Waited too long.
4 Inf.	1/31/14	98	Not transfused.		No result. Death anesthetic.	Not transfused.
5 Inf. Donor	1/31/14 2/ 3/14	99 102	1st. Infected dog. 2nd. Transfusion to produce immunity. Transfused 15 minutes.	Peritoneal cavity opened. Infected with dust. Wound sewed tight. No drainage.	Infected dog lived 12 days from date of infection.	Autopsy. Peritonetum clean. No pus. Death from neck wound. Dog (102) donor showed no involvement.
6 Donor Inf.	2/ 5/14 2/ 7/14	28 105	Same as previous experiment. Transfusion only partially successful.	Same as previous experiment.	No result.	Dog 28 (donor) lived months. Not effected by experiment. Dog 105 (inf.) died under anesthesia. Autopsy—g neral peritonitis; pus in peritoneal cavity.
7 Donor Inf.	2/12/14 2/10/14	113 29	Same as previous experiment. Transfused one hour.	Dust.	Infected dog lived 50 days when he was chloroformed.	Autopsy. Peritonetum clean. Donor O. K.
8 Donor Inf.	2/21/14 2/19/14	5 6	Same as previous experiment. Transfused one hour and five minutes.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Excellent.	Infected dog killed and autopsied Feb. 26. Gauze walled off. No infection. Dog 5 remained well.
9 Donor Inf.	2/19/14 2/16/14	121 118	Same as previous experiment. Not transfused.	Peritoneal cavity opened infected with gauze covered with dust. Wound sewed tight. No drainage.	No result.	Dog died under anesthetic. Not transfused. Geenral peritonitis pus.
10 Donor Inf.	2/28/14 2/23/14	136 128	Same as previous experiment. Transfused one hour and fifteen minutes.	Peritoneal cavity opened infected with gauze covered with dust. Wound sewed tight. No drainage.	Excellent.	Dog 136 remained well. Infected dog. Autopsied March 27. Pneumonia in right lung. Peritoneal clean. Dog lived 13 days after primary infection.
11 Inf.	3/ 2/14	137	Same as previous experiment. Not transfused.	Peritoneal cavity opened infected with gauze saturated with pus. Wound sewed tight. No drainage.	No result.	Dog died March 4. No transfusion done. Autopsy. General peritonitis. Gauze not walled off.
12 Inf.	3/ 5/14	143	Same as previous experiment. Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Animal died March 6. No transfusion. Autopsy. General peritonitis.
13 Inf.	3/13/14	154	Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Autopsy. General peritonitis.
14 Donor Inf.	3/19/14 3/18/14	165 162	Same as previous experiment. Transfused. Length of time not recorded.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Excellent.	Infected dog recovered. The Donor remained well. Autopsy. April 9 Dog (162). gauze walled off. Peritoneum healthy. No pus. No infection.
15 Donor Inf	3/21/14 3/20/14	170 168	Transfusion thirty minutes.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Dog died March 23. Autopsy General peritonitis.
16 Inf.	3/25/14	179	Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Autopsy. March 26. General peritonitis.
17 Donor Inf.	3/28/14 3/26/14	183 181	Same as previous experiment. Transfused 15 minutes.	Peritoneal cavity opened infected with gauze covered with dust. Wound sewed tight. No drainage.	Good.	Autopsy. April 8. No peritonitis. Dog (183) not affected.
18 Inf.	4/ 1/14		Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Dog died April 2 before transfusion could be done. Autopsy. Peritonitis.
19 Donor Inf.	4/11/14 4/10/14	211 209	Transfusion one hour.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No success.	Infected dog died April 14, four days after infection. Autopsy. General peritonitis. Gauze partially walled off. Abscess.

TABLE OF EXPERIMENTS

No. Experiment	Date	No. Dog	Object of Experiment	Nature of Experiment	Result	Remarks
20 Donor Inf.	4/16/14 4/15/14	216 215	Transfusion 45 minutes.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No success.	Infected dog (215) died April 18 Autopsy. Pus peritoneum. Gauze partially walled. Dog (216) not affected.
21 Inf.	4/21/14	220	Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Dog died April 22. No transfusion done. Autopsy. General peritonitis.
22 Inf.	4/24/14	221	Not transfused.	Peritoneal cavity opened infected with pus. Wound sewed tight. No drainage.	No result.	Dog died April 25. No transfusion. Autopsy. General peritonitis.
23 Donor Inf.	4/30/14 4/29/14	225	Transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Excellent.	Autopsy. May 28, one month later. No peritonitis. Gauze walled off.
24 Donor Inf.	5/ 2/14 5/ 1/14	228 227	Transfusion one hour.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Perfect result.	Autopsy. Sept. 9 peritoneum clean. Gauze walled off. Dog (228) not affected.
25 Donor Inf.	5/ 7/14 5/ 6/14	233 231	Transfusion one hour.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Perfect.	Autopsy. Sept. 9. Peritoneum clean. Gauze walled off. Dog (233) lived on, showed no effect from transfusion.
26 Donor Inf.	5/ 9/14 5/ 8/14	236 234	Transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Dog died May 10th. General peritonitis. Gauze not walled off.
27 Donor Inf.	5//4/14 5/13/14	143 239	Transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	Excellent.	Autopsy. June 1. No peritonitis. Gauze walled off.
28 Inf.	5/18/14	246	Not transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Dog died May 20. No transfusion done. Autopsy. Peritonitis. Gauze not walled off.
29 Donor Inf.	5/21/14 5/20/14	254 250	Transfused.	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	Infected dog (250) died May 22. Autopsy. Localized peritonitis. Gauzed partially walled.
30 Inf.	5/25/14	258	Not transfused	Peritoneal cavity opened infected with gauze covered with pus. Wound sewed tight. No drainage.	No result.	No tarnsfusion done. Dog died May 27. Autopsy. Peritonitis. Gauze beginning to be localized.

saturated with pus; or (3) pure pus. The reason for infecting in this way was because the substances offered various strengths of infection. Where pure pus was used the dogs died within forty-eight hours, before transfusion could be done; the reaction with dust was slower; gauze saturated with pus presented a reaction between these two—between pure pus and dust.

Technique: In the table of experiments there are two dates to each experiment. On the first date the dogs to be infected were etherized, a laparotomy was done and the peritoneal cavity opened; infected material was inserted into cavity, and the wound was sewed tight, no drainage whatsoever. The second date is the date of transfusion. On this date the donor was selected, next shaved and etherized, and the external jugular exposed throughout the neck. The infected dog was similarly operated upon. The dogs were then turned head to head; the external jugular was cut in the middle in each dog and then joined for transfusion as follows: Upper end of vessel of dog A to lower end of vessel of dog B; the other two ends were similarly joined, then the clamps were removed, and blood was allowed to flow continuously throughout the circuit created between the two animals, from A to B and from B to A. In several of these experiments this continual swapping of blood was kept up for over an hour; manifestly this could not be done with a direct transfusion. The advantages claimed for this method is that the transfusion can be kept up for an indefinite period between, if desired, several subjects, with a minimum loss of blood to each animal.

In none of these cases was there any attempt made to isolate a specific germ, nor were any blood tests made. It is thoroughly realized that the isolation of infecting germs would have made a more interesting paper, but a keen desire to report the continuous transfusion work prompts the experimenter to leave a more detailed study to a later period. The work done is doubtless gross, but it is only a beginning, a general survey of the subject, and later work will be done in more detail.

In dogs that were not transfused, death occurred in 24 to 48 hours, and in transfused dogs death was deferred from three to four days, or absolute recovery took place. All transfused dogs lived longer than the dogs that were not transfused.

Conclusion.—Continuous transfusion is experimentally successful between dogs for periods varying from one-half to three hours. The experimenter believes that he succeeded in raising the vital resistance in instances as related in these experiments. As to the production of immunity, he is in

doubt. In the words of one of my laboratory colleagues, the method doubtless has big possibilities, but a great deal more research is needed. I offer this as a preliminary report.

34 East Fortieth Street.

SOAP.*

By G. K. DICKINSON, M.D.,

Jersey City, N. J.

So often does it happen that the commonplace, that which has become a customary practice, fails to receive the thoughtful attention deserved, while much more importance is placed upon that which is new and recently introduced into professional techniques. The time will probably never come when all will be satisfied with effective simplicity; not, at least, until it becomes a second habit. Even then the exploitation of some new medicament or method may obtain favor because of the strong attraction novelty possesses.

This applies with unusual appropriateness to soap. It has become such a customary thing to soap, lather, and rinse that no thought is given to the process, for the convention of cleanliness satisfies. But, perhaps, there may be more to soaping. There may be some other activity of importance, a study of which may lead to an enlightenment and more proper usage.

Anything is a soap which is a combination of oils with an alkali or alkaline earth. The commercial soaps are made of animal or vegetable oils combined with potash or soda. Soaps made in combination with the alkaline earths are insoluble and ineffective. The two types of soap on the market are: the soda, or hard soap, and the potash, or soft soap.

Not many years ago there were but few varieties of soap. These were imperfectly made, and, the process not being comprehended, the full effect was not obtained. To-day there are thousands of manufactories, a large output, glaring advertisements, and a public dissemination of nicely made up material which attracts even the most ordinary person.

Although soap has been known for ages, it was not until 1813 that Chevreul[1] published the results of his scientific researches on the composition of fats and the process of soap making. He claimed that the cleansing action of soap was brought about by its decomposition in contact with water into fatty acids and an alkali, that the impurities were set free by the alkali, and that the fatty acids entangled them, all being removed with the lather.

According to Park's "Hygiene and Public Health,"[2] grease and dirt cannot be removed without the use of soap. The alkali of the soap combines with the grease and emulsifies it. Cheap soaps may contain an excess of alkali and produce irritation. The best results in saponification are obtained with soft water; that is, water free from lime or magnesia, for one grain of chalk will waste eight grains of soap. If a soap does not produce a lather, it is not efficacious.

Joseph, in "Prevention of Disease,"[3] says that if the fat on the surface of the skin is not emulsified, we cannot speak of cleanliness. The alkali dissolves the superficial horny layer of the skin.

But the interest of the sanitarian and the surgeon is not so much in ordinary cleanliness and cosmetic results as in the inhibition and destruction of germ life. Not until the discovery of pathogenic germs could there be any thought as to the dual value of soap, but, since their discovery, particularly since the thorough researches of Koch,[4] in 1881, there have been numerous experiments from different viewpoints in order to determine whether soap had any inhibiting action on any of the germs which induce disease. He studied the effect of potassium soaps on the development of the anthrax bacilli, and from the results of his observations concluded they had a very pronounced antiseptic power.

The following experiments are noted by Rodet[5] in an article on the antiseptic value of soap:

In 1884 Wernich advised the use of solutions of potassium soap, but in mild strength.

Kuisl, in 1885, experimented with potassium soap on the control of the anthrax, typhoid, and cholera bacilli, but failed to find any antiseptic properties.

Di Mattei, in 1888, made studies in the efficacy of soap on the cholera vibrio, the typhoid bacillus, and the staphylococci.

In 1889 Kaupe made studies of the anthrax bacillus with ordinary soap.

Behring (1890) took forty varieties of soap, experimented with them, and came to the opinion that they possessed a real disinfectant power, but thought that the bactericidal effect was found in the alkali reaction alone. He was the first to denounce as useless the additions of antiseptics to soap.

Nijland, in 1893, used three kinds of soap—the soft potassium, the hard, and the medicated, and found the hard soap less antiseptic than the soft. Those to which phenic and salicylic acids had been added seemed to be diminished in power.

In 1893 Jolles experimented on numerous soaps of the potassium and sodium types, but failed to find any important difference between them. He reached the conclusion that they were efficacious as disinfectant agents.

Reinicke (1895) found the resisting power of spores to the potassium soaps in 5 per cent. solution very considerable.

Beyer in his experiments of 1896 studied the effect of soft soap in 3 per cent. solution in disinfecting soiled linen. His results were to the effect that they could be disinfected by prolonged immersion. Reithoffer, in the same year, worked up the effect of potassium soap in the cholera, typhoid bacilli, and the staphylococci, and stated his belief in its real antiseptic power.

Serafini, in 1898, recognized soap as a very important disinfecting agent, and called attention to the fact that the discordant conclusions of other experimenters were due to the diversity of conditions under which their experiments were conducted.

Foerster (1900) came to the opinion that soft soap was inefficient for the disinfection of linen. Other soaps were more active.

In 1902 Conradi emphasized the important part played by the aromatic principles of scented soaps. He used very weak solutions and failed to get any particular effect.

Marx, in the same year, studied the aromatic principles of potassium soap, but his conclusions are not stated.

Nocht, Henle, and Heider experimented with the so-called antiseptic soaps, and Heller, in 1903, experimented with carbolated soap in various proportions.

*Read at the annual meeting of the New Jersey Sanitary Association, held at Lakewood, December 3, 1915.

Conradi, in 1904, experimented with more than a hundred varieties of commercial soap, using exclusively the anthrax bacillus. His conclusions were that there was no effect upon this germ unless mixed with aromatic substances.

Such is the history of the experimental work done up to recent times. It can be seen that the views do not thoroughly harmonize, and it is a question whether, according to them, soap is at all effective in the control of bacterial life. But, when we read the reports with the knowledge of much of the work being done in the laboratories, perhaps some of the results may be explained.

All of the experimenters, or nearly all, used weak solutions. The soaps employed by many were of the poor commercial type. Some used the potassium soap, others the sodium. The amount of water the soap contained is not mentioned, so that the true percentage of the solution is open to question. The quality of the water employed varied with the locality. Some experimenters studied for the antiseptic action, others for the bactericidal effect. Many of the investigations were upon a rare type of organisms, the anthrax bacillus, very little effort being made to study the effect upon the more common disease-producing forms, such as the staphylococcus, streptococcus, and colon bacillus. In none of the experiments was the temperature of the water made an important factor.

Then again (and the main point of all), in some cases the microbes were put on threads and hung in the preparation, while in other instances they were entangled in albuminous masses.

One very important fact is demonstrated by all the work done by the bacteriologists in the study of soap solution, as well as in the study of other bactericides, and that is, that the germs do not all die at once. Whether it be soap, carbolic, or sublimate, the germs begin to die soon after the application is made, but the last germ is not killed for a considerable time later. It is inaccurate to say that an antiseptic of a certain strength in solution at a certain temperature kills germs at a certain time, because some germs possess a greater resisting power than others and will endure against the antiseptic action for a more considerable period.

Soap as used is not in solution, *per se*, but there is a separation into its ions, and it is taken and applied, according to most writers, in about a 10 per cent. strength, yet few of the experimenters give us the result of a 10 per cent solution.

All the experimenters did not have the same object in view. Some looked into the effect of the preparation on linen, while others looked upon the effect on the skin. But in one thing they are in accord, and that is, an antiseptic added to a soap is diminished in efficiency thereby, and diminishes the efficiency of the soap itself.

Wright[6] says "everything hinges upon whether the laboratory experiments which we trust accurately reproduce the conditions they are supposed to effect. Now, the early experiments on antiseptics (and it is always upon the antiquated experiments the mind of the doctor of the day rests) did not even aim at reproducing practical conditions. The antiseptics came into the application not as they are used commercially, but upon microbes simply suspended in water. Can it pass as an axiom that if *in vitro* all the microbes were destroyed, then also all the microbes *in vivo* would be destroyed?"

Later day researches are, perhaps, more valuable and possess greater reliability. The object of this paper is to present them, also, so that a new viewpoint may be taken and a more accurate estimation of the value of soap as a bactericide obtained.

Symes,[7] 1909, studied to determine two things: whether plain toilet soap might not be a medium in which germs could flourish, and whether it might not be of advantage to use a disinfectant soap. He used the *Staphylococcus* pyogenes aureus, the commonest and most resistant of the pus organisms, and experimented with six types of soap. He answered the first question, "can germs live and multiply on soaps," with the statement that all soaps possess antiseptic properties in some degree and that the germs rubbed into soap or dropped on its surface are not capable of multiplication. Of all the soaps tested the most antiseptic property was contained in the biniodide of mercury soap.

His second series of experiments was as to the disinfecting value of soaps. He made many observations, running over a number of months, and came to the following conclusion: 1 per cent. solution of germicidal soap with biniodide of mercury kills the *Staphylococcus aureus* in 1 minute, while the same strength of other soaps, with or without the antiseptic, fails to do so in from 10 minutes to 3 hours. He noted the fact that all organisms are not affected alike by soap solutions. The cholera vibrio, typhoid bacillus, colon bacillus, and streptococcus are killed much more quickly or by much more diluted solutions than the staphylococcus.

He concludes from his experiments that for practical purposes most so-called disinfectant soaps have no value, but in a combination of biniodide of mercury with soap we have a useful means of disinfecting hands, instruments, and surfaces, although he never succeeded in completely sterilizing the hands.

Championnière,[8] writing in 1910, says that "those who are most strongly opposed to antisepsis are at the present time studying it under various forms, such as the use of tincture of iodine, and soaps." In practice there are numberless sterilizations which can be carried out in a proper manner by using soap in concentrated solution. He feels it would be interesting for some research worker of the day to study soap as iodine, carbolic, and the sublimates have been studied. "The use of antiseptics is current. The object of new methods should be to choose those which are powerful, useful, and inoffensive, according to the requirement of the cases to which they are to be employed. The first place in common antiseptics must certainly be given to soaps. It must not be forgotten that in these times of asepsis the requirements of sterilization are everywhere encountered, even in places where a complete apparatus is not at hand, and it is not wise to neglect anything which may play a really active part and to put every one in a position to effect an indispensable antisepsis with means common but sure. Numerous experiments have emphasized the great antiseptic value of soap, so it is of highest importance to determine its exact action. It is necessary to ascertain whether very complicated methods of certain sterilizations are not inefficient and inferior to the use of soap, which belong to the immense class of unconscious antiseptics, practised in pursuance of a scientific doctrine or because experiment and tradition have established a necessity.

"No practical result will be accomplished by merely studying the absolutely antiseptic value of the substance by means of a simple experiment *in vitro*. The circumstances in which the substance is

employed, the association into which it is forcibly introduced, and complex actions may destroy its properties, and all these facts must be thoroughly established. Soap dissolves the fat bodies and dismembers the albumenoid matter. Whereas in vitro soap appeared infinitely less antiseptic than the metallic salts, it maintains a powerful action at a time when other antiseptics have absolutely no action whatever."

Rodet's article[5] on "The Antiseptic Value of Common Soap," published in 1905, is the most exhaustive treatise we have. After a careful laboratory research, made under conditions which simulate those to which soap is ordinarily and practically applied, he came to the conclusion that soap solutions are manifestly endowed with a destructive power with regard to staphylococci: 1 per cent. solution is very slow in effect and little active, but its bactericidal power is not altogether negligible; 5 per cent. solution is much more active and possessed of considerable power. In the first minute a number of elements are killed and very soon few are left, but these latter survive for a long time, and take hours to be destroyed, as if, amongst the elements of a staphylococcus culture, there were a certain number, which, in regard to soap (and would it not be the same in regard to other antiseptics?), behaved as resisting elements and played the part of spores or durable forms.

The typhoid bacillus is much more sensitive than the staphylococcus. A 5 per cent. solution is very active and kills the bacilli in a short time, the larger number being killed in less than a minute.

All bacilli immersed in soap solution are not killed at the same time. They are touched successively, probably due to an inequality in the resisting power of the various germs in the same culture. Plain soap possesses a real antiseptic power with regard to the staphylococcus and typhoid bacillus, the latter being more sensitive to it.

Our profession has been under the influence of the laboratories. Since the time they became effective in various techniques their impress has been very great, as they seem to possess a short-cut to the explanation of many things and to the perfection of diagnosis. Perhaps good old-time common sense has been neglected and the laboratories resorted to in its place. Through them we have attempted to investigate and to test out the action of disinfectants, but the biggest and best laboraory of all is clinical experience, particularly that of the unconscious type. Can we not see that the professions, sanitary and medical, are gradually becoming suspicious of the value of antiseptics and that there is a trend toward what we used to call hygiene because of our lack of knowledge, but now know to be nature's sanitary antiseptics: soap, water, and sunshine?

Almost all clinics devote considerable time to scrubbing with a potassium soap, the lather put on estimated to be of 10 per cent. strength. Unna, after a preliminary wash, pastes potassium soap over his hands and arms, rubbing it until fairly dry, then puts on gloves and proceeds. Even the educated surgeon, after washing, fails to keep his hands and arms in the antiseptic mixture until the last germ has been killed, but splashes a little and goes to his gloving.

The leading boards of health in our more advanced cities have stopped fumigation and spraying with antiseptics of the laboratory and are depending upon soaps.

A potassium soap made of pure materials, not hurriedly used, we now know not only cleanses, but, by its sustained action materially cuts down germ life.

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280 Montgomery Street.

MEDICAL INSPECTION AND ANTHROPOMETRIC STUDY IN THE UNIVERSITY OF PORTO RICO.

By LUIS A. SALIVA, M.D., G.PH.,

RIO PIEDRAS, P. R.

MEDICAL INSPECTOR, DIRECTOR COLLEGE OF PHARMACY, UNIVERSITY OF PORTO RICO.

THE Board of Trustees of the University of Porto Rico, in its meeting of July 19, 1915, adopted a resolution that Medical Inspection and Anthropometric Study of the students of the University should be undertaken. This is the first time that work of this character has ever been done in Porto Rico.

I was appointed by the Dean of the University as Medical Inspector, and the inspection and anthropometric study were begun in September, 1915, at the opening of the present school year. The examination being now completed, I have thought it might be of interest to the people of Porto Rico and to people interested in anthropometric work outside of the island, to publish the results obtained, since work along this line will be carried out in a very short time by the different public and private schools of the island. Complete medical inspection of schools has been carried on in some cities and States in the United States for the last twenty years. The results attained have more than justified the existence of medical inspection of school children, this being the surest way of safeguarding the life of the young people going to public schools, by preventing the spread of contagious diseases and by correcting malformations. As Dr. S. W. Newmayer of Philadelphia says: "We realize that the progress of our civilization, the welfare of the individual and the general good of society are contingent upon the efficiency of the education imparted to the children in the public schools. To take advantage of such opportunities, children must be physically and mentally equipped." Upon the inspection of the public schools of Porto Rico depends the future physical welfare of the people of Porto Rico.

These few items, though not pretending to contain the last word on the subject, might also be of interest in establishing a comparison between what the people of our island are physically, and what they should be; and between what the development of our young men and women is, as compared with the development of young people of the United States and other nations of the world.

The data presented are the result of the examination of 514 students of whom 220 were males, and 294 females.

ANTHROPOMETRIC CHART FOR BOYS

Age	Height, Inches	Weight, Pounds	Shoulders, Inches	Chest Transversely, Inches	Chest Antero-posterior, Inches	Neck, Inches	Chest muscular, Inches	Chest Natural, Inches	Chest Expanded, Inches	Chest Contracted, Inches	Waist, Inches	Hips, Inches	Right Arm Down, Inches	Right Arm Up, Inches	Right Forearm, Inches	Left Arm Down, Inches	Left Arm Up, Inches	Left Forearm, Inches	Right Thigh, Inches	Right Calf, Inches	Left Thigh, Inches	Left Calf, Inches	Lung Pressure, Pounds	Sight, per Cent	Hearing, per Cent	Condition of Teeth, per Cent	Adenoids	Heart, per Cent	Lungs, per Cent	Number Students Examined
13 years	57	71 50	13	9	6 25	12	26	25	27	24 50	33 25	29 50	7 50	8.50	8 00	7.25	8 25	8.00	16	11	16	11 25	2	90	90	90	no	90	90	1
14 years	63	93	13 75	9 50	7 50	11 25	30 50	29	31	28 75	24	30	7.75	8.50	8 50	7 75	8 25	8.25	18	12	17	12 50	1.50	70	90	70	no	90	90	1
15 years	61 25	93 6	14 31	9 81	7 50	12 18	29 31	28 56	30 37	28 06	25.50	30	8 18	8.93	8 62	7.75	8.37	8.18	16 62	11.37	16.37	11.12	1.62	75	85	75	3 no 1 yes	86 25	81 25	4
16 years	64 76	111 17	14.89	10 03	7 80	12 60	30 82	29 87	31.78	28 16	26 91	31 57	8 64	9.48	9.16	8 48	10.03	8.98	18	12.50	17.80	12.73	2	82.85	85 75	75 71	13 no 1 yes	88 57	84 28	14
17 years	62 71	111 33	15.34	10 33	7.98	12 98	31.59	30.57	32 45	30 11	24 38	32 30	8 77	9 56	9.70	8 24	9.45	9.08	18.26	12.62	17.89	12.60	2 20	80.34	84 48	74 82	28 no 1 yes	89 31	81.72	29
18 years	65 34	115 92	15.47	10 35	8 20	13 08	31 61	30 46	32 76	30 25	27 48	31 98	8 99	9 82	9 49	8.75	9 57	9 25	18.28	12 55	18.04	13.10	2 12	82.22	83.33	75 92	26 no 1 yes	89 44	85 00	27
19 years	65 60	113 52	15 42	10 33	8 09	13	30 76	30.45	32 49	30 20	26 70	30 87	8.73	9 64	9 01	8 62	9 54	9 06	18 24	12 60	17.76	12 59	2 21	81.35	84 59	74 86	36 no 1 yes	88 64	84 05	37
20 years	65 88	116 32	15 75	10 51	7 09	13 33	31 29	30.95	33 06	30 70	27 51	32 61	9 20	9 90	9 60	8 84	9 78	9.43	18 41	12 91	18 17	12 85	2 38	80	86 66	70	20 no 1 yes	85 33	82 66	39
21 years and over	66 73	120 31	15 56	10 55	8 10	13 45	32 59	31.56	33 66	31 42	28 22	32 82	9 04	10 02	9 63	8 86	9 86	9 73	18 57	12 61	18 24	12 53	2 30	77 79	85 32	76 25	71 no 6 yes	87 20	83 31	77
General average	63 58	105 12	14 83	10 04	7 61	12 65	30 49	29 60	31 61	29 12	27 10	31 29	8 53	9 15	9.08	8 28	9 22	8 88	17 82	12 24	17 47	12 36	2 03	79 95 109 O.K. 111 X	86 12 166 O.K 54 X	76 10 65 O.K. 15 X	208 no 12 yes	88 30 146 O.K 74 X	84 09 147 O.K 73 X	220

Average age of boys, 19.07 years.

ANTHROPOMETRIC CHART FOR GIRLS

Age	Height, Inches	Weight, Pounds	Shoulders Inches	Chest Transversely, Inches	Chest Antero-posterior, Inches	Neck, Inches	Chest Muscular, Inches	Chest Natural, Inches	Chest Expanded, Inches	Chest Contracted, Inches	Waist, Inches	Hips, Inches	Right Arm Down, Inches	Right Arm Up, Inches	Right Forearm, Inches	Left Arm Down, Inches	Left Arm Up, Inches	Left Forearm, Inches	Right Thigh, Inches	Right Calf, Inches	Left Thigh, Inches	Left Calf, Inches	Lung Pressure, Pounds	Sight, per Cent	Hearing, per Cent	Condition of Teeth, per Cent	Adenoids	Heart, per Cent	Lungs, per Cent	Number of Students Examined
15 years	60 75	111 58	13 80	9 19	7 30	11 88	29 50	28.80	31 36	28 22	25 05	34.75	8 27	9 16	8 47	8.47	9 00	8 41	18.72	12 96	18.69	12 94	1.36	76.66	90	74 44	8 no 1 yes	87.77	78 88	9
16 years	61 73	105 59	13 43	9 27	6 84	11 96	29 79	29.07	31 06	28 28	25 40	34 01	8 09	8 75	8 25	7.98	8.56	8.12	17.85	12 23	17.84	12 24	1.39	80 06	90	76 25	16 no 0 yes	90	80	16
17 years	61.46	104 69	13 41	8 98	6 90	12 01	29 75	28.77	30.71	27 83	24.77	33.46	8.10	8.64	8 28	8.06	8.61	8 12	17.88	12.37	17.85	12.33	1.16	78.66	90	78 33	60 no 0 yes	89.33	74.50	60
18 years	60 84	103 25	13 37	8 96	7 06	11.96	29 83	28.92	30 93	28 53	24.42	33 16	8 05	8.64	8 24	7 94	8 58	8.11	17 93	12 37	17 93	12 34	1 11	77.66	89 25	78.64	81 no 0 yes	87 03	74 44	81
19 years	61 15	107 82	13.62	9 08	7.11	12.21	30 16	29.38	31.47	28.60	25.09	33 76	8.33	8 92	8 41	8 23	8 74	8 28	18 30	12 47	18.19	12.47	1 15	78 42	89 27	79.63	83 no 0 yes	87 59	76 02	83
20 years	62 00	106 85	13 48	8.86	6 95	12 03	29 91	28.73	30.73	27.89	24.64	33.65	8.13	8.73	8 28	8 08	8 65	8 20	17.98	12 63	17.97	12.61	1 05	76 92	90	84.61	26 no 0 yes	89.15	70 76	26
21 years and over	61 97	108 84	13 77	9 18	6.84	12 02	30 25	29.38	31.27	28 52	24.65	34 05	8.06	8.92	8.26	7 93	8 81	8 06	18 65	12.34	18 64	12 26	0 98	78 42	90	82 63	18 no 1 yes	90	74 31	19
General average	61.41	106 94	13 55	9 06	7 00	12 01	29.88	29 00	31 07	28 26	24 86	33 83	8.14	8.82	8 31	8 09	8 70	8 18	18 18	12.43	18 15	12.45	1.17	78.10 120 O.K. 174 X	89 78 288 O.K. 6 X	79 21 133 O.K. 161 X	292 no 2 yes	88 69 268 O.K. 26 X	75 74 73 O.K. 221 X	294

Average age of girls, 18.30 years.

The average age of the males examined was 19.07 years; their height was 65 inches, and their weight 113.52 pounds. The young men of the same age in the United States average 67.88 inches and weigh 137 pounds. It will thus be noticed that our Porto Rican boys are about two inches shorter and weigh 23.48 pounds less.

The average age of the girls examined was 18.03 years, their height being 61.41 inches, and their weight 106.94 pounds. Comparing, again, these figures with those of American girls of the same age, *i.e.* 63 inches and 120 pounds, we shall see that our Porto Rican girls are 1.59 inches shorter and weigh 13 pounds less than the girls in the States.

Following was the order of examination. Age; height; weight; neck measurement; measurement across the shoulders; chest, natural, anteroposterior, transverse, muscular, after full inspiration, after full expiration; waist; hips; right arm down, right arm up; left forearm; left thigh; left calf; lung pressure; sight; hearing; condition of the teeth; adenoids; heart, lungs. Would drill or ordinary gym. work be injurious? Special exercises recommended.

The above items were printed in blank form, and numbers were used instead of the students' names in keeping the records.

In the examination of the chest, the average expansion was found to be 2 inches. The average pressure, 2 pounds. In the examination of the eyes, simple and granular conjunctivitis, strabismus, astigmatism, myopia and hyperopia were looked for. Out of the 514 students, 285 were found to be suffering from their eyes, 180 of these had myopia and astigmatism; about 85 had hyperopia and simple conjunctivitis, there being four cases of granular conjunctivitis.

The watch was employed for testing the hearing; 60 out of 514, *i.e.* 8.5 per cent. were deaf in one or both ears. One student had suppurative otitis media.

Out of the number examined 316 had decayed teeth, there being only 198 whose teeth were in good condition.

In the examination of nose and throat, enlarged tonsils, adenoids, defects in breathing and speech were looked for. Of these, there were 14 cases of adenoids; 2 had defects in their speech; 2 had defects in breathing. One case of acute tonsillitis was noted.

In the examination of the heart, its position, valve murmurs, bradycardia, and tachycardia were looked for. Fifty students were found to have hemic murmurs, probably due to their anemic condition. Further examinations are being made to ascertain the cause. There were 2 cases of tachycardia.

Mentality tests were not carried out in this first examination, but will be given in our next examination at the end of the school year.

A study of the accompanying charts, one for the boys, the other one for the girls, will illustrate graphically the work accomplished.

Sterilization of Water by Ultra-Violet Rays.—Parkinson reports favorably on this method of sterilization of water, and the treatment of turbid water has met with remarkable success. For a constant result the quartz mercury lamp, employed in this work, must be burning under a constant voltage and be in good condition. The action of the rays is apparently entirely physical. —*Thirty-third Annual Report, Provincial Board of Health of Ontario.*

PLASTERERS' CORNS AND BUNIONS.

By GUSTAV F. BOEHME, JR., B.S., M.D.,

NEW YORK.

NEUROLOGIST TO THE WEST SIDE GERMAN DISPENSARY AND HOSPITAL; ASSISTANT PHYSICIAN, NEUROLOGICAL INSTITUTE.

IN the last few years occupational ills of all varieties have been investigated, but as a rule only from the angle of the patient's constitutional condition. The workers in metals, in chemical factories, in the manufacture of matches, those who are injured generally by noxious fumes and gases have all been investigated and prophylactic and curative means for their ills have been devised. There are, however, a number of minor complaints which are due directly to occupation, that have been ignored completely, and it is the province of this paper to call attention to one such condition, with a suggestion for the means of its prevention.

Some time ago there came into my office a patient who worked as a plasterer and I noted, in chatting with him, the peculiar deformity of his hands. On asking him how they had gotten into this condition he laughed and said, "All plasterers have

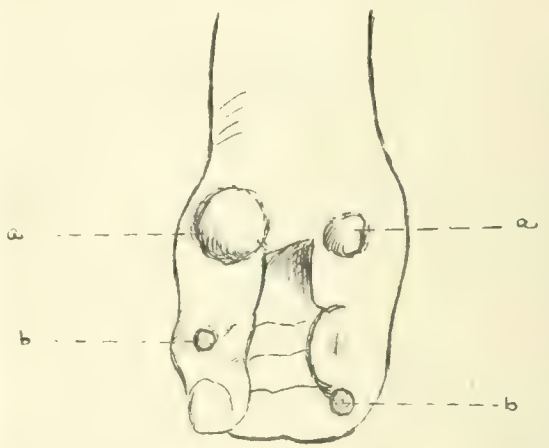

FIG. 1.—Position of "Bunions" and "Corns." *a*, bunions; *b*, corns.

them; we call the big ones "bunions" and the small ones "corns."

Clinically the condition presents itself as follows: Over the external aspect of the metacarpophalangeal joint of the thumb there is noted a large bursa, varying in size from a quarter to a little below a fifty cent piece. This protrudes exactly as a large bunion does in a corresponding position on the feet. A similar bursa, usually smaller in size, is present over the metacarpophalangeal joint of the index finger.

Over the first interphalangeal joint of the index finger, and the corresponding joint of the thumb, two hard callous areas are present, exactly the same in character as the corns on the feet. These among plasterers are in fact known by that name.

The etiology of the condition is interesting. They occur more commonly on the left hand (as most plasterers are right handed) and are produced in the following manner: The plasterer holds in his left hand a flat board about sixteen inches square to which, at its center, is attached a round stick six to eight inches long. This central handle is held in the hand, the board resting flat upon the closed fist so that it gains its support from the metacarpophalangeal joints and the flat

surfaces of the thumb and index finger. Upon the board is placed a large pile of plaster weighing from six to eight pounds. With his trowel the plasterer now removes the plaster from the side nearest to him of this instrument known to the workers as a "hawk," and gradually, as he uses the material, rotates it in his hand, bringing new plaster near him. Acting therefore for six to eight hours daily upon the hand, there is a pressure of six to eight pounds weight (accentuated by gravity, in foot-pounds of work, dependent upon the elevation of the job), in conjunction with the constant friction produced by the rotation of the hawk. The end result is at first a subacute inflammatory process over the joints described, followed by the gradual development of the two large bursa, "bunions" as they are called in the business, with callouses, known as "corns," on the other points of pressure. The deformity in advanced cases is marked, and is not at all a pleasant condition to present to public view.

The therapy in this condition I believe should be directed toward prophylaxis, and I believe that I have devised a "hawk" which will do away entirely with the condition. It is simple in construction and should not be of great added expense to the plasterer, especially when he considers that a real deformity is prevented thereby.

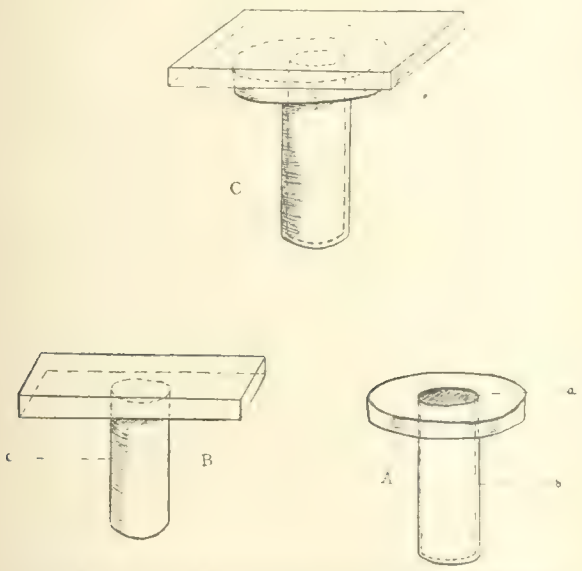

Fig. 2.—Model of improved hawk for plasterers' use.

In Fig. 2, *A* is a hawk of oval shape slightly larger than the hand. In its center (*a*) is a hole leading into a hollow handle (*b*). *B* is a similar hawk, the top of which is of the usual size employed in work. The handle (*c*) slides into the hollow handle (*b*) of hawk *A* and the whole hawk *B* can be rotated on its axis within this hollow shaft. The edges of the superimposed hawk *B* are notched to allow the workman to rotate it by a touch from his trowel. The lower surface of the hawk *A* should be padded with hair and leather to prevent undue pressure.

In practice the hawk *A* is grasped in the left hand, the hawk *B* is slid into hawk *A* (as Fig. 2, *C*), plaster to the usual amount is superimposed. As plaster is needed the upper hawk can be rotated upon the lower, thus entirely avoiding the constant friction on the hand of the worker. The padding also helps to prevent pressure on the bony prominences supporting the instrument.

By means of this simple variation of an old-time tool the writer believes much discomfort and pain can be prevented, besides the avoidance of a permanent and unpleasant deformity of the hands.

As to the treatment, the method varies with the degree of the process present. In the early cases stopping the work temporarily, with local soothing applications will restore the hand to normal. The subsequent use of the above described hawk should prevent its recurrence.

In cases of long standing actual "bunions," *i.e.* inflamed bursæ are found, and these must be treated like these bursæ elsewhere. The callouses can be removed in the usual manner, by means of caustics, or any of the salicylic paints or salves.

There are numerous minor ailments of this kind occasioned by occupational instruments and manoeuvers. This is but one of them; further study will present similar conditions, and their treatment along prophylactic lines is not to be neglected—at least no more so than that of the constitutional ills.

220 Audubon Avenue

Medicolegal Notes.

Privileged Communications—Waiver by Failure to Object.—In an action for personal injuries the most important and difficult question was whether, under the Minnesota privileged communications act, a patient, if he fails to object to a question which necessarily calls for testimony which is privileged after a fair opportunity is given him to make an objection, waives his right to object that the physician cannot testify. The testimony in question was as to a physical ailment existing prior to the accident. "There is no question," said the Court, "but that this testimony is inadmissible, unless the plaintiff made it inadmissible by waiver. There was no express waiver. If there was a waiver, it must be because of a failure to object at a proper time. There is much to be said in support of the policy of limiting the statutory restriction or of modifying the statute. Dean Wigmore makes a forceful argument against the rule of prividеges. 2 Wigmore Ev. secs. 2388-2389. It is followed in an incisive opinion in Epstein v. Pa. R. Co., 250 Mo. 1, 156 S. W. 690, 48 L. R. A. (U. S.) 394, Ann. Cas. 1915A, 423, and in other cases. The complaint usually is that a plaintiff, seeking damages for an injury, is unfair in repressing and keeping from the jury the testimony of a physician who treated him and has knowledge of his condition at the time, when the physician's testimony, if truthfully given, should be helpful to the jury in reaching a right determination of the extent of the injury for which compensation is sought. There is much force in this suggestion; yet there are those who say that the complaint made is unjust, in that it prescribes an arbitrary test of fairness for the plaintiff, and leaves the physician who attended him at the time of his injury, and whom he did not employ, and who may be a partisan of the defendant, restrained by no rule of fairness, except such as his conscience gives. It is likely that the whole question is not of such far-reaching importance as some give it, for juries see the practical situation and measure testimony accordingly. This court voiced its understanding and appreciation of the standpoint of Wean Wigmore in Hilary v. Ry. Co., 104 Minn. 432, 116 N. W. 933, and notably in the late case of Marfia v. Great N. R. Co., 124 Minn. 466, 145 N. W. 385. We are not concerned with the question of the policy of restricting a physician in his testimony. The Legislature has fixed the policy and stated it in the language of the statute quoted. The question of waiver, however, is a question for the court; * * * and it is the view of the majority that when a question is asked a physician, necessarily calling for testimony which is privileged under the statute quoted, and a fair opportunity is given the plaintiff to make an objection, he must make it then or lose his right to object afterwards during the trial. * * * A minority of the court do not agree with the conclusions stated."—Burke v. Chicago & N. W. Ry. Co. Minnesota Supreme Court, 154 N. W. 960.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE SOLDIER'S HEART.

ACCOUNTS of wounds in war, their nature and treatment have filled many pages of the medical journals since the outbreak of the war in Europe, and already a voluminous literature has accumulated on the subject. From the medical standpoint not so much has been written for the very good reason that, on the whole, disease has been conspicuous by its absence among the soldiers at the front. There has been no great epidemic, with the exception of that of typhus in Serbia, and the health of the soldiers, at any rate, of those at the French front, has been quite remarkably good. Nervous affections brought about by strain and shock have been fairly frequent. A somewhat extraordinary feature of the campaign in France is that a large proportion of tuberculous subjects serving in the French army are said to have been greatly benefited by the exposure and the hard life which they have been compelled to lead.

With regard to heart affections, it is manifest that the trying life of the soldier, the stress of life in the trenches, the shocks which he has encountered, and the varied vicissitudes to which he has been exposed have placed an undue strain upon the heart. Naturally when the heart is impaired, such a life as the soldier must lead will find out the weak spots and render its possessor unfit for military duty. But, as Sir James Mackenzie pointed out in a paper read in opening a discussion in the Section of Therapeutics of the Royal Society of Medicine (*British Medical Journal*, January 22), such cases form but a small percentage of those that are actually invalided on account of their hearts. He further pointed out that it has long been recognized, particularly since the instructive account published by Weir Mitchell and other physicians during and after the American Civil War, that there is a form of heart trouble to which soldiers are particularly liable and which has gone under the name of the "soldier's heart" or the "irritable heart of soldiers." Mackenzie during the past year has had opportunities for studying heart disorders of soldiers, and in association with Dr. Wilson has examined about 400 cases. They found that at least 90 per cent. of the cases that had been certified and treated as heart affections were not primarily heart cases, and that the principles of treatment applicable to these cases were widely different from those called for in heart failure.

After describing the phenomenal characteristics of the soldier's heart, Mackenzie concludes that the condition is one of general exhaustion and the circulatory symptoms are but parts of a general manifestation. In order that this point may be appreciated more clearly, he differentiates between an infected heart and chronic disease of the heart. In some cases of infected heart there may be doubt as to whether the condition may not be due to an infection of the heart itself. It may not be possible to settle the question while there is a rise of temperature, so judgment will have to be deferred until the fever subsides. If the temperature remains raised for a period of weeks, and no source of infection can be found, then the suspicion that there is an affection of the heart becomes strengthened. With the permanent fall of temperature, the heart can usually be assumed to have escaped infection and the abnormal manifestations—rapid beat, systolic murmur, and increase in size—may be taken as a reaction of the heart to a toxin, or to the factors that produce a general exhaustion. In chronic heart disease the first sign of a failing heart affected by some old standing lesion is invariably a subjective one, due to a distressful sensation arising when some effort is made which the individual used to perform with no discomfort. By far the most common sensation occasioned in this way is breathlessness; the next most frequent pain. Both these may be associated with palpitation. These are sensations which everyone recognizes as indications of inefficiency of the heart. In the poisoned heart these are usually not the first signs, though they also appear, the first sign being the sense of exhaustion. Such heart abnormalities are, according to Mackenzie, but a feature in a general condition. In short, the view taken by the great British authority is that the cause of the disorder is some bacterial or toxic influence, although he acknowledges that the grounds for this belief are solely clinical.

The treatment recommended for the condition should be one which tends to increase the health of the body as a whole in such a way as to increase the natural resistance to infection, to eliminate toxic influences and to brace up the whole man bodily and mentally. In Mackenzie's opinion the best way to achieve this result is by fresh air and judicious exercise in the fresh air. Attention is drawn to the fact that there is a deeply rooted notion that if there is anything wrong with the heart the patient must be restricted in the amount of effort, and indeed the common belief among physicians is that the best mode of treatment is rest in bed or, as Mackenzie puts it, going about gingerly. He entirely disapproves of this, however, and, as said before, advocates judicious exercise in the open air.

FREE OMENTAL GRAFTS IN ABDOMINAL SURGERY.

SOMETHING over a year and a half ago (August 8, 1914) we called attention to the value and gradually increasing field of application of free fat and fascia transplantation, and since then Lexer and others have contributed exhaustive articles on the trans-

plantation of tissues and organs. The results in many instances have been little short of marvellous; and from the numerous reports of such successes in the literature it is evident that surgeons have been generally quick to grasp the possibilities of tissue transplantation.

In view of this fact it seems strange that more use has not been made of the omentum in intraabdominal surgery. Here is a fatty structure ready and waiting to be used in certain classes of cases and still, as Freeman (*Annals of Surgery*, January, 1916) says, there seems to be a general failure to recognize the important surgical uses to which it may be put, and especially is this true of free omental grafts. Freeman calls attention to the fact that the omentum seems almost intelligent in seeking out and attaching itself to raw and inflamed surfaces, wrapping itself around them in such a way as to afford a maximum of protection; and that when the inflammation has subsided or the need for protection has ceased these adhesions tend to disappear. He then discusses a number of conditions under which omental grafting may be profitably employed, such as the replacement of lost portions of the peritoneum; the prevention of adhesions; the strengthening of suture lines in operations upon the stomach and intestines; pyloric and intestinal occlusion; and the checking of hemorrhage, particularly parenchymatous oozing from the liver or spleen.

The technique of omental grafting is simple, but Freeman calls attention to the following precautions which are to be observed: (1) In tying off the graft a sufficient number of ligatures should be used so as not to pucker the pedicle into too much of a bunch. (2) The excision should be made as far from the base and as near the free border of the omentum as possible and an effort made to avoid the larger vessels, for reasons mentioned further on. (3) No more tissue should be sacrificed than is actually required. (4) The grafts should always be held in place by a number of stitches of fine catgut, in order to guard against their shifting. Silk or linen sutures are unnecessary, owing to the remarkable rapidity with which adhesion of the grafts occurs. (5) The transplant should entirely cover the raw area and project over the sound tissues on every side.

There are, however, certain objections to omental grafts which Freeman thinks should prevent us from employing them too hastily. These are: (1) The production of multiple foci of hepatic necrosis; (2) the causation of gastric and duodenal hemorrhage; (3) the loss of a useful organ which might be required for other purposes, and (4) the production of a raw omental stump capable of forming objectionable or even dangerous adhesions. He does not consider that there is much force to any of these objections, for the probability of their occurrence is remote to say the least. Gastric hemorrhage and hepatic necrosis are of the greatest interest and are probably both due to emboli arising from thrombosis of the vessels following ligation of the omental tissues. However, he quotes Friedrich for the statement that such happenings "belong among the rarest clinical phenomena," and when they do appear the prognosis is usually good.

There can be no doubt that omental grafting is a resource of great value in selected cases. Certain general indications may be stated, but the use of the graft in the individual case must always depend upon the possibly complex conditions that may be present and the ultimate decision will depend also upon the surgical judgment, skill, and experience of the operator. In certain adhesion cases, after cholecystectomy when there is parenchymatous oozing or difficulty in covering in the raw surface, after the separation of ileal kinks and bands, to reinforce the suture line after the excision of a gastric or duodenal ulcer—these are a few of the conditions in which omental grafts may be advisable; and doubtless more use will be made of this resource as its value is better appreciated.

POST GRADUATE INSTRUCTION IN MEDICINE.

WHEN a man has received the degree in medicine, as a rule, he is not fully fitted to practise; he must gain experience in hospital or dispensary work ere he is adequately qualified to perform the duties of a general practitioner. Moreover, after he has been practising for some time he is apt to get rusty or rather he is not well acquainted with the improvements in medicine and surgery that are constantly taking place. In order to be in every way competent to do his duty to his patient he must keep in touch with all the advances of medical and surgical science. For the majority of practitioners the best means of successfully achieving this object is attendance at some post-graduate school of medicine.

In the *Interstate Medical Journal*, March, 1916, is a paper by Dr. Frank Spooner Churchill of Chicago dealing with the subject. He sketches the ideal hospital for post-graduate teaching and especially emphasizes the value of post-graduate teaching in pediatrics. The principles discussed in Churchill's paper are summarized as follows: (1) Post-graduate study and instruction in medicine are desirable both from a private and public point of view; from the private points of view they enable the individual practising physician to keep himself informed as to progress in medical science, thereby making him a better workman and increasing his prestige and standing in his own community; and secondly, from the public point of view, in that it ensures to the public well trained and well informed physicians, an inestimable benefit to any community. (2) The opportunity for physicians to keep themselves so informed is best found at a teaching hospital connected with the medical department of a university, such a hospital being located preferably in a large medical center, in order to secure an abundance of clinical material. (3) To make the clinical material available for teaching, the hospital must be well organized and well equipped, the material well classified. (4) While opportunity should be provided for physicians to develop themselves into specialists and research workers, the greatest importance attaches to the needs and demands of the great body of general practitioners. Therefore (5) instruction should be made as practical as possible, patients being studied at the bedside and in the

laboratory; and (6) The teaching should be as individual as possible; hence classes or groups should be small in number. (7) Undergraduates and postgraduates in medicine should not be taught in classes together, so different are the demands and needs of the two groups.

Plastic Surgery of the Face.

The present war, especially as it is carried on in France and Belgium, has been distinguished by certain outstanding features. The first of these features is applicable to the war generally, namely, the use of such high explosive shells as have never been employed in warfare previously; the second is the trench fighting, chiefly waged in France and Flanders, and the third is the use of gas. A striking feature of the wounds resulting from this mode of warfare is that so many in the prime of health and strength are almost hopelessly mutilated. Some are crippled and disfigured nearly beyond recognition, and in France, at any rate, the greater proportion perhaps of these are wounded in the head and face. This is due to the fact that in trench warfare the upper part of the body is the most exposed, and to the employment of high explosive shells and shrapnel. In no war have there been so few wounded by rifle bullets. It goes without saying that a very large number of the head and face wounds have been of a terrible nature. At a meeting of the Eastern Medical Society of the City of New York held on February 11, 1916, Dr. W. Seaman Bainbridge read a paper on some effects of war as seen by himself, the paper being illustrated on the screen. Among the many aspects of the war depicted were several pictures of face wounds which were successfully treated by Dr. Blake, late of New York, and by Dr. Hayes, an American dentist. As an illustration of what skilful plastic surgery can accomplish, these pictures were wonderful. However, plastic surgery has reached a very advanced stage of development. In the *Journal of the Royal Army Medical Corps* for December, 1915, is a paper by four British dentists, Messrs. Hopson, Payne, Pearce, and Mummery, dealing with plastic surgery of the face and drawn from their experience of jaw injuries which had occurred among British soldiers fighting in France. They tabulate their principles of treatment as follows: (1) Reduction of the displacement and maintenance of the remaining fragments during healing of the parts; (2) stretching of the cicatricial tissue and remoulding of the facial contours; (3) fitting of a permanent prosthetic appliance to replace lost parts, restore function, and preserve the facial outlines.

Simple Pruritus.

Perhaps no physician ever lived who has brought to bear so much of effort to determine the exact pathogeny and rational treatment of disease as the dermatologist Unna. The reason for this lies in the comparative absence of drawbacks connected with a study of disease of superficial tissues. Unna also offers the almost unique combination of a laboratory and clinical practitioner and a high type of each. No one is more exhaustive in the study of histology and histochemistry, nor more original and resourceful as a therapeutist. In the *Berliner klinische Wochenschrift* for November 8 Unna briefly sums up the subject of simple pruritus. presumably as it affects or might affect the soldier. The affection is either universal or reappears in successive localities. Any toxic substance which is a reducing agent and can damage the endothelial nerves of the blood capillaries may set up a pruritus which will subside only with the withdrawal of the cause. This affection is not very prevalent among the troops and is usually due to one of a few causes, as tobacco, icterus, and involutional changes in the skin, the latter being a predisposition which is activated by unknown circulatory toxins. In civil life diabetes and albuminuria are frequent causes of simple pruritus. The treatment must necessarily be eliminative. Locally oxygen baths and strong oxidizing applications neutralize the poison because these are themselves reducing agents.

The Thorax Paralyticus.

This anomaly is sufficiently described in various textbooks, but is by no means an entity. There are differences of opinion as to whether it is congenital or acquired and speculation as to its relationship with the habitus asthenicus. At a recent session of the Berlin Medical Society (*Muenchener medizinische Wochenschrift,* December 7) Virchow showed a dissection of such a thorax. It had a narrow aperture and a long manubrium, which explained the anterior width of the intercostal spaces which were correspondingly narrow behind. A firm connection of the first rib with the sternum is necessary for the performance of its function and has no relationship to a phthisical apex. Respiratory gymnastics, especially singing, can favorably alter the shape of the thorax. In discussion von Hansemann stated that ossification of the first cartilage was not a phenomenon of vital significance; the form of the first rib had much to do with the aperture of the chest. Wolff-Eisner spoke of radiographs of the tuberculous thorax. Only now and then was the first cartilage ossified. This phenomenon could be ascribed in part to ossifying perichondritis. Kausch alone upheld Freund's doctrine that ossification of the first cartilage was a determining causal factor of pulmonary tuberculosis.

The Sterilization of Sputum Specimens.

One of the ever-present dangers to which the laboratory worker is exposed is that of infection from the specimens which are submitted to him for examination. This is an especially great danger in the case of sputum, since the outside of the container is more apt to be contaminated. A method which eliminates this danger has been devised by Griswold (*Jour. Lab. and Clin. Med.,* 1915, i, 189). He autoclaves the specimen in the sputum bottle for twenty minutes at twenty pounds pressure and 120°. This sterilizes bottle and contents and causes a separation of the specimen into two layers, an upper watery one and a lower, more solid, layer having about the consistence of butter. This consists largely of coagulated albumin and contains most of the bacteria of the sputum. This material gives a thin even smear which is readily stained and examined. Control tests showed that the tubercle bacilli stained as well after autoclaving as before and cultures and animal inoculations showed that the material was sterile. The cleanliness and safety of this method should commend it to all laboratories as being worthy of adoption when culture tests are not to be made.

News of the Week.

Military Training.—The College of Physicians and Surgeons, Columbia University, announces a course of lectures on military administration, medicine, and surgery, to be given at the college on Tuesday afternoons at 5, beginning on March 28. The lectures will be open to the general medical public as well as to the students of the college. The course is as follows: March 28, "Organization, Equipment, and Training of Armies," by Lieut.-Col. W. S. Terriberry, Medical Corps, N. G. N. Y.; April 4, "Organization in the Medical Department, and Its Service in Campaign," by Major Joseph H. Ford, Medical Corps, U. S. A.; April 11, "Wounds in War, Their Complications and Treatment," by Major Ford; April 18, "The Personal Hygiene of the Soldier," by Major S. H. Wadhams, Medical Corps, U. S. A.; April 25, "Camp Sanitation," by Captain P. W. Huntington, Medical Corps, U. S. A.; May 2, "Preventable Diseases in War," by Captain Huntington.

New Dental School.—As previously announced, the Faculty of the College of Physicians and Surgeons, Columbia University, New York, realizing the importance of the relation of infections of the teeth and mouth to systemic disease, has unanimously voted in favor of the establishment of a dental department in connection with the medical school. This will be the first university dental school in New York City and the second in the State. The admission requirements for the dental school will be the same as for the medical school, and the first two years of the four-year course will be the same as the first two years in medicine, thus insuring for the dental student a thorough knowledge of the fundamental sciences necessary to the practice of medicine. After the second year the dental student will give all his time to the study of dental subjects: operative dentistry, prosthetic dentistry, oral surgery and oral pathology, orthodontia, etc., and the more technical part of the work required for the well-trained dental surgeon. The school will be the first in New York State to give a four-year course in dentistry.

A Pay Clinic.—Mt. Sinai Hospital, New York, announces the establishment of a clinic for paying patients to be conducted by the hospital, in the belief that there exists in this city a need for pay clinics where ambulant patients in moderate circumstances may consult reliable specialists without being compelled to pay office fees beyond their means. The clinic will be held on week-days from 7.30 to 9 P. M., and the patients will be restricted to those whose incomes are under $1,200 a year. Opportunities for consultations between outside physicians and the clinic doctors will also be provided.

Rockefeller Foundation.—Among a number of appropriations recently made by the Rockefeller Foundation, New York, are the following: To the Rockefeller Institute for Medical Research for additional endowment needed in connection with the Department of Animal Pathology at Princeton, N. J., for the study of animal diseases, $1,000,000. To the Institute, also, for the cost of medical research and such medical supplies and services as the Institute may appropriately furnish at the seat of war in Europe, $25,000. To the China Medical Board for the purchase of additional property adjoining the Union Medical College, Pekin, thus increasing the facilities for the promotion of medical teaching in China, $125,000. The major part of the second appropriation mentioned will be used for the support of the hospital and research work conducted by Dr. Alexis Carrel at the hospital in Compiegne.

Fight Over Mohansic Site.—At a recent conference between Governor Whitman and the Republican leaders, the decision was reached to put through the Legislature a measure providing for the abandonment of the Mohansic State Hospital and the Yorktown Heights Training School for Boys on the Croton watershed. An effort is being made, however, to strangle the bill in committee.

The Harrison Law in Texas.—Forty physicians in the State of Texas have been convicted of violating the Harrison law governing the use of narcotics, and the State Medical Board, at a recent meeting, decided to ask for the revocation of their licenses.

Medical Legislation.—There has recently been introduced into the United States Senate a bill providing for the establishment in the Department of Justice, a bureau for the study of the criminal, pauper, and defective classes, to include laboratory investigations and the collection of sociological and pathological data. The bill provides for the appointment of a director, a psychologist, and clerical helpers, the total cost of the bureau to be about $15,000 per annum.

Deaths of Foreign Medical Men.—Dr. Gilbert Ballet, professor of mental diseases in the Faculty of Medicine, University of Paris, died on March 17.

Dr. Léon Labbé, the well known surgeon of Paris, member of the Institute and of the Academy of Medicine, died on Tuesday of this week. He was born in Mericault in 1832.

Dr. Pietro Grocco, director of the medical clinic at the University of Florence and a senator in the Italian Parliament, died of pulmonary tuberculosis the latter part of February.

Reorganization at Randall's Island.—Dr. William B. Cornell of Baltimore, executive secretary of the Mental Hygiene Society of Maryland, has been appointed by Commissioner Kingsbury as medical director of the New York City Child's Hospital and Schools at Randall's Island, and the institution is to be completely rehabilitated and reconstructed. The city has made an initial appropriation of $600,000 to start the work of rebuilding and reorganization in the right way, and it is understood that $1,000,000 in addition will be forthcoming to complete the work. Dr. Cornell is a graduate of the Johns Hopkins Medical School, in 1903, and has had considerable experience in the care of the insane and of defective children. He assumed charge of the institution early in March, this being the first time in the history of the place that a medical man has been at its head.

Dr. Carlos Husk, chief surgeon of the American Smelting and Refining Company, who had been working with the doctors sent by Mount Sinai Hospital, New York, in studying typhus in Mexico, died at Laredo, Texas, from typhus fever on March 20. Dr. Olitzky of New York, who is also down with typhus, is reported to be recovering.

Mosquito Week.—The Department of Health of New York City announces that the week beginning May 1, is to be set apart as "mosquito week," and that during that time a determined war will be waged against the pests. This was decided upon at a conference held last week at the Health Department between the local authorities and representatives of the health boards of Nassau, Suffolk,

and Westchester Counties, New York, and Hudson County, New Jersey. Commissioner Emerson says that the Health Department will prosecute all owners who neglect proper precautions in the drainage of their properties. The Department will also breed for experimental purposes 1,000,000 mosquitoes and will prepare them in glass jars as exhibits to be distributed to the public schools in the summer and used as object lessons in the nature study courses.

Dr. Haiselden Resigned.—Dr. H. J. Haiselden of Chicago, who achieved considerable notoriety last fall because of his refusal to operate on a defective baby, has resigned from the Chicago Medical Society on March 13, on the charge of unethical conduct. His expulsion was recommended by the committee on ethics of the society because he had permitted the publication of a serial story of the case in a newspaper over his signature and had posed for moving pictures.

"The Medico-Legal Journal" has changed hands, Mr. Clark Bell, its founder and publisher, retiring, and being succeeded by Dr. Alfred W. Herzog as editor and publisher. The journal will appear henceforth as a monthly instead of a quarterly.

Help for Drug Addicts.—The Board of Inebriety of New York has, with the cooperation of the Commissioner of Charities, obtained additional facilities at the City Hospital and the Kings County Hospital for the preliminary treatment of drug addicts who are afterward to be cared for at the Farm Colony at Warwick. In addition to the hospital and industrial colony at Warwick, which is now being enlarged so that it will be possible to accommodate 300 patients by the end of the year, the Board of Inebriety is empowered by the law to provide for the treatment in the city of alcoholics and those suffering from drug addiction.

Negro Dies at 121 Years.—Louis Merriman, a negro of Kansas City, Mo., who was said to have been born 121 years ago, when Washington was President of the United States, died recently at his home.

Hospital Reports.—The Roosevelt Hospital, New York, during the year ending December 31, 1915, treated 33,918 patients, according to the forty-fourth annual report of the hospital recently issued. Of these, 4,826 were cared for in the wards, 12,625 in the emergency department, and 16,467 in the outpatient department. Since the opening of the hospital on November 2, 1871, treatment has been given to 130,283 bed patients; 936,250 ambulance cases have been cared for, and 2,186,125 patients have been seen in consultation. For the year just ended, the total disbursements of the hospital are given as $412,673.34.

The annual report of the Flower Hospital, New York, covering the year ending September 30, 1915, states that during that time 4,749 patients were cared for in the hospital, of whom 1,189 were free patients, and 1,401 city patients. The total days of treatment were 50,605. The hospital ambulances answered 5,671 calls, an average of over fifteen a day, during the year. In the dispensary, 27,417 treatments were given and 20,529 prescriptions filled.

The Northern Dispensary, New York, during 1915 treated 12,327 patients in the dispensary and 1,678 in their homes, 6,495 of the total number being children under fifteen years of age. The number of cured or relieved patients was 12,137. The total disbursements for the year were $10,272.55.

Field Hospital Review.—The First Field Hospital, N. G. N. Y., the only organization of its kind in New York City, and the first in the United States, was reviewed on the evening of March 14 by Lieut.-Col. W. S. Terriberry, chief surgeon of the National Guard of New York. The organization was formed ten years ago and is reputed to be the most efficient in this country.

To Study Tuberculosis.—The Association for the Promotion of Medical Research for the Prevention and Cure of Tuberculosis was recently incorporated in New York State. Its chief office is in New York City and its field of labor is the United States; its purposes are set forth as the establishment of professorships and scholarships in the various medical schools and the maintenance of institutions for the treatment of tuberculosis.

State Psychopathic Hospital.—If the Wheeler bill, creating a clearing house for the mentally deficient in New York State is passed, it has been stated, a number of wealthy and public spirited citizens will build in New York City a large psychopathic hospital which will be leased to the State for a nominal amount. It is said that the sum of half a million dollars has already been pledged for this undertaking. The Wheeler bill creates a commission of seven persons with an executive manager to supervise the work of examining and diagnosing the cases of the mentally deficient and to investigate the causes of mental deficiency.

Measles at Training Station.—The outbreak of measles at the Naval Training Station in Newport, R. I., is now said to be well under control. Twenty-two patients were being cared for at the Naval Hospital on March 12.

In Aid of Bellevue.—By an arrangement between one of the large New York department stores and the Social Service Committee of Bellevue Hospital, a number of society women, members of the committee, acted as saleswomen in the store during the week of March 13, 10 per cent. of their sales being donated to the hospital.

Montclair a Baby Town.—In connection with the recent observance of Baby Week in Montclair, N. J., announcement is made that during 1915 the death rate of infants under one year of age in Montclair was 65 per 1,000 births, as compared with 123 per 1,000 for the State of New Jersey, 124 for the United States, 160 for Japan, 192 for Germany, and 332 for Chile. The deaths from diarrheal disease of children under two years of age in Montclair decreased from 131 per 100,000 of population twenty-five years ago to 12 in 1915; while the number of deaths of children under five years of age decreased from 500 per 100,000 of population twenty-five years ago to 163 in 1915.

Chicago Death Rate.—During the week ending March 11, there were reported in Chicago a total of 767 deaths, giving an annual death rate per 1,000 of 16.1, as compared with a total of 847 deaths for the same week of last year, when the rate was 18 per 1,000. The largest decreases were noted in the deaths due to tuberculosis, which dropped from 91 last year to 61, and to pneumonia, which dropped from 141 to 102.

The Harvey Society.—The ninth lecture of the series will be held at the New York Academy of Medicine, 17 West Forty-third Street, on Saturday evening, March 25, 1916, at 8.30 P. M., by Dr. R. T. Woodyatt, University of Chicago. Subject: "On Intermediate Carbohydrate Metabolism."

Gifts to Charities.—By the will of the late Mrs. Mary Van Nest Jackson, who died recently, St.

Mary's Free Hospital for Children, New York, receives a bequest of $80,000, and St. Luke's Hospital, New York, one of $25,000.

St. Joseph's Hospital, Yonkers, receives $10,000, and the German Hospital and the Knapp Memorial Hospital, $5,000 each, by the will of the late Mrs. Mary A. Halloran of this city.

The Rice Memorial.—Announcement has been made of the purchase, from the trustees of Cornell University, of the Guiteau estate at Irvington-on-Hudson as the site for the Isaac Rice Memorial Hospital, which will be built by Mrs. Rice as a convalescent home and rest cure for patients from New York. The property consists of about fourteen acres, offering ample space for the four buildings which it is proposed to erect, at an estimated cost of $300,000; these comprise a main structure containing 100 beds and a number of private rooms, a nurses' and servants' home, an administration building, and a power house. As previously announced the new hospital will co-operate especially with the Beth Israel Hospital, New York, and will receive patients without distinction of race or creed.

New Cancer Hospital.—In addition to several smaller bequests to New York hospitals, the will of the late Mrs. Mary A. Halloran of this city, provided for the gift of approximately $300,000 to the Sisters of Charity of St. Vincent de Paul for the establishment at Stanford, N. Y., of the "Halloran Cancer Hospital," as a branch of St. Vincent's Hospital, New York. The property owned by Mrs. Halloran at Stanford is left as the site for the hospital.

Personals.—Dr. Isadore Dyer, dean of the medical college of Tulane University, appeared recently before the Senate Committee considering the establishment of a national leprosorium.

Dr. Simon Flexner of New York has been appointed Cutler lecturer at the Harvard University Medical School for this year.

Dr. Daniel J. McCarthy, professor of medical jurisprudence, and Dr. Alonzo E. Taylor, professor of physiological chemistry, University of Pennsylvania, Philadelphia, have been appointed special attaches to the American Embassy in Berlin, to aid in Red Cross work in Germany.

Dr. John E. Daugherty, formerly a member of the Indian Service, has been appointed medical superintendent of the Greenpoint Hospital, Brooklyn, which is under the control of the New York Department of Charities.

Dr. Clarence W. Wille, surgeon in command of the United States Marine Hospital at Cleveland, Ohio, has resigned his position and will take up the practice of surgery in Cleveland.

Dr. Don Cleveland of the Royal Victoria Hospital, Montreal, has received a commission in the Royal Army Medical Corps, and will shortly leave for England.

Obituary Notes.—Dr. NATHAN GROSS BOZEMAN of New York, a graduate of the College of Psysicians and Surgeons, New York, in 1885, died at his home, from pneumonia, on March 17, aged 61 years. After his graduation from the medical school Dr. Bozeman served as an interne at the Woman's Hospital, New York, and also studied abroad in Coburg, Paris, and Vienna. Since that time he had practised in New York, and at the time of his death was attending gynecologist at the Northeastern Dispensary, the Bayonne Hospital, and the Hackensack Hospital, and a member of the American Medical Association, the New York State and County Medical Societies, the Greater New York Medical Association, the Lenox Medical and Surgical Society, and the Woman's Hospital Society.

Dr. ROBERT ALLEN BLOOD, formerly of Boston, a graduate of Harvard University Medical School in 1870, and a member of the Massachusetts Medical Society and the District Society, died at his home in Lake Sunapee, N. H., suddenly, on February 21, aged 78 years. Dr. Blood was at one time surgeon general of Massachusetts, and at the time of his death was president of the Association of Military Surgeons of the United States.

Dr. JOHN A. DICKES of Portland, Ind., a graduate of the Kentucky School of Medicine, Louisville, in 1885, and a member of the American Medical Association, the Indiana State Medical Association, and the Jay County Medical Society, died at his home from heart disease on February 28, aged 58 years. Dr. Dickes had served as secretary to the County Board of Health for a number of years.

Dr. AUDRIM T. GREER of Abbeville, Miss., a graduate of the Memphis Hospital Medical College, Memphis, Tenn., in 1892, died suddenly in Holly Springs, Miss., on February 24, aged 56 years.

Dr. EDWIN LANDIS DETWILER of Herndon, Va., a graduate of the Jefferson Medical College, Philadelphia, in 1886, and a member of the Medical Society of Virginia and the Fairfax County Medical Society, died suddenly on February 29, aged 56 years.

Dr. EDWARD LLEWELLYN CRANDALL of Troy, N. Y., a graduate of the Albany Medical College in 1881, died at his home on March 6, aged 60 years.

Dr. GEORGE HUNTINGTON, a graduate of the College of Physicians and Surgeons, Columbia University, New York, in 1871, and a member of the American Medical Association, the Medical Society of the State of New York, and the Dutchess County Medical Society, died recently at Cairo, N. Y., aged 66 years.

Dr. CHARLES HENRY MITCHELL of Lynn, Mass., a graduate of the College of Physicians and Surgeons, Boston, in 1893, died at the Lynn City Home on March 2, aged 69 years.

Dr. THOMAS HENRY MANN of Bolton, Conn., a graduate of the Albany Medical College, Albany, N. Y., in 1870, and a member of the Rhode Island Homeopathic Society, the American Institute of Homeopathy and the Connecticut Homeopathic Society, died at his home on March 3, after a long illness, aged 73 years. Dr. Mann was for years interested in journalism. He was one of the founders of the Milford *Daily News*, Milford, Mass., and later was editor of the Fitchburg *Evening Mail*.

Dr. WILLIAM C. BOUTON of Waukegan, Ill., a graduate of the Northwestern University Medical School, Chicago, in 1889, and a member of the American Medical Association, the Illinois State Medical Society, and the Lake County Medical Society, of which he had been secretary, died at his home on February 29, after a long illness, aged 51 years.

Dr. AMBROSE M. KEIM, a graduate of the Jefferson Medical College, Philadelphia, in the class of 1877, died recently at Bethlehem, Pa., of heart disease, aged 62 years. Dr. Keim was for twelve years coroner of Northampton County, and was a member of the Medical Society of the State of Pennsylvania and the Northampton County Medical Society.

Dr. EDWARD W. ROOS, formerly of Buffalo, N. Y., a graduate of the University of Buffalo Medical Department in 1903, died recently at Corning, N. Y.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

HUNTERIAN LECTURE, ROYAL COLLEGE SURGEONS—ULCERS, NEW AND OLD—PYLORIC-JEJUNAL OPERATIONS.

LONDON, Feb. 25, 1916.

SIR J. BLAND SUTTON took for the subject of his Hunterian Lecture at the Royal College of Surgeans "Ulcers, New and Old: Jejunal for Duodenal Ulcers." On the outset he remarked that fifty years ago chronic duodenal ulcer was recognized as a clinical entity, and its treatment long remained in the physician's province. Operations were performed for it in 1893 and two following years, and in the present century a new field of surgical enterprise has been opened up. For some unknown reason the ulcer in the great majority of cases is on the anterior wall of the duodenum, within 2 cm. of the pylorus; it is not often accompanied by physical signs but the symptoms are distinct and easily recognized. The ulcer often appears as a simple roundish depression in the mucous membrane—the muscular coat its floor. In other cases a layer of thickened peritoneum forms the base; or it may rest on the pancreas, liver, or gallbladder. If on the anterior wall of the duodenum it may rest on the peritoneum of the anterior abdominal wall. Ulcers near the pylorus frequently cause obstruction by the edema of the mucosa. Duodenal ulcer does not become cancerous although it is one of the most chronic forms of ulceration and generally occurs at the age most liable to cancer. Sir Bland Sutton said he had long sought among the living and the dead and in museums for a duodenal ulcer that had become cancerous, but so far his search had "been unavailing." So, too, he found the frequency with which gastric ulcers become cancerous and the infrequency of such change in the duodenum was difficult of explanation. In gastric cancer small detached fragments are transported into the small intestine but implantation above the ileocecal valve is unknown. The lecturer agreed with Shattuck that they would not escape tryptic digestion.

Jejunal ulcer following gastrojejunostomy is often called peptic ulcer, is dangerous, sometimes perforates before protective adhesions have been formed and causes septic peritonitis which in turn is fatal: or this ulcer may have thickened edges and run a chronic course. It causes pain aggravated on taking food, often tenderness and sometimes distinct swelling under the upper part of the left rectus muscle, indicating that the peritoneum on the anterior abdominal wall is involved. Sir Bland had been able to study the changes preceding the ulcer in the duodenum and exhibited one of the specimens.

It is the common opinion that duodenal ulcer is caused by the acid chyme ejected through the pylorus on to the duodenal wall. Bacterial action has not been much studied as to this; the stomach is thought to be amicrobic so long as it can expel its contents, but the fluid found in the abdominal cavity in cases of perforated ulcers swarms with streptococci and other organisms. Jejunal ulcer is rarely met with after gastrojejunostomy for cancer of the stomach—perhaps few patients survive long enough for its formation. This operation and others of the indirect kind relieve the patient though they do not remove the disease. The most favorable conditions for it are a pylorus blocked by an inflammatory mass and a stomach able to propel the chyme through the new opening and prevent its reflux. It cannot be relied on with an unobstructed pylorus, and as it exposes patients to the risks of regurgitant vomiting and jejunal ulcers the lecturer prefers to excise the pylorus and the segment of duodenum containing the ulcer. This excision is not a serious physiological loss. Half the stomach, indeed the whole may be removed; the lecturer himself had removed it for cancer from a woman of 35, who survived 3½ years. She could not eat as big a meal as her husband, she said, a year after the operation, but made up for that by "eating two meals to his one."

There is some uncertainty about the functions of the pylorus; the lecturer believes it is extremely sensitive, though, like the buccal and anal sphincters, this is only proved when it is chapped or ulcerated. When excised it easily admits the index finger, a contrast with preserved specimens in which the orifice is quite small, having contracted under the influence of the preservative fluid. The favorable conditions for operation are narrow, elongated, pyloric segment of the stomach and absence of adhesions to liver, pancreas or intestine. Adhesions are unfavorable and if extensive forbid interference. Sir Bland Sutton's first pylorectomy was in 1909, since when he has performed twenty. In three of these gastrojejunostomy had been previously done. In one the symptoms returned three months after, in a second in six years, in a third in two years. One died on the nineteenth day; the suture line had sloughed in two places. The results of excision are mostly good if the pylorus is obstructed and so the chyme compelled to pass by the new route, but if it can pass through a partially obstructed pylorus it may continue to do so.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 2, 1916.

1. Field Work of the State Department of Health on Communicable Diseases. Wm. W. Walcott.
2. The End-Results in Seventy Consecutive Cases of Umbilical Hernia Operated Upon at the Massachusetts General Hospital. Channing C. Simmons.
3. Some Electrocardiographic Studies of Patients Under Digitalis Treatment. Harold W. Stevens.
4. The Abnormal Parent. Arthur H. Ruggles.

2. **The End-Results in Seventy Consecutive Cases of Umbilical Hernia Operated upon at the Massachusetts General Hospital.**—Channing C. Simmons gives a report of the above cases operated upon between January 1, 1909, and April 1, 1914. During this period he had the opportunity to operate upon all of the cases entering the hospital as a special assignment—fourteen in all. The other fifty-six cases were operated upon by twenty different members of the staff, the largest number done by any one man being seven. The length of time the cases were followed after operation varies from one to four years. Herniæ, if they are going to recur, practically do in less than one year after operation, usually in a few months, so that cases remaining well over one year may be called cured. For purposes of analysis the cases have been divided into three groups according to the type of hernia existing and a description of the operation used by Simmons is given. As a result of the work done and the success obtained Simmons draws the following conclusions: Small umbilical herniæ in thin adults, and umbilical hernia in children, may be cured by any operation which removes the sac and closes the defect in the abdominal wall. Cases of umbilical hernia in stout adults are difficult to cure.

The Mayo operation, of transverse closure of the ring, with an overlap of the aponeurosis, gives the best results. In adults, closure of the ring by any other method than the Mayo, in a general hospital, is followed by 46.4 per cent. of recurrence. Recurrence, if it is to take place, usually does so in less than one year. The suture material employed has no relation to the liability to recurrence. Skin sepsis is very likely to occur, but, apparently has no relation to recurrence.

3. **Some Electrocardiographic Studies of Patients under Digitalis Treatment.**—Harold W. Stevens made the observations upon this series of patients while working as a fourth year student in the medical wards of the Peter Bent Brigham Hospital, Boston. The purpose was to study the variations of the individual electrocardiogram during the course of digitalis treatment, and, if possible, to determine which variations may be related with the effect of the drug. Patients were chosen so that the group includes the common types in which digitalis treatment is usually considered as indicated, which were two cases of auricular fibrillation, two cases of auricular flutter, one case of paroxysmal tachycardia, and three cases with normal rhythm, but showing evidence of myocardial weakness. The conditions of observation were such that it did not seem feasible to limit the study to cases receiving digitalis alone, consequently several of the patients at some time during the period of study received other drugs, none of which is recognized as having any definite cardiac effect. Successive electrocardiographic tracings of individual patients were made as frequently as it seemed that a record would be significant, the interval varying from one to several days. Eight tables containing data of the electrocardiograms accompany the report, and Stevens from these observations has obtained the accompanying summary: 1. The cases in which digitalis produces marked slowing of the heart are cases of abnormally rapid rate; the drug in ordinary doses appears to have little or no effect upon rates which are normal. The ventricular slowing may be produced in cases of normal auriculo-ventricular sequence and in cases of auricular fibrillation and auricular flutter. 2. In some cases of normal rhythm under digitalis treatment there is a distinct increase in the P-R interval; and an accompanying increase in the R-T interval. In some cases of fibrillation also the increase in the R-T interval is found. In most instances these increases are coincident with a decrease in the rate and hence accompany an increase in the length of the whole heart cycle. A possible factor in the improvement of the heart's action under digitalis may be the increased mechanical advantages resulting from the increase in the total length of the cardiac systole. 3. A single case in which digitalis coupling occurred shows, in all instances of the extra systoles, complexes of the same type, indicating a common focus of origin. 4. A single patient showed a much increased susceptibility to slowing by vagus pressure during the digitalis treatment. The P-R and R-T intervals referred to stand as "time 50th sec." in the tables and represent together the length of the heart beats.

New York Medical Journal.

March 11, 1916.

1. The Psychology of the Physician as a Wage Earner. Charles W. Burr.
2. The Conservative Treatment of the Tonsils. G. Hudson-Makuen.
3. The Removal of the Troublesome, Useless Uterus. A. Ernest Gallant.
4. The Curability of Chronic Urethritis. Walter S. Reynolds.
5. Sarcomata in Unusual Situations. Hubert A. Royster.
6. Spastic Paralysis in Children. Jacob Grossman.
7. The Standardization of Disinfectants. J. T. Ainslie Walker.
8. The Therapeutic Value of Diathermia. Albert C. Geyser.

1. **The Psychology of the Physician as a Wage Earner.**—Charles W. Burr, MEDICAL RECORD, Feb. 26, 1916.)

2. **The Conservative Treatment of the Tonsils.**—G. Hudson-Makuen places himself on record as a conservative radical, or as one who believes in the exercise of great care, and in the acquirement of great skill, in the performance of this exceedingly difficult and important operation for the removal of tonsils or any of the adjacent structures; also when it comes to a question of diagnosis and the necessity for the removal of tonsils. The question arises, what is a conservative treatment of the tonsils? The answer is that it may be regarded as including any medical or surgical treatment that falls short of their complete enucleation. Improvement of drainage of the tonsillar region, in the case of diseased conditions by the opening up of retention pockets, whether they are found in the crypts of the tonsils themselves or between the tonsils and the adjacent faucial pillars, gives relief and in many cases cure. Hudson-Makuen considers that the faucial tonsils rarely become foci of serious general infection and in the great majority of cases radical operation is not indicated. If the operation be absolutely indicated, the tonsil should be removed with as little as possible of the surrounding tissue and as little as possible of the so-called capsule itself. Hudson-Makuen further states his views: In its normal state the tonsil is not a menace, but a probable protection, and its presence is helpful in both phonation and articulation. The fact that we do not know the systemic and mechanical functions of the tonsil is an argument in favor of conservatism rather than radicalism in our treatment. The enucleation of the tonsil is the simplest and most expeditious way of dealing with it, but that it is the best way is always a matter of opinion and a question for careful consideration in each case. It is easier to remove a tonsil than it is to know whether or not it should be removed, and the very simplicity of the operation and its apparent freedom from untoward results make the temptation all the greater to do it rather than resort to the more difficult but less radical and probably better methods. In our clinics the temptation to remove tonsils in a somewhat wholesale manner is almost irresistible, but the practice is none the less reprehensible. It is obvious that dispensary cases should have the same careful treatment and the same consideration that are given to the most deserving private cases, and lack of time in our dispensary work is not a good excuse for ill-advised and careless operations. The man who tonsillectomizes a dozen or fifteen patients in a single afternoon had better spend his afternoons in the abattoir. However, after all is said and done against radicalism in tonsillar surgery, the fact remains that in certain selected cases there is nothing we can do that gives such brilliant results as the removal of the tonsils and adenoids, and in well selected cases there can be no objection to the operation, provided always that it is carefully performed. The very brilliancy of these results, however, has an element of danger in that it leads us to make the radical operation the rule, rather than the exception which it ought to be, and, as has been said in a previous communication, the tendency of the future will be to find out, not how to operate, but how not to operate, or at least how to operate in the most conservative manner.

6. **Spastic Paralysis in Children.**—Jacob Grossman gives a report of seven cases of this condition, due to injury, birth conditions, syphilis, etc. Paresis and spasm are given as the characteristic features of cerebral hemiplegia while sensory disturbances are rare and when present are confined mostly to the hands. Mus-

cular hypertrophy occurs when the spasticity is very great and is usually due to overwork of the muscles. A peculiar phenomenon of hemiplegia is seen in the posthemiplegic motor disturbances, which occur frequently. It may be expressed in tremor, or in its severest form, may consist of permanent tremor, chorea, or athetosis. Under treatment he states that there is no cure for cerebral palsy. Cases that respond to iodine and mercury are to be suspected; the symptomatic treatment consists of massage, electricity, etc. He views these conditions from the following conclusions: 1. Spastic paralysis may result from an apparent normal delivery. 2. In some cases interference with the dressing or the bathing of the infant may be the first evidence of an existing spastic paralysis. 3. In other cases delayed functions of sitting and walking directs one to the existing spastic paralysis. 4. Convulsions in infants, either immediately after or shortly after delivery, should make us suspicious of cerebral injury. 5. The possibility of syphilis as the etiological factor in some cases of spastic hemiplegia must always be remembered. 6. Where ophthalmoscopic examination reveals increased intracranial pressure, and where there is not a great amount of intereference with the mentality of the patient, subtemporal decomposition, as described by Sharpe, should be performed. 7. In the other cases, and in the after-treatment of cases operated in, massage, electricity, manipulation, supports, tenotomies, and muscle education usually offer relief to the patients, and influence to a certain degree the existing condition.

Journal of the American Medical Association.

March 11, 1916.

1. Principles Underlying the Classification of Diseases of the Nervous System. Smith Ely Jelliffe and William A. White.
2. The Philology of Hysteria: An *A Priori* Study of the Neuroses in the Light of Freudian Psychology. Trigant Burrow.
3. The Latent Râle in the Diagnosis of Incipient Tuberculosis. H. A. Bray.
4. The Prognostic Value of the Urochromogen Reaction in Pulmonary Tuberculosis. M. E. Cowen.
5. A Study of the Etiology of Chronic Nephritis, and of the Efficiency of the Phenolsulphonephthalein Test. Philip King Brown and W. Taylor Cummins.
6. Analgesia and Anesthesia in Obstetric Practice. Arthur J. Skeel.
7. Notes on Nitrous Oxid Administration. Raymond C. Coburn.
8. The Treatment of Diphtheria Carriers with Iodized Phenol. William A. Ott and K. A. Roy.
9. The Follow-Up System of the Presbyterian Hospital in the City of New York. James A. Corscaden.
10. The Control of Diphtheria Epidemics. W. D. Stovall.
11. Malignant Disease of the Ovaries: Further Studies. Miles F. Porter.
12. The City's Need of a Psychopathic Clinic. Stewart Paton.
13. Removal of Tonsils and Adenoids in Diphtheria Carriers. S. A. Friedberg.
14. Congenital Atresia of the Esophagus: Report of a Case. Everett O. Jones and John B. Manning.
15. The Function of the Thyroid-Parathyroid Apparatus. Edward C. Kendall.
16. Strangulated Fallopian Tube, Ovary, and Intestine in an Infant. George Abelio.

5. A Study of the Etiology of Chronic Nephritis, and of the Efficiency of the Phenolsulphonephthalein Test. — Brown and Cummins state that among 7,000 cases the initial urine examinations showed that 594 patients had albumin and casts, although only thirty-eight of them were admitted as cases of nephritis. These 594 cases were divided into two groups: those in whom the blood pressure, in absence of any other obvious cause, was above the maximum normal while at rest in bed on ordinary hospital diet, and those in whom it was normal or below. Each group was studied with reference to entrance diagnosis, complications, age, occupation, use of alcohol, and previous infections. The cases with a blood pressure above 180 were separated from the cases with high blood pressure. It was not possible to distinguish in all high blood pressure cases between chronic interstitial nephritis and anteriosclerotic kidney, and they will be considered as chronic interstitial nephritis. It is obvious that the diagnosis of nephritis from the results of the tables given is practically a laboratory diagnosis, that it exists as a complication undiscovered until some other condition brings the patient to the hospital. The chief difference between the two groups lies in the fact that in the high blood pressure cases three-fourths were over forty years of age, whereas in the normal or low blood pressure group less than one-third were above the age of forty. Thus the incidence of marked permanent structural change in the kidney bears a distinct relation to age. Both groups show that venereal disease and infection from the scarlet fever group were nearly two times more frequent than in normal kidney cases which makes the supposition reasonable that the signs of kidney irritation in the low pressure group portend a likelihood of future kidney insult and change not evidenced by the control group. From the tables given it is seen that certain of the infectious diseases, notably the venereal and scarlet fever groups, were from twenty to three hundred per cent. commoner in the early history of chronic nephritic cases than in the non-nephritic cases. The influence of alcohol played a less prominent part as an etiologic factor than was formerly supposed. In the nephritic and non-nephritic kidney conditions, alcohol was used in from sixteen to twenty-five per cent. more cases than in the control group. A previous history of some diseases other than the minor children's ailments was about twice as common in the nephritics. In cases of streptococcus infection, especially in the throat, they have been surprised to find streptococci in the urine with very little evidence of kidney disturbance, often enough to warrant them in believing that the beginnings of many serious kidney disturbances are insidious. With reference to the laboratory methods in urine examination phenolsulphonephthalein seems to give the best results. Brown and Cummins make their observations as follows: Following the technique as described by Rowntree and Geraghty, sixty-seven patients were studied with the phenolsulphonephthalein test, and seventy-five injections were made. Of the sixty-seven patients, thirty-six (50 per cent.) were nephritics, one with acute parenchymatous nephritis, thirteen with chronic parenchymatous nephritis and twenty-two with chronic interstitial nephritis. Of the non-nephritic group, the average excretion for two hours was 51.4 per cent. The lowest was 35 per cent. in a case of lumbrosacral myalgia and no demonstrable signs of nephritis. Two cases of neurasthenia showed 35 per cent. The highest percentage was seventy-seven in a case of cholelithiasis.

6. Analgesia and Anesthesia in Obstetric Practice.— Arthur J. Skeel says that for two or three years the attention of obstetricians in this country has been called rather sharply to methods of relieving the pain of labor. Since November, 1914, he has employed gas for the relief of pain in seventy-two labor cases. He outlines the indications and contraindications for the use of morphine, nitrous oxide and oxygen, and ether, and also his routine in handling a normal labor. His indications for morphine during the first stage are: A rigid, hypersensitive os; evidence of considerable pain with a probable first stage of several hours, as in most primiparas; the presence of nagging but ineffectual pains which irritate and exhaust the patient out of all proportion to results. Patients in whom ineffective uterine action, true primary uterine inertia, seems to be the cause of the delay are not given morphine. Gas is begun at the beginning of the second stage, or if the patient suffers severely, shortly before dilatation is completed. Administration is begun with small amounts,

as thirty gallons of nitrous oxide to fifteen gallons of oxygen. As the head approaches the pelvic floor and strikes the perineum, the nitrous oxide is increased to fifty or sixty gallons. This is further increased to seventy to eighty gallons as the perineum distends. When the head is born the gas is at once discontinued and the patient sharply revived by a few whiffs of pure oxygen. The following remarks sum up his conclusions: I wish to enter a vigorous protest against the advice at present being so freely given that any one may use gas in labor cases with perfect safety. Gas is a powerful therapeutic agent with infinite possibilities for harm at the hands of incompetent or careless users. The statement has been made and is, I believe, accepted, that gas in the hands of an expert is a safe anesthetic, but the most dangerous anesthetic if given by a novice. Of course this is far too strong a statement to make concerning analgesia. Even here, however, some knowledge and experience are necessary to secure both safety and satisfaction from its use. Moreover, the temptation to follow a gas analgesia labor with a gas anesthesia for repair is so obvious that I would earnestly urge all those expecting to adopt this method to spend sufficient time in special study of the agents he is to use, so that he can direct its administration. This does not mean that a doctor must equip himself as a gas expert. The skill necessary for its use in labor can be acquired in a short time, but free use of gas by the absolutely inexperienced will surely lead to tragedies.

8. The Treatment of Diphtheria Carriers with Iodized Phenol.—William O. Ott and K. A. Roy announce that the cases reported consist of carriers convalescent from clinical diphtheria in the infectious ward of the Charity Hospital, New Orleans, and some that did not have diphtheria but were persistent carriers. In all cases reported iodized phenol (acidum carbolicum iodatum of the N. F.) was used. It contains 60 per cent. phenol (carbolic acid), 20 per cent. iodine crystals, and 20 per cent. glycerin. In pharyngeal cases, the tonsils, uvula and posterior wall of the pharynx were swabbed every forty-eight hours until negative cultures were obtained. In nasal cases, the entire anterior part of the nasal cavity was swabbed with iodized phenol every forty-eight hours. Care was taken not to allow the preparation to run over the face or drop into the larynx. Cultures were always made a few minutes before the local application. In this way, forty-eight hours elapsed after each application of iodized phenol before another culture was made. Seventeen cases were treated. Negative cultures were obtained after one application of iodized phenol in six cases (35 per cent.); after the second application in five cases (29 per cent.); after the third application in two cases (12 per cent.); after the fifth application in one case (6 per cent.), and after the sixth application in two cases (12 per cent.). One case (nasal) was under treatment for twenty-one days and required nine applications before negative cultures were obtained. With the exception of this case, none of the other sixteen were under treatment longer than eleven days.

15. The Function of the Thyroid-Parathyroid Apparatus.—Edward C. Kendall of the Mayo Clinic, in formulating and presenting a hypothesis of the function of the thyroid-parathyroid apparatus gives Plummer's basic hypotheses with reference to the effects of the thyroid gland disturbances: (1) In thyroid disturbances the effects are due to a change in the rate of a normal function. (2) The stimulating effect of increased thyroid activity is not felt in any particular set of organs or tissues alone, but the stimulus is active throughout the body. (3) The stimulating action is intracellular. With this basis he goes on to state that when protein is catabolized in the body, nitrogen is not excreted as ammonium carbonate, but appears chiefly in the form of urea. Some mechanism must exist for the conversion of the ammonium carbonate resulting from deamination into urea. After parathyroidectomy the ammonium content of the urine is increased, and it has been suggested that tetany following this operation is due to this increase in ammonia. The acid radical to which the ammonia is attached has not been determined, but it has been shown that the soluble salts of barium, strontium, calcium, and magnesium relieve tetany following the above operation, and also that tetany is controlled by the injection of acids. (Wilson.) The only ammonia salt that can react with all five of these reagents forming a non-toxic compound is ammonium carbonate. From other investigators' results, and his own Kendall suggests that the function of the parathyroid is to convert ammonium carbonate into urea. The above suggested principles furnish a means for the study of the factors controlling the activity and the manifestations of animal life. The process occurring in the normal animal may be outlined as follows: The body proteins are decomposed to a slight extent into amino acids. Under proper conditions and in the presence of the iodine compound these are deaminized, and the products are then burned either directly into carbon dioxide and water or are used for the formation of carbohydrates, fats, etc. If an increase in the amount of the iodine compound in the cell is brought about, the speed at which this reaction takes place is increased, the equilibrium between proteins and amino acids is disturbed, more amino acids pass into the reaction, and finally, the proteins, unless replenished, are exhausted. At the same time the products of the reaction, deaminized acids, are formed in increased amounts. This results in an increased speed of the processes of oxidation and the formation of carbohydrates and fats. There is no direct change in the mechanism entering into the metabolism of carbohydrate and fat formation and oxidation. The only thing which is influenced is the rate at which deamination occurs. If the thyroid secretion is the catalyzer controlling the rate of deamination of amino acids, and the parathyroid furnishes the mechanism for the conversion of the so formed ammonium carbonate into urea, then urea (and ammonia) output by the body is within certain limits a measure of thyroid-parathyroid activity. If this hypothesis be correct, we may conclude that the function of the thyroid is to furnish a catalyzer which regulates the rate of deamination. This is an outline of the function of the thyroid-parathyroid apparatus under normal conditions. Under the effects of excessive secretion, the presence in the cells of an increase of the iodine compound produces a condition similar to that found during violent exercise. An increase of from 200 to 300 per cent. in the rate of metabolism has been found in cases of exophthalmic goiter. This is at a temperature, but slightly above normal, and it is apparent that the usual controlling mechanism for temperature regulation is not broken down. At death from this condition, a crisis is often seen in which the controlling mechanism does break down, the temperature reaches 106° or more, and metabolism runs wild. The other extreme is myxedema. Here metabolism is at a minimum. The entire absence of iodine compound from cells would mean a metabolism at zero rate—death. The life and activity of every individual cell is dependent on the amount of the iodine compound in it. It is obvious that during different periods of rest and activity the organs require varying amounts of the iodine compound. Therefore, it

can be assumed that the function of the thyroid is not only to elaborate this substance, but also to supply the cells of the body with the amount necessary to meet the momentary demands of each cell. After cell activity has been heightened by an increase of the amount of the iodine compound present, there must be some mechanism for the subsequent removal of some of the catalyzer from the cells and for carrying it back to the thyroid, there to be held again until needed. The vehicle for carrying the iodine compound from the gland is probably the colloid found in the thyroid secretion. It is suggested that the balance between free amino acids and colloid may be the mechanism governing the supply and demand for the catalytic substance. The presence in the blood of abnormal amounts of amino acids may be a stimulus to the activity of the thyroid. If the foregoing hypotheses of the function of the thyroid-parathyroid apparatus proves tenable, Kendall states that its application to the explanation of biological phenomena is apparent, but further elaboration of the hypothesis will not be attempted until after a quantative study of the factors involved.

The Lancet.

February 26, 1916.

1. The Lettsomian Lectures on the Effects of High Explosives Upon the Central Nervous System. Fred. W. Mott.
2. Investigations on Clinical Thermometry: Continuous and Quasi-continuous Temperature Records in Man and Animals in Health and Disease. G. Sims Woodhead and P. C. Varrier-Jones.
3. Paratyphoid Fever: Its Clinical Features and Prophylaxis. William Henry Willcox.
4. A Case of Ruptured Jejunum, Operation; Recovery. R. P. Rowlands.
5. Notes on Albuminuria and "Trench Fever." F. G. Chandler.
6. Cicatricial Stenosis of the Larynx Treated by Intubation. Harold Barwell.

1. The Lettsomian Lectures on the Effects of High Explosives upon the General Nervous System.—Fred. W. Mott delivered this lecture before the Medical Society of London on February 21. Under the symptoms of CO poisoning, he states that the action of CO is most marked upon the central nervous system, and that a very important symptom is loss of memory sometimes coupled with loss of recognition. A detailed account of the histological changes in the brain in CO poisoning, shell shock, and spinal concussion is given, showing the histological similarity produced by these conditions. Individuals are classified according to their mental and bodily condition at the time of shock as follows: 1. Inborn. 2. Acquired: due to alcoholism, syphilis, or previous head injury; a lowered neuropotential; nervous exhaustion from various causes; bodily exhaustion from cold, wet, fatigue, and hunger. From the 156 cases studied, a large majority of so-called shell shock cases admitted into the hospital with functional neurosis in some form, occurred in individuals with a nervous temperament, or with an acquired or inherited neuropathy. In a certain number of cases the cumulative effect of active service had produced a neurasthenic or hysteric condition in a potentially sound individual. Among the large number of officers Mott has seen sent back on account of neurasthenia, none have exhibited symptoms of functional paralysis or mutism. Cases which were supposed to have developed epilepsy as a result of shell shock were, usually, individuals who were either epileptics or potential epileptics prior to the shock. For ten years Mott has studied the subject of hereditary predisposition of epilepsy and insanity, and his results convince him that this condition is the one in which an inborn tendency is shown more than any other nervous affection. Shock may be an exciting cause, but is not *per se* the cause of epilepsy. This is important because a man may know that if he can claim that he is an epileptic his services will be no longer required, and he can state that the shell shock was the cause and claim a pension for being incapacitated by active service. Evidence goes to prove that an acquired or inborn tendency to neurosis plays an important part in the effects on the central nervous system of exposure to shell shock in a majority of cases.

3. Paratyphoid Fever: Its Clinical Features and Prophylaxis.—William Henry Willcox gives an account of this condition based on the clinical study of a large number of cases in the Dardanelles area. No less than 150 cases of the enteric group yielded a positive result by cultivation from the blood. Of these 13.5 per cent. were typhoid cases, and 86.5 per cent. were paratyphoid cases. This change in ratio of percentage of paratyphoid to typhoid cases in the Mediterranean area is in itself one of the most striking illustrations of the prophylactic value of antityphoid inoculation. He divides his cases into three groups: 1. Those with sudden onset and characteristic symptoms, the commonest type. 2. The mild cases. 3. Severe toxic cases closely resembling true typhoid. The symptoms of each group are given, but are too numerous to be given here. The mortality is between 3 and 5 per cent. Willcox considers that with reference to mortality and risk to life, paratyphoid A and B are decidedly more serious than is usually supposed. Early recognition of the disease, bacteriological investigation for the early diagnosis of cases and for the recognition of carriers, and general preventive measures are the best prophylactic measures. Individual protection of the men by prophylactic inoculation is now being carried out by the War Office. Most important measures are: (1) Protective inoculation of the personnel of hospitals against paratyphoid as well as typhoid. (2) When reinoculation of troops is necessary a mixed vaccine protective against paratyphoid A and B as well as against typhoid should be given. (3) The inoculation of troops with a mixed vaccine before going abroad.

5. Notes on Albuminuria and "Trench Fever."—F. G. Chandler states that from the beginning of the war he has seen in France hundreds of cases among the soldiers of pyrexia of sudden onset, all almost exactly similar and presenting symptoms of influenza. His observations were imperfect as a cellar or a dugout formed a consulting-room and one and one-half test tubes, together with some acetic acid comprised his laboratory outfit. The symptoms shown in these men were temperature 102° to 103° F., pyrexia, pain and stiffness of limbs, vomiting or nausea, headaches, and severe pain in the back; hematuria, hemoptysis, hematemesis, presence of blood in the stools, and sometimes albumin in the urine. The temperature fell to normal in two or three days, after which there was a residual weakness and pallor. Herpes labialis et nasi was very common. The treatment suggested was a milk diet as far as possible and detention at some farmhouse. Chandler believes that aceto-salicylic acid and quinine proved of value, with an initial does of Dover's powder. Dry cupping gave relief for intense backache. These cases of even severe pyrexia soon recover, but if they pass unrecognized, may cause great anxiety to the medical attendant by presenting without apparent cause grave symptoms of renal disorder.

British Medical Journal.

February 26, 1916.

1. The Epidemic Jaundice of Campaigns. William Henry Willcox.
2. The Treatment of Toxic Jaundice Due to Tetrachlorethane Poisoning. William Henry Willcox.
3. The Treatment of Kala-Azar (Indian Form) by Tartar Emetic Intravenously and by Inunctions of Metallic Antimony. Leonard Rogers and N. H. Hume.

4. Attempts to Produce a Safe and Effective *Bacillus Dysenteriae* (Shiga) Vaccine for Prophylactic Purposes. J. D. Thomson.
5. Notes on Dysentery Vaccination. Aldo Castellani.
6. The Diagnosis of Abortive Cerebrospinal Meningitis. M. Culpin.

1. The Epidemic Jaundice of Campaigns.—William Henry Willcox studied this condition in the Mediterranean region and also among the soldiers of the Expeditionary Force in France during the early part of the war. He states that jaundice is of common occurrence among troops on campaign, therefore it is a disease of importance from the military point of view on account of the amount of incapacity for duty it occasions. The epidemic jaundice of campaigns appears to start as a gastrointestinal infection, the inflammatory catarrh being most marked in the duodenum. At this stage pyrexia and toxemia occur, but there is no general blood infection usually, since blood cultures have been negative. Fortunately, most cases clear up at this stage. The specific organism which is the cause of this condition has yet to be isolated; the contributing causes are chiefly from infection from food, water, and flies. Corresponding care in these directions is necessary, together with notification of jaundice cases in order that immediate preventive measures may be instituted. The treatment consists of rest in bed during the early stage. Liquid diet, which would mean milk on a campaign, together with lemon juice to counteract the lack of vitamines produced by the boiling of the milk. When possible, porridge, mashed potatoes, and vegetable soup may be added. Excess of protein should be avoided. Urotropine gr. x given three times a day produces a gastrointestinal antisepsis. Calomel is contraindicated in repeated doses, since patients suffering from epidemic jaundice are very susceptible to the effect of calomel thus given.

3. Treatment of Kala-Azar (Indian Form).—Rogers and Hume have successfully treated this condition by intravenous injections of tartar emetic and by inunctions of metallic antimony. The technique is that usually employed in intravenous work, a 10 c.c. serum syringe being used. The median basilic or cephalic vein is selected. Great care should be taken that the injection is made into the vein and not into the surrounding tissues, as tartar emetic is very irritating, and irritation or sloughing of the tissues may result. The dosage begins with only one-half to one c.c. of the 2 per cent. solution of tartar emetic, but it can be rapidly increased to 3 or 4 c.c. The injection is repeated every two or three days, adding 1 c.c. at each injection up to a maximum of 10 c.c. if there are no marked gastric symptoms. The treatment should be continued until the temperature has remained normal for several weeks with steady gain in weight, and the parasites are found to have completely disappeared from the spleen, and the leucocytes have been raised to about the normal level. It is not necessary to continue until the spleen has been reduced to its normal size, as this will occur after the injections are omitted. In children and nervous women inunctions of antimony ointment, preferably 10 per cent. strength, is worthy of trial, although there is not yet sufficient evidence to prove its absolute value.

5. Notes on Dysentery Vaccination.—Castellani considers that dysentery vaccination is of such importance practically, that it is surprising so little attention has been paid to it since the pioneer work of Kruse and Shiga. He gives the following reasons for the limited use of vaccines for this condition: 1. Vaccines containing the Shiga-Kruse bacillus, prepared according to the usual technique give severe local and general reaction. 2. Vaccine prepared from the same bacillus does not give immunity for forms of dysentery due to Flexner, Flexner-like, and other dysentery germs. Since 1912, Castellani has prepared a mixed dysentery vaccine, and also a vaccine containing the mixed vaccine plus typhoid, paratyphoid A, paratyphoid B. He says that a dysentery vaccine should contain several species of dysentery bacteria and not one only. Vaccine of this character should be prepared with a carbolic salt emulsion from agar cultures without heating, or peptone water cultures may be used. Also it is essential to prepare the vaccine with strains which, though rich in antigen, are not virulent or very little so. A large series of strains of Shiga-Kruse bacillus should be inoculated in rabbits, and the least virulent, provided it be rich in antigen, should be kept permanently as a stock culture to prepare the vaccine. Broth cultures should never be used.

Berliner klinische Wochenschrift.

January 31, 1916.

Pancreatic Stone Colic.—Einhorn of New York gives this subject an almost monographic consideration and relates two personal cases. The diagnosis and treatment are summed up as follows: There are periodically appearing colic-like pains in the epigastrium, which set in with transitory attacks of glycosuria. This syndrome is of course not specific for the affection. If, however, the pains disappear suddenly and finally the likelihood of pancreatic stone colic is greatly increased, as suggesting that the stone has reached the intestine. At this period a study of the feces may reveal the presence of a chalky concrement which is devoid alike of cholesterin or bile pigment. The pancreas appears to tolerate the stone for a long time without reaction, but eventually its function is compromised. The transient glycosuria is not always present and hence its absence has no great diagnostic significance. When the presence of an attack of pancreatic colic is surmised, the patient should be placed at rest on a scanty diet. Warm compresses should be applied and if necessary morphine, atropine or both combined should be given as analgesics. After the attack small and frequent meals and alkaline mineral waters should be the diet. If these medical measures do not prevail, and especially if fever develops, trial laparotomy should be performed. Both the biliary structures and the pancreas and its duct should be carefully examined. If there is a stone anywhere present it should of course be removed, but the small size of the pancreatic stone may make it very difficult of recognition. In such a doubtful case the gall bladder should be drained for a time, which often leads to a subsidence of the pancreatitis which has been responsible for the intervention.

Ophthalmological Errors in the Field.—According to Rauch the chances of error in this domain are very numerous. Should dressings be monocular or binocular? It must be remembered that occlusive dressings always lead to retention of pus and tears. In many cases the lid itself is all the protection required. The author mentions such possibilities as dacryocystitis, both before and after the escape of pus. On the other hand, in several lesions of various character a firm occlusive dressing is indispensable. Here belong a corneal injury or foreign body and a unilateral gonorrhea. In blepharaspastic affections under certain circumstances, the effects of the sunshine are beneficial, so that the occlusive dressing is contraindicated. Here belong very refractory cases of conjunctivitis. The author cites the case of one patient who also had trachoma. The patients were exposed to the fiercest rays of the sun and complained much at first, but in two weeks blepharospasm had ceased. The severe pains in the eye appear to demand cocaine, but while this drug is an analgesic, it

also irritates the sympathetic nerve fibers, one result of which is mydriasis. In a number of cases the general action on the sympathetic was highly undesirable, and for a mydriatic effect when indicated one should use atropine or scopolamine. The yellow precipitate ointments are apt to be coarse-grained, and the author would substitute some bland preparation, even simple vaseline.

Münchener medizinische Wochenschrift.

January 25, 1916.

Gas Gangrene. — Conradi and Bieling state that this condition is essentially a disease of war, and in this respect stands almost alone. Against the known disease tetanus one was prepared; against gas gangrene there could have been no preparation. Not that the disease is wholly unknown in peace times. Clinically it is of a uniform type—edema and emphysema about the wound, foamy discharge from the latter, progressive and burrowing gangrene involving the muscles, small rapid pulse, dyspnea and coma. It has not been easy to obtain the offending micröorganism in pure culture. The bacillus emphysematodes of Fraenkel is only a collateral find, although it has been looked upon as the cause. The authors in 53 cases have isolated a special germ which they regard as the true bacillus of gas gangrene. It is never found in the blood, but from its predilection to attack the muscles has been termed the bacillus sarcemphysematodes. It exhibits a notable polymorphism and agrees closely with the so-called rauschbrand bacillus of sheep. Special cultures can be inoculated into the muscles of swine and other animals, but in all cultures there is a marked tendency to decrease of virulence, due perhaps to its extreme anaerobic character which renders it very sensitive to the oxygen of the air. In experimental work the muscle is attacked and dissolved while still alive. Along with this property of attacking muscular tissue, the germ causes a sort of cellulitis of the entire limb, characterized by edema and crepitation, with a tendency to hemorrhage. The affected limb also becomes algid. It is evident that differentiation between gas gangrene, gas phlegmon, malignant edema, hospital gangrene and ordinary gangrene as seen in the surgery of the extremities will not be a simple matter in the future, because the micröorganisms which produce them should be very closely related. The hospital gangrene of our forefathers has occurred during the present war to a minimal extent.

Gas Phlegmon.—Marquardt has described two cases of this condition. The first one shows that the casual agency of this affection can enter the blood and cause metastatic abscesses and further can carry infection along the lymphatics. In the first case a bullet wound was received through the hip joint. Four days later when admitted to the hospital patient had high fever and delirium. The joint had been shattered throughout. All bony fragments were first removed and a drain inserted. The entire thigh became swollen, and there was elicited not only crepitus but a tympanitic percussion note. The wound canal was now thoroughly cleaned out, and incisions were made in the thigh, down to the muscle, with escape of much offensive gas. Incision of the muscles gave the same result. The patient appeared to be doing well when the disease suddenly attacked the leg beneath the affected thigh and at the same time the opposite thigh and the patient soon succumbed. The second patient was wounded in the outer aspect of the left calf with a shell fragment. The affected leg became gangrenous, while a gas phlegmon reached as high as the pelvis. The patient had high fever and delirium. A circular amputation was performed at the lower half of the thigh. As the muscles were divided, much stinking gas escaped. The cellular tissue which should be the seat of a phlegmonous process contained but little gas. After amputation the thigh and hip were incised repeatedly to give exit to gas. Matters at once took a favorable turn and the patient made a good recovery. In contradistinction to gas gangrene there was neither hemolysis nor liquefaction of muscular tissue.

Deutsche medizinische Wochenschrift.

January 27, 1916.

Treatment of Tuberculosis with X-Rays Alone or in Association with the Quartz Lamp.—The present issue contains two articles, the first of which is contributed jointly by Küpferle and Bacmeister and deals with the experimental disease. The conclusions are as follows: In the beginning tuberculosis (experimental) in the rabbit, hard, filtered *x*-rays can suppress and even cure tuberculosis. The bacillus is not directly attacked but the rapidly growing granulation tissue which naturally under favorable circumstances undergoes cicatrization is stimulated. An optimum dose is required to obtain this effect. Too small doses are inert, while too large doses cause bronchitis and bronchopneumonia. The amount of energy required is from 20 to 23 X of surface energy with reaction intervals of 3 to 5 days' length. Both aspiration and inoculation tuberculosis yield to the treatment. In animal experiment the quartz lamp does not appear to exert any influence in the tuberculous process. The second article is by Bacmeister alone and is devoted to the combined treatment of human tuberculosis with the *x*-ray and quartz lamp. The case histories of several patients are as follows: 1. Severe left-sided destructive pulmonary phthisis, treated with artificial pneumothorax, total in extent, with unsatisfactory results. Sputum still contained elastic fibers and tubercle bacilli. After two weeks of the combined radiation the character of the sputum improved greatly. After a month's pause the treatment was resumed and maintained for a month or until the sputum was quite negative. Three other cases of similar type are related. Thus far the treatment does not seem to have been tested save in severe, although not hopless cases, and we can only say that it promises well in all pneumothorax and thoracoplastic cases as after treatment.

Treatment of Bronchial Asthma with the Endobronchial Spray.—Stephan refers to pioneer work in this domain, which is one of a high degree of technique not yet adapted to the general practitioner. Thus far an entire series of complete cures of asthma has been placed on record, to say nothing of those who have obtained material benefit. There is no strong theoretical foundation for this method of treatment, for authors differ widely in their views of the disease. It is possible that the bronchial secretions exert a reflex influence which provokes the spastic crises. But one spray is used—a mixture of novocain and adrenalin, beginning with very small dosage to prevent possible overaction, and increasing slowly until an optimum for the individual is reached. The bronchoscope is invariably used for location of the disease foci. Most of the rami of the second order can be brought into the visual field. For the introduction of the spray an atomizer is used in connection with a suction pump, both devices of Brünings. The former is introduced by the same method as a Kuhn's tube, *i.e.* without visual control. The author admits that his results are apparently far behind those reported by Ephraim and others. A few patients did very well at first, and in one case there was an interval-free period of nine months.

Book Reviews.

VAGOTONIA. A Clinical Study in Vegetative Neurology. By Dr. HANS EPPINGER and Dr. LEO HESS, of Vienna. Authorized translation by WALTER MAX KRAUS, A.M., M.D., and SMITH ELY JELLIFFE, M.D., Ph.D. Price, $1. New York: The Nervous and Mental Disease Publishing Company, 1915.

THIS interesting monograph takes up a department of neurology, which has been neglected more or less ever since Langley's great work on the sympathetic nervous system. It is a department too which is bound to become important to the internist, as well as to the neurologist and psychiatrist. The subject is so new that we shall very briefly describe it.

The so-called vegetative nervous system includes all those nerve fibers which go to organs having smooth muscles, such as the intestines, blood-vessels, gland ducts and skin, as well as glands; also to the heart, to each end of the alimentary canal, and to the muscles of the genital apparatus. It differs from the "animal," or sensori-motor nervous system, principally, in having ganglion cells in the peripheral make-up. It is divided into a *sympathetic* system proper and into an *autonomic* system. In the latter the nerve fibers arise from the mid-brain, the medulla, and the sacral cord, and do not come into relation with the sympathetic cord. The sympathetic and autonomic systems are antagonistic, in action, yet both furnish fibers to each organ. The most important nerve of the autonomic system is of course the vagus. Fibers of the vagus go to the heart, stomach, bronchi, esophagus, intestine, and pancreas; while nerves from the sacral portion supply the bladder, anus, genital apparatus, descending colon, and sigmoid. Whether a common nerve center controls both systems is not known. They may be influenced, however, independently, by drugs and physiological stimulation. An irritability or an increased tonus may be thus artificially produced.

The autonomic system has been especially studied in this monograph; and as a result, the authors claim to have discovered a definite symptom complex identified with a state of stimulation of this system. The autonomic system is sometimes spoken of as the "extended vagus." Hence the name, "Vagotonia." We have then instead of our old friend "intestinal neurosis," or neurasthenia, or hysteria of a type, a new friend, a functional autonomic system disease. They say it may be general or local; that the internal secretions are at fault; that it is found most developed in the young constitutional inferior and may bear a relationship to the status thymicus and the lymphatic constitution. The chapters on physiological observations, diagnosis, clinical findings, relations of endocrinous glands to vagotonia, and therapeutic observations are all interesting. The anatomy and physiology of the sympathetic system are of comparatively recent knowledge. The pathology is unknown. The book should stimulate further research along similar lines.

THE DUCTLESS GLANDULAR DISEASES. By WILHELM FALTA, Vienna. Translated and edited by MILTON K. MEYERS, M.D., neurologist to the Lebanon Hospital, and to the dispensaries of the Jewish and St. Agnes Hospitals, Philadelphia, etc., etc. With a foreword by ARCHIBALD E. GARROD, M.D. (Oxon.), F.R.C.P. (London), F.R.S., physician to St. Bartholomew's Hospital, London. With 101 illustrations in the text. Price, $7. Philadelphia: P. Blakiston's Son & Co.

IN the development of our recent knowledge of the action of the ductless glands, the researches of Falta have been of considerable importance. His studies have been chiefly on the functional activities of the suprarenals and pancreas, but in his monograph, published in 1913, he included all the ductless glands: thyroid, thymus, hypophysis, adrenals, genitals, etc. He included also a section on infantilism, dwarfism, chondrodystrophy, and mongolism, which can not at the present time be definitely correlated with the depression or exaltation of the secretion of any one of the known ductless glands. The work, though very unequal in its original form, certain chapters being filled with valuable information and others being largely compilations of the literature, contained a large amount of material not readily accessible to English readers. The experimental and pathological aspects were not very fully presented, as these were already admirably covered in Biedl's exhaustive monograph. The English translation of Falta's book, therefore, brings to the large number of physicians who do not read German an extremely valuable clinical discussion of those diseases which, while their pathogenesis is still very obscure, are apparently based upon changes in some way correlated with the functional and, in some cases, anatomical alterations in the group of glands mentioned above. It is much to be regretted that the editor did not fully revise the translation; evidently the person who made the original draft was unfamiliar with medicine, and so a large number of errors have crept in, as an example of which a single paragraph will suffice: On page 220, in the discussion of tetany, the translation reads: "Much difficulty is met with, however, in the diagnosis of pyloric stenosis." While this statement may be true, the original German really states that "the chief difficulty is met with in the diagnosis of the pyloric stenosis"; evidently quite a different meaning. A few lines below, the translation reads: "as the result of gastric lavage during the entire evening," the last words being a wrong translation of *allabendlich*, which means, of course, washing every evening, not all evening. Numerous similar mistranslations occur throughout the text, and should certainly be corrected in another edition, as also should the general style, for while the words are English, the arrangement is often German, and the text is, therefore, extremely difficult to read. The publishers have done their share of the work well, for the mechanical get-up of the book is excellent, the cut reproductions are good, and the type and paper are satisfactory.

THE CRIMINAL IMBECILE. An Analysis of Three Remarkable Murder Cases. By HENRY HERBERT GODDARD, Director of Department of Research, Vineland Training School. New York: The Macmillan Company, 1915.

IN this small volume of 157 pages the author makes an important contribution to the literature of feeblemindedness on the one hand and that of criminal procedure on the other. The three cases analyzed are regarded as unique in being the first court cases in which the Binet-Simon tests were admitted in evidence, and in which the mental status of the persons under indictment was largely determined by this method. Two of the cases were high grade imbeciles, and these furnish the text upon which the writer makes a plea for a more adequate recognition of the legal irresponsibility of the high grade imbecile. In a chapter on Responsibility the author indicates the difference between *verbal* morality such as the child may have and the deep-seated and appreciated moral principle that develops only with adolescence and experience. Lawyers and jurists will profit by a perusal of this brief for the criminal imbecile.

CANCER OF THE STOMACH, a Clinical Study of 921 Operatively and Pathologically Demonstrated Cases. By FRANK SMITHIES, M.D., Gastro-enterologist to Augustana Hospital, Chicago. With a chapter on the Surgical Treatment of Gastric Cancer by ALBERT J. OCHSNER, M.D., LL.D., F.R.C.S., Professor of Clinical Surgery in the School of Medicine of the University of Illinois; Surgeon-in-Chief to Augustana Hospital, Chicago Price $5.50 net. Philadelphia and London: W. B. Saunders Company, 1916.

IT is a long time since any adequate monograph, devoted to the subject of gastric cancer has appeared, and in this period there have been many changes not only in diagnostic methods but also in beliefs concerning etiology and in the manner of treatment. The author's extensive experience in Ann Arbor, Rochester, and Chicago have furnished him with an abundant material from which he has produced an excellent work. Etiology, pathology, and symptomatology are all treated fully and satisfactorily. The chapter on the blood in gastric cancer we believe could be improved. The serum reactions are mentioned and described, but their value is not discussed. The fact that the blood picture may simulate that of pernicious anemia is not mentioned. The discussion of the relation of gastric ulcer to gastric cancer is the best in the book. The author shows its great importance, admits that it is impossible of absolute proof, and yet forces the reader to concede that there is no doubt a very intimate relationship between the two. He apparently has not much use for the Roentgen ray. Ochsner's chapter on the surgical treatment is an admirable one. The work is a production of the highest class and can be unreservedly recommended to all practitioners of medicine and surgery.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held December 28, 1915.

DR. GEORGE W. KOSMAK, IN THE CHAIR.

Premature Separation of Normally Situated Placenta Due to Shortening of the Cord.—Dr. LUCIUS A. WING reported this case. He said the patient was a primipara, 28 years of age, who at the time of her admission to the hospital gave a history of having had weak labor pains for about fifteen hours. For the past seven hours she had had bleeding from the vagina which became quite active. The attending physician had packed the vagina with iodoform gauze and had made a diagnosis of placenta previa. On admission to the hospital the patient's general condition was good. The uterus was very firm and remained more or less tonically contracted. On removal of the vaginal packing the cervix was still thick and barely admitted the tip of the finger. No placenta could be felt. Uterine contractions occurred every four or five minutes and were of moderate force and duration. The fetal head presented above the pelvic brim but did not come into the brim when the uterine contractions occurred; it moved laterally in the direction of the right iliac fossa. The patient had a justo-minor and moderately flattened pelvis, the true conjugate being 8.5 cm.; but as the child was small and the patient three or four weeks before term the somewhat diminished size of the pelvis was not sufficient to explain the failure of the head to engage. The condition could only be explained by some cord entanglement, with partial separation of the placenta. Abdominal cesarean section was decided upon as the quickest and most satisfactory method of dealing with the situation. At operation an oval placenta was found. The attachment of the cord was almost marginal at the lower border. The placenta measured 14 x 17 cm. and the cord was 43 cm. in length. Two coils of this cord were about the child's neck, and held the head close to the lower border of the placenta. The mother's postpartum course was very satisfactory.

Erythema Nodosum as Post-Partum Complication.—Dr. LUCIUS A. WING reported this case, which occurred in a primipara, 22 years of age, and pregnant seven and one-half to eight months. He said that twenty-two hours before admission to the hospital she had fallen heavily against the rim of the bath tub, striking her abdomen and left forearm. This was followed by abdominal discomfort, which continued to increase until, at the end of three or four hours, the patient was having severe abdominal pains, cramp-like exacerbations, and severe backache. About ten hours after the fall the patient began to bleed from the vagina, though not profusely. When brought to the hospital she was nearly exsanguinated and mildly delirious. Examination revealed a long cervix which barely admitted one finger and no placenta was felt. The uterus was tonically contracted. No fetal heart was heard. The small vagina and undilated cervix together with the desperate condition of the patient made it seem advisable to empty the uterus at once by laparotomy. The blood count on admission showed red cells 2,210,000, white cells 13,200, polymorphonuclears 80 per cent., and hemoglobin 33 per cent. When the uterus was exposed it was found firm and somewhat distended, and much deeper in color than normal, being a deep purplish red and showing numerous petechial areas. On incising the uterus the fetus was found in the region of the fundus and almost entirely separated. The dead fetus, membranes, placenta, and a great quantity of clotted blood, were quickly removed and the uterine incision sutured. The patient was discharged on the twenty-second day at her own request, though still quite anemic. Twenty days later she was again admitted to the hospital, complaining of weakness, headache, pains in the back and limbs, particularly in the large joints, slight sore throat, and slight cough. There was evidence of slight bronchitis and a mitral stenosis was present but showed no change since her former stay in the hospital, beyond the increased pulse rate, this being 110. Both arms and legs were dotted with a deep red nodular eruption, confined to the extensor surface. At the time of admission her blood count was as follows: red cells 4,070,000, white cells, 6,400, polymorphonuclears 72 per cent., and hemoglobin 60 per cent. The urine was highly colored and showed an excess of indican. The patient continued to run a temperature for fourteen days, during which time the eruption gradually faded and its nodular character disappeared. There was some desquammation overlying each nodule. The blood culture showed a growth of streptococcus viridans. The patient was discharged on the twenty-second day, her temperature having been normal for a week.

Dr. HENRY DAWSON FURNISS said the case just reported was interesting to him because of the blood count following transfusion. There was at the Post-Graduate Hospital a woman who had bled profusely from a carcinoma of the cervix. Her blood count had fallen to 2,700,000 red cells and hemoglobin 45 per cent. After the transfusion of 480 c.c. of blood her blood count fell to 2,300,000 red cells and hemoglobin 40 per cent. The patient then began to improve during her stay in the hospital and the improvement had continued since. When a small amount of blood was transfused it seemed that one should be on the lookout for a reaction afterwards. It was better to infuse a greater amount in the first place. In this case hemolytic and agglutination tests were satisfactory and there was no evidence of hemolysis following the transfusion.

Spontaneous Rupture of a Pregnant Uterus Presenting Abdominal Symptoms of a Mild Degree.—Dr. T. H. CHERRY reported this case. He stated that the patient was thirty-five years of age, the mother of six children, and in her eighth month of pregnancy when she was admitted to the Harlem Hospital. The day before admission she began to have cramp-like pains in the lower abdomen, and a midwife told her she was in false labor. The pains continued with dyspnea on lying down. A physician was then called who confirmed the midwife's diagnosis. Although the patient's symptoms were referable more to the chest than abdomen, and although examinations of the heart and lungs disclosed no lesion, it was deemed advisable to terminate labor. A modified Ribes bag was inserted through the cervix. The following day as no labor pains had occurred, and the patient's condition remained unchanged, it was decided that the best way to deliver her was by cesarean section. Upon opening the abdomen and entering the peritoneum a moderate amount of blood was found free in the pritoneal cavity with the fetus and placenta among the intestines. These were delivered through the abdominal incision. The fetus was a dead anencephalic monster. The uterus was well contracted and showed a longitudinal tear on its anterior and lateral walls, extending from the junction of the fundus and lower segment near the midline to the vesico-uterine peritoneal fold, and laterally to the right broad ligament. Manipulation started fresh hemorrhage which made it advisable to remove the uterus supravaginally. The patient made an uneventful recovery and was discharged from the hospital on the sixteenth day. The uterine specimen was unfortunately mislaid so that it could not be determined whether any degenerative process was present in the uterine muscle. This case was of interest because, although the symptoms were entirely due to the conditions originating in the uterus, the local manifestations were slight and the cardiac symptoms were so marked that attention was directed principally to them.

Rupture of the Uterus Sustained During Version, Unrecognized Until Prolapse of the Intestines Forty-eight Hours Later.—Dr. T. H. CHERRY reported this case which occurred in a patient, thirty-six years of age, who had had four normal pregnancies and labors. Her present pregnancy had been normal. When she entered into labor her physician found a shoulder presentation with one arm protruding through the vagina, the uterus tonically contracted, and the cervix fully dilated. Under chloroform the physician performed a difficult internal podalic version with subsequent extraction of a dead child. A retained placenta was removed by manual extraction. The patient presented a normal appearance for the two following days when a cathartic was given. This was followed by a free movement of the bowels, at the termination of which she complained of abdominal cramps, nausea, and extreme weakness. Vaginal examination showed several loops of intestine prolapsed into the vagina. The patient was immediately sent to the Columbus Hospital, where an abdominal section was immediately done. On entering the peritoneal cavity with the patient in the Trendelenburg position a considerable length of small intestine was found lying free at the pelvic brim entirely detached from its mesentery. On following up this loop it was ascertained that the detachment of the mesentery from

the gut reached to the duodeno-jejunal junction, a distance of three feet. There were no signs of peritonitis or of free blood in peritoneal cavity. A rapid resection of three feet of the jejunum was made and a side to side anastomosis was done by the suture method. Examination of the uterus disclosed a longitudinal laceration in the lower segment on its posterior surface which extended to the cervix at its vaginal junction. This was sutured with interrupted chromic gut sutures. The patient left the operating room in fair condition. Later in the evening her temperature rose to 106°F., there was an increase in pulse rate, and she died a few hours later. In this case a complete rupture of the uterus had occurred during an operative delivery causing practically no shock or hemorrhage, and a period of forty-eight hours elapsed before prolapse of the intestine occurred. This was undoubtedly produced by the administration of the cathartic which produced active peristalsis, while at the same time the use of the voluntary muscles of evacuation increased the abdominal pressure causing the prolapse of the intestines through the uterine rupture. The uterus then contracting grasped the prolapsed intestines and held them in a fixed position.

Gas Bacillus Infection Following Futile Attempts at Induction of Labor.—Dr. T. H. CHERRY reported this case. He said the patient gave a history of having had one full term baby and two still births at term. At the time of admission to the hospital no fetal hearts could be heard and the mother stated that she had felt no fetal movements for two weeks, neither could the small parts of the fetus be felt. The patient was kept under observation for two weeks when it was decided to empty the uterus. The patient was prepared for this procedure by the most approved aseptic methods and a Ribes bag was introduced, after instrumental dilatation made necessary by the sclerosed condition of the cervix due to previous lacerations. Twenty-four hours later no labor pains had been produced and a larger bag was introduced, aseptic methods being carefully observed. During the next sixteen hours there were no labor pains and no softening or dilation of the cervix occurred. The patient then complained of nausea and chill, and an elevation of temperature was noted. After an attack of severe nausea and vomiting the patient suddenly expired, forty-eight hours after the introduction of the first bag. A partial autopsy revealed a dead fetus *in utero* and smears from the uterus showed typical bacilli Aerogenes capsulatus. While infection seldom followed the induction of labor where an aseptic technique was carred out, it was worth noting that virulent bacteria might be introduced into the uterus even if the technique was carried out in as aseptic a manner as they knew how. Dr. Cherry said that if he encountered such a condition again he would perform a vaginal cesarean section, as this procedure was the most rapid and certain mode of emptying the uterus after the third month of gestation.

Dr. JAMES A. HARRAR said that at the Lying-in Hospital when they had a case of ruptured uterus sent in they preferred to do a rapid hysterectomy rather than attempt to suture the rent in the uterus, especially when so extensive as the one described. They usually made no attempt to close the peritoneum over the opening in the vaginal vault. The women with ruptured uteri were admitted in desperate condition and it was noteworthy that those cases in which a hasty operation with drainage but with no attempt at the niceties was done recovered more frequently than those who, being in better shape, encouraged the operator to take pains in closing the peritoneum over the stumps of the tubes and amputated cervix. Dr. Harrar related a case somewhat similar to Dr. Cherry's second case, which had occurred during an attempt to produce an abortion. The woman was three or four months pregnant and had a retroverted uterus. The physician who attempted to produce the abortion tore through the uterus at the junction of the body with the isthmus and drew down a loop of the ileum. The loop of ileum was torn free from its mesentery? Nine inches of the ileum was resected with a lateral anastomosis. This patient made a smooth recovery.

Dr. GEORGE W. KOSMAK said he wished to speak with reference to the possibility of injury to the intestines without rupture of the uterus occurring during labor, and to relate an interesting case which he would report more in detail at a future time. This patient, a primipara, a few hours after normal labor sudenly went into shock, and fourteen hours later was admitted to the Lying-in Hospital with the belief that the uterus might have been ruptured. The abdomen was slightly distended and there was more or less pain in the iliac fossa. There was no evidence of intraperitoneal hemorrhage. Upon opening the abdomen a considerable quantity of straw colored fluid was seen and there was complete gangrene of the sigmoid portion of the descending colon. The abdomen was simply closed with drainage and the patient died two hours later. At autopsy a complete gangrene of the sigmoid was found and there was no evidence of thrombosis formation indicative of obstruction to the blood supply, but the sigmoid was very movable. Examination showed no other lesions. The explanation seemed to be that the head, during the process of engagement, carried the movable gut with it and the pressure injury thus inflicted caused the gangrene. There was nothing in this instance that could have been done. The case showed conclusively that injury to the intestines even in normal labor was possible.

Backward Dislocation of the Lower Humeral Epiphysis as a Birth Injury.—Dr. EDWARD D. TRUESDELL gave a lantern slide demonstration which brought out a number of points of interest with reference to injuries of this nature. He said that in the new born child one or both arms might hang motionless; most commonly when this was the case a fracture of the clavicle or humerus was present, or an Erb's birth palsy might have occurred. During the first few days of life a syphilitic periostitis might cause a dangling arm, but a less common cause was a dislocation of the lower humeral epiphysis, a condition more often suspected than proven. The lower femoral epiphysis at birth quite regularly contained an ossification nucleus, as did the upper humeral epiphysis at times. Where this nucleus was present the *x*-ray picture would show the situation of the epiphysis, but without the nucleus the epiphysis being entirely cartilaginous could not be precisely located by the radiograph. When periosteum was stripped from bone in the new born, new bone formation took place beneath this periosteum very promptly and was visible in the radiograph at the eighth day after birth. This was noted quite regularly in cases of fracture of the humerus in the new born. By hyperextension of the forearm upon the arm in full term still born infants, backward dislocation of the lower humeral epiphysis was produced experimentally in one-half of all attempts made. These dislocations were dissected out, and it was found that the cartilaginous epiphysis was displaced backward, while it was still attached to the posterior portion of the periosteum of the shaft, which was stripped upward for a variable distance. In a case of backward dislocation of the lower femoral epiphysis studied at the Lying-in Hospital, the diagnosis was made by radiograph, the situation of the epiphysis being indicated by the contained nucleus of bone. Serial radiographs of this case extending over seven months were made. The dislocated epiphysis was not replaced. New bone formation began quite promptly beneath the periosteum, which was evidently stripped up following the epiphysis backward. Nature effected the repairs very satisfactorily during the seven months, constructing a new portion of femoral shaft to meet the displaced epiphysis and at the same time absorbing the superfluous bone in front. The present study was based on three cases in all of which version and breech extraction had been done. In each instance there had been extended arms causing great difficulty in delivery. In each infant there was a dangling arm. The first case was seen at the eighth day when a callous mass was felt just above the elbow joint and a diagnosis of supracondylar fracture made. The radiograph showed no fracture, but did show a deposit of new bone about the terminal portion of the humeral shaft. This was the only observation made in this case, the true nature of the injury not being fully realized. In the second case, the conditions of the arm being similar to the first, two radiographs were made. New bone was found around the lower portion of the shaft of the humerus, particularly evident in the lateral view; the deposit extended upward half the length of the shaft. In the third case it was thought that the humerus had been fractured, the diagnosis having been made before delivery was completed as the obstetrician felt some structure give away. There was distinct crepitus when the injured arm was examined. The radiograph showed no fracture, the bones appearing normal. At the eighth day new bone formation was shown in the radiograph, particularly in the lateral view, about the lower portion of the shaft of the humerus. Some thirty pictures were made of

this arm during the next three and one-half months. New bone formation was shown for nearly the entire length of the humeral shaft increasing in amount from above downward. At the same time there was a bevelling off of the lower portion of the humeral shaft in front, a modified arrangement effected to meet the backward dislocation of the cartilaginous epiphysis, invisible in the *x*-ray. From the manner in which these injuries occurred, from the experimental evidence, from the radiographs of these three cases, and from analogy between these three cases and the case of dislocation of the lower femoral epiphysis, it would seem that backward dislocation of the lower humeral epiphysis did occur as a birth injury, and furthermore that this lesion was one definitely ascertainable in the radiograph made at or after the eighth day.

Post-Mortem Cesarean Section: A Report of Ten Cases.—Dr. JAMES A. HARRA presented this communication. He said that occasion might arise to handle the situation of a pregnant woman dying undelivered. She might or might not be in labor. The confusion accompanying the catastrophe to the mother might often cause the attendant to neglect the opportunity as well as the duty of rendering instant assistance to the unborn child. The operator might also be embarrassed by the necessity or the inability of obtaining consent for any operative maneuver upon the dead mother. Thus in many instances the baby's life was sacrificed when a prompt incision of the abdomen and uterus would rescue it without difficulty. The civil law in Rome dating from the time of Numa Pompilius decreed cesarean section in pregnant women dying undelivered. That post mortem delivery was recognized in ancient mythology was borne out by the reputed births of Bacchus and Aesculapius by this method. The Church also reproduced the injunctions of the Roman law. Unfortunately for many years and even at the present time post mortem delivery had resulted in surprisingly few living children. Attempts at post mortem extraction were sometimes made by version or forceps, preceded it might be by vaginal hysterectomy or manual dilatation. These procedures were generally doomed to failure, except in the case of death occurring toward the end of the second stage when a prompt low forceps or rapid extraction of a breech was the correct procedure. A certain repugnance among the laity to post mortem delivery of the dead woman was not unnatural, and to avoid later embarrassment it was always better to secure the consent of the husband or family if instantly at hand. If consent was not promptly to be had or if it was refused and the fetal heart was still going, it was not only permissible but imperative that the physician should do everything in his power to save the child. That the operation of post-mortem cesarean section was legal without consent had been shown by Bacon. He pointed out that the right of the husband to the custody and control of his wife's dead body did not go to the extent of preventing disposal of it as might be necessary to keep it from injuring another human being. The viable human fetus had the same right to live as had any other human being. This rule would require a post mortem delivery in every case when the fetus was of at least the twenty-eighth week of gestation and was known to be alive at the time of the mother's death. The legal status of a child born by post mortem cesarean section might at times prove to be of importance. The proposition of whether a child delivered after the death of the mother would share in the distribution of an insurance policy of the mother for the benefit of her children, living at the time of her death, was put up to the head of the legal department of one of New York's largest insurance companies. He gave it as his opinion that such a child would share in its mother's estate, and that the company would pay its share in the policy described without question. In 91,000 pregnancies at or near term at the Lying-in Hospital, 50 women had died undelivered. The great majority of these perished in less than an hour after their reception into the hospital, some dying while being admitted. In 19 instances the medical attendant considered it proper to take advantage of the opportunity of doing a post-mortem delivery. Seven times version was done, resulting in seven still births. Once a low forceps concluded the birth of a living child, the head being on the perineum when the mother died. Once a breech extraction was completed after the death of the mothor with a living child. Ten times a cesarean section was performed and it was these cases which the writer discussed more particularly. In summarizing this series of cases he stated that three babies were still born. It was probable that the death of all these children occurred before the death of the mother. Four babies were born with hearts feebly beating, but there was no attempt at respiration after prolonged efforts at resuscitation. One baby gave a few feeble gasps and died shortly after delivery. One baby, though badly asphyxiated at birth, left the hospital living and well, and one, crying spontaneously at delivery, was also discharged living and well. This showed what might be expected in a general way as to the success of post-mortem delivery by cesarean section taking the cases as they came. DeLee stated that a fetus would live from five to twenty minutes after the death of the mother, and that reported cases of longer periods were not authenticated. The length of time of survival depended upon the suddenness of the mother's death. The child lived longer if she died of apoplexy, accidental hemorrhage, eclampsia, or very acute infection, than if the agony was prolonged, as in tuberculosis, heart disease, etc. Since the mother used up the child's oxygen the latter usually died first. In the cases reported in this paper the longest interval between the death of the mother and the delivery of a living infant was seven minutes. One delivered after eight minutes gave a few feeble gasps and died shortly after birth. One delivered after an interval of twenty minutes had a feebly beating heart but never made any attempts at respiration. The obvious observation was that the success of the operation depended very much upon the promptness with which it was done. Unless one had positive proof that the baby was dead, when the mother succumbed it was justifiable to proceed at once to post mortem cesarean section. A point to be emphasized was the importance of persisting in prolonged efforts at artificial respiration as long as any intermittent contraction could be appreciated in the baby's heart by pressing the fingers up under the left costal margin. The children delivered in by post mortem cesarean section were almost invariably born in severe asphyxia and great patience was required in their resuscitation.

Mr. GEORGE A. WHITESIDE, Counsel for the Medical Society of the County of New York, said that the subject of cesarean section had received but little mention in either the reported cases or in the text-books of law, although it had been legally defined in Black's Law Dictionary as follows: "A cesarean operation is a surgical operation whereby the fetus, which can neither make its way into the world by the ordinary natural passage, nor be extracted by the attempts of art, whether the mother or fetus be yet alive, or whether either of them be dead, is, by a cautious and well timed operation, taken from the mother with a view to saving the lives of both or either of them." Where a post-mortem cesarean section was performed the situation was apparently anomalous, wherein the child was brought into the world after the mother's death and its property rights might, by reason of such fact, become seriously endangered if the ordinary principles of law were not in some wise adapted to this unusual condition. Both at Common Law and under the Statutes of our States, recognition had long been given to the rights of the posthumous child, this term being usually regarded as defining a child born after the death of its father and within the usual period of gestation. The Encyclopedia of Law and Procedure however, recognized that this early conception and definition of posthumous child should be extended to include likewise a child born after the death of the mother when cesarean section had been performed. For the purposes of property rights a child *en ventre de sa mere* was considered in *esse;* so that in law the time elapsed between the death of the father and the birth of a previously begotten child was completely annihilated. If this statute applied likewise to the posthumous child of the mother, then the property rights of such a child derived through intestate succession were in every wise similar to those of a child born prior to the mother's death. The statute referred to the intestate in the masculine gender, in the phrases "begotten before *his* death" and "in the lifetime of the intestate should he survive *him.*" By the method of statutory construction "Words of the masculine gender included the feminine and the neuter, and may refer to a corporation or a Board or other body"; so that by this construction it would appear that a posthumous child born by post mortem cesarean section would have the same right of inheritance under the intestacy of its mother as though the death of the mother had occurred subsequent to the child's birth. A review of the Statute Law and of its

history and its construction in connection with the Descendant's Estate Law makes it plain that a child born as a result of post-mortem cesarean section, whose mother had hitherto made a will in which such a child was unprovided for and not mentioned, should receive the same portion of such parent's real and personal estate as would have been distributed to it if such parent had died intestate. So then as regarded the rights of a child born by post-mortem cesarean section, both under the intestacy of its mother and also where the previously made will of the mother did not mention or provide for such child, its rights were in no wise lost and were preserved as fully as those of a child normally born and not posthumous. Again, in the creation of estates in real property the position of the posthumous child was defined as follows: "When a future estate is limited to heirs of issue or children, posthumous children shall be entitled to take in the same manner as if living at the death of their parent and a future estate dependent upon the contingency of the death of any person without heirs, or issue, or children, shall be defeated by the birth of a posthumous child if such person is capable of taking by descent." By a section of the Code of Civil Procedure, an executor or administrator of a decedent who had left him surviving a husband, wife, or next of kin, might maintain an action to recover damages for a wrongful act, neglect, or default, by which the decedent's death was caused. Under this statute it would appear that if a woman about to give birth to a child, upon whom a surgeon was about to perform a cesarean section, were suddenly killed by the negligent act of another, and the surgeon thereafter delivered by post-mortem cesarean section a living child, the father thereof having died, an administrator could be appointed for that child and an action could be instituted for the death of the mother, and damages recovered for the death for the benefit of the child. If the mother's death were due to the negligence of the surgeon Mr. Whiteside said he saw no reason why a similar action could not be brought for the benefit of the child against the surgeon. As to the possible criminal responsibility of the surgeon performing post mortem a cesarean section or refusing to perform such operation, the Penal Law defined homicide as follows: "Homicide is the killing of one human being by the act, procurement, or omission of another." Where the cesarean section was performed before the mother's death, it was designed to preserve the life of both mother and child, so that in its proper performance there could be no criminal responsibility. Where, however, it should be performed by the surgeon and he neglected to do so, the life of both mother and child might be sacrificed. If either mother or child was killed by the omission of the surgeon to perform the operation, did it not seem clear that the definition of homicide was satisfied? If the surgeon's omission to perform the cesarean section was due to his performance of other lawful acts looking to the saving of the lives of the mother and child by lawful means, with ordinary caution, and without unlawful intent, it would seem that such homicide, under these conditions, might be considered excusable. If one assumed that such an omission was homicide it did not constitute murder in the first degree unless there was a premeditated and deliberate design to effect the death of the person killed; or murder in the second degree unless there was also a design to effect the death of another, without the element of deliberation and meditation. But if such an omission resulting in death, was without design to effect death but by culpable negligence, it would seem that such an offense might be considered as manslaughter in the second degree. This last analysis of criminal responsibility Mr. Whiteside said was purely speculative and not founded upon any precedent. The principle, however, was well founded on precedent and had found expression in cases in which safety devices of recent invention, readily available, but unheard of or unknown a half century ago, were omitted from use by those upon whom the responsibility for their use rested, and when a man's life was sacrificed through such failure or neglect the courts had considered such omission as constituting culpable negligence, and had held those responsible therefore upon a charge of manslaughter in the second degree. This was particularly true in the engineering field, but its application to surgery awaited the opportunity which a specific case might afford. Mr. Whiteside said that all these phases which he had considered might be elaborated at great length.

Dr. JOHN VAN DOREN YOUNG asked whether the physician or surgeon who performed a post-mortem cesarean section performed an autopsy, and whether he was liable under the law forbidding the performance of an autopsy without the consent of the family of the deceased. The legal status of the baby born by post-mortem cesarean section had been very thoroughly cleared up but they had not been told whether the doctor might not be criminally liable who performed a post-mortem operation without the consent of the husband or relatives.

Dr. THOMPSON T. SWEENY said that it seemed that the success of a post-mortem cesarean section depended upon the time that elapsed between the death of the mother and the extraction of the child, on the rapidity with which the operation was performed after the death of the mother. He felt that one would spend four or five minutes trying to resuscitate the mother and that personally he should hate to perform a cesarean section without doing this, and yet if the operation was to be successful it must be done rapidly.

Dr. J. A. HARRAR said that there was one point that he expected was of more interest to them as doctors than to Mr. Whiteside as a lawyer, and that was whether it was necessary to get the consent of the family before performing a post-mortem cesarean section, or whether the doctor had the right to go ahead and operate even if such permission was refused, viewing the question from the standpoint that in performing such a post-mortem cesarean section he was simply removing inert matter that was endangering the existence of a living human being. They would like to know what was the legal duty of the physician with reference to performing a post-mortem cesarean section where there was a possibility of getting a living child by this procedure. As to what had been said with reference to operating a few minutes after death, it seemed to him that one could usually make a safe decision, especially with a woman dying under observation, with a working diagnosis of the cause of her death. In such a case simple tests should enable one to assure the family that the mother was dead and that an attempt to save the life of the child was necessary.

Mr. WHITESIDE said that as to whether a surgeon should get the permission of the husband before performing a post-mortem cesarean section, this question could not be definitely answered until the Court of Appeals gave a decision. It seemed to him that when the physician was given charge of the expectant mother he was given charge of the lives of two human beings, mother and child, and he was thereby given implied authority to do all that science made possible to conserve the two lives committed to his care. If the mother died, his responsibility so far as her life was concerned was at an end and any cutting operation on her body was in the nature of an autopsy; but the surgeon still had the responsibility of doing all that science enabled him to do for the preservation of the life of the child, and this duty he owed by the implied agreement when he was put in charge of the case. It carried with it the authority to perform a post-mortem cesarean section without the consent of the husband, in his judgment. Of course this operation was in the nature of an autopsy and could not be performed without the consent of the husband or family, but this consent had been given when the life of the child was committed to the care of the physician when he took the case.

SECTION ON SURGERY.

Stated Meeting, Held January 7, 1916.

DR. JOHN DOUGLAS IN THE CHAIR.

Tuberculous Cervical Adenitis Treated by X-Ray.—Dr. A. F. HOLDING presented two cases.

CASE 1. This patient was eight years old. His trouble began in the summer of 1914 with a sore around the matrix of the index finger which was treated as an acute infection of the finger at two dispensaries. When the glands became enlarged at the bend of the elbow they were lanced. Dr. Holding said he was experimenting at this time on the action of various forms of electricity on infections and he went to various dispensaries asking for cases and this case was referred to him. When he first was on the case the glands of the arm, axilla, and the axillary portion of the chest were enlarged. Soon after the treatment was started an abscess formed over the right eye and, fearing that the infection was becoming general, cultures were taken which were reported as *Staphylococcus aureus* infection. A section taken from the finger and a gland

which was removed from the arm showed typical hyperplastic tuberculosis with some giant cells and tubercles. The diagnosis was then made of tuberculous adenitis based on the microscopical examination. The patient had received six Roentgen ray treatments and had gained very markedly in weight, strength, and general nutrition. He had now been perfectly well for over six months.

CASE II.—This patient was a woman, twenty years of age, with a negative family history. She had whooping cough at the age of one year which was followed by bronchial pneumonia, night sweats, cough, expectoration, loss in weight, and she had been confined to her bed for six months. After this time a small knuckle of bone was found in the back and she was treated for tuberculosis of the spine by Dr. Shaffer and Dr. Phelps. For six years she lived in a plaster-of-Paris cast which was followed by spinal braces. Her present illness began in 1910 when a hard lump formed in her left arm. This was lanced, after which there was a continuous discharge; similar lumps developed throughout the arm and axilla, as well as on both sides of the neck and front of the chest. In this condition the patient was referred from the New York Orthopedic Hospital to him, by Dr. Howard, with the diagnosis of tuberculous adenitis. Since April 15, 1914, she had received sixteen *x*-ray treatments and had been perfectly well of the adenitis and glandular involvement for over six months. The entire duration of her trouble was five years.

Fascia Transplants.—Dr. HAROLD NEUHOF presented a patient who had been under observation since nine months ago. There was a tracheal defect, and under local anesthesia a piece of the fascia lata was sutured in place with fine catgut. Leakage followed and it became necessary to drain the field. There was an extensive emphysema. Good results followed. The interesting features of this case were that the operation was done under local anesthesia and that the procedure employed was a very simple one.

He also presented a boy who had been under his observation for one year. He had a urethral defect and voided a small amount of urine through it, as well as through the normal opening. An operation was performed under general anesthesia; when the skin was peeled back a defect was found more than one-half the perimeter of the urethra in extent. By a very simple method the fascia lata was sutured over the defect and with perfect results.

Thyrectomy for Vagotonic Type of Basedow's Disease.—Dr. DEWITT STETTIN presented a young lady, 19 years of age. Her sister was a sufferer from Basedow's disease. Four years ago she first noticed a swelling in her neck, and two and a half years ago tremor, nervousness, slight exophthalmos, palpitation, and hyperidrosis became noticeable. She lost in weight and in spite of treatment her disease progressed. In July, 1914, the entire right lobe of the thyroid was resected, but she did not improve to any great extent and there was still no improvement. The remaining part of the left lobe continued to grow. Her chief complaints were tremor, extreme nervousness, hyperidrosis, swelling of the left side of the neck, and palpitation. She was admitted to the German Hospital on October 29, 1915. The patient showed the symptoms and physical signs of an advanced Basedow's disease. She weighed 119 pounds. She flushed easily and perspired profusely. She had a marked tremor. She was extremely nervous and restless. She was on the verge of a psychosis and she displayed choreiform movements of a pronounced degree. Her heart was enlarged and there was a moderate tachycardia, 120 to 130. There was a slight exophthalmos, but the various eye symptoms were not evident. There was a decided enlargement of the remaining portion of the left lobe of the thyroid. There was no presternal dulness. The *x*-ray examination showed only an enlargement of the heart. The blood count showed a leucopenia with a marked lymphocytosis, 5,300, with 50 per cent. lymphocytes. Her blood pressure was low, systolic 114, diastolic 68. She had no alimentary glycosuria. The adrenalin test was negative. The Loewi reaction was not present. There was a pronounced Aschner phenomenon (pulse before eyeball pressure, 110, after, 100). On injection of pilocarpine there was a most profound, even alarming reaction. The marked pilocarpine reaction, the decided Aschner phenomenon, the increased carbohydrate tolerance, even after adrenalin injection, the profuse hyperidrosis with the clammy extremities, the low blood pressure, the slight exophthalmos, and the moderate tachycardia with subjective symptoms, all suggested that they were dealing with a case of Basedow's disease in which the vagotonic symptoms were at least pronounced, a case in which it might be presumed that the thymus had a preponderating influence. The patient's condition, in spite of three weeks' rest in bed and medical treatment, became worse and, although the case was not looked upon as the best operative risk, it was decided to remove part of the remaining thyroid tissue and at the same time to attempt a thymectomy as advised in this type of cases by Haberer, Klose, Garré, Halsted, and others. This was accordingly done on November 18, 1915, under general anesthesia. The remains of the left lobe of the thyroid were exposed through the old scar and the part resected. The exposure was very difficult owing to adhesions and cicatrix and there was considerable oozing. A second incision was then made perpendicular to the transverse one and this was extended downwards to below the suprasternal notch. The anterior mediastinum was exposed and the fat and glandular tissue lying between the sternum and trachea was removed. The total mass was not large, about the size of a pigeon's egg. The patient left the table in considerable shock and with a pulse of 168. From this shock she promptly recovered, and, although they expected a stormy post-operative course, she made a most uneventful recovery. There was no acute hyperthyroidism whatsoever; there was only a very slight rise of temperature the first two days and the pulse came down in two days to 100 where it remained. It was really striking that the patient who was in such an unsatisfactory condition before operation that they were reluctant to attack the case surgically, showed so little reaction after a rather severe operation. In fact it was much less than was shown by the average Basedow's case after the ligation of a single artery. This was quite in line with the well-known experience of von Haberer after the removal of even a small fragment of thymus. The microscopical examination of the tissue from the anterior mediastinum showed it to be an atrophic thymus imbedded in fat. Since the operation the patient had steadily improved. Her choreiform movements had gradually left her and she had gained fifteen pounds in weight. The pilocarpine test was repeated and 0.1 grain had as little effect as a dose of distilled water. On the other hand, the adrenalin test had become positive. Her heart action was still variable, the blood picture had not changed and the tremor, though better, was still present. Dr. Stettin said he realized that this case was not a clear-cut one, nor could it be considered as a cure as yet, although there had been certainly a decided improvement. He felt, however, that the observation was of sufficient interest to warrant the presentation.

Dr. JOHN ROGERS said that every case of Graves' disease was not entirely dependent upon some disease of the thymus, although he had several times thought the thymus to be at the bottom of the trouble. He reported briefly three cases. One was a woman, sixty years of age, who had been troubled greatly with cough. Thyroidectomy was done but without benefit. Dr. Rogers explored the region of the thymus and found a mass there as large as the thumb nail. This mass was removed, which was followed by a marked improvement of the cough, but little improvement in the diarrhea which she had had for some time. In the two other cases he made a careful exploration but could find absolutely nothing to account for the symptoms. He had seen one case that was operated upon four times; one lobe of the thyroid was first removed, then the other, and finally the isthmus. This patient then developed a severe psychosis and she was a very difficult case to handle. She had involuntary defecation and urination. She drifted into the hands of an *x*-ray specialist who applied the rays over the sternum and with perfect results. Dr. Rogers did not know how to make a satisfactory explanation of the result of this treatment. There was no doubt but that affections of the thymus would sometimes induce certain mental disturbances which were akin to psychoses. He reported another case of a child who had twice been operated upon. He took out a portion of the thyroid and tied off the thyroid arteries and today the patient was living practically on thymus. She could go about and attend to her ordinary household affairs. If the thymus was stopped, there appeared at once an enlargement of the thyroid with its accompanying disturbances. That the thymus in these cases was at fault could not be demonstrated. In many instances they

would look for the thymus and it could not be found in its proper situation; it would be found located somewhere else.

Subclavian Aneurysm; Return of Pulsation after Ligation of the First Portion.—Dr. H. A. HAUBOLD presented this patient. She was admitted to the Harlem Hospital March 10, 1915. A diagnosis of subclavian aneurysm was made and operation upon the same was performed by Dr. Haubold two days following. System anesthesia was begun with the Bennett intratracheal (Minewin and Rafsky) by Drs. Schaub and Lombard. Much difficulty was experienced in the introduction of the tracheal tube; after this had been inserted the anesthesia was excellent. The thorax was immobile throughout the operation. An incision five inches long was made, beginning about the middle of the right clavicle, curving upward and ending at the left sternoclavicular articulation. The platysma was divided and the sternocleidomastoid muscle was exposed and cut across about one and a half inches above the clavicle. The muscle was dissected upward and downward, giving an exposure of the carotid sheath, which was opened, and the right common carotid artery, the internal jugular vein, and the vagus nerve were dissected clean. The internal jugular vein was severed between two ligatures at the level of the incision of the sternocleidomastoid muscle. The lower portion of the cut jugular vein was dissected downward, thus exposing the right subclavian artery with the vagus nerve passing over it. A fine silk ligature on a carrier was passed about the subclavian artery from below upward, internal to the vagus nerve. A heavy, No. 20, double silk ligature was tied to the fine silk and carried around. Each of the heavy silk ligatures were tied tightly side by side with a double turn at the first part of the knot. The two ends of the ligature were then tied together, forming the second part of the knot. The bleeding vessels were ligated. The sternocleidomastoid muscle was sutured with a double mattress stitch. The skin and platysma were sutured with catgut lock stitch. A rubber drain was inserted in the external end of the incision. The patient made a rather slow but uneventful recovery, but there was a return in the pulsation in the aneurysm. The patient felt good and was very comfortable.

A Study of Postoperative Pneumonia in the Presbyterian Hospital during 1915.—Dr. ALLEN O. WHIPPLE presented this paper, in which he stated that the unusual number of postoperative pneumonias during the months of February and March of last year attracted the attention of the medical and surgical staffs of the hospital to this subject. As a result there was a more systematic study of the cases, both from the bacteriological and clinical standpoint, certain conclusions were reached, and a more comprehensive plan for the investigation of the etiology of the disease to be carried out during the coming year had been formulated. They had collected all the pneumonias that developed on the surgical side and found that these numbered 42 out of 1,902 cases, or 2.2 per cent. Whether all of these were to be considered postoperative pneumonias or not was a debatable question. A careful clinical study of the cases seemed to divide them into three groups: 1. The cases that developed within the first to the fourth day after operation in patients that were in good physical condition before the operation. Of this group there were 33, or 79 per cent. 2. The cases that came to the hospital with a pneumococcus infection in a part of the body other than the lungs. There were three such cases, or 7 per cent. 3. The cases that developed a pneumonia either as a terminal complication in the presence of other severe infections or in the feebler senile patients, or where the pneumonia appeared after the patients had recovered from operation and the pneumonia was contracted as in regular life. There were six of these cases, or 14 per cent. Of the 42 cases, 30 were males, 12 femals; 37 were adults and five were children. After reviewing these cases more in detail the writer concluded: 1. That a fairly large percentage of the cases would have been overlooked had it not been for the systematic examination and radiographing of the patients that gave no definite physical signs of pneumonia, but in whom there was a rise in temperature and blood count or an increased respiration rate with more or less cough. In all such cases radiographs were taken, provided the condition of the patient did not forbid his being taken to the *x*-ray room in bed or on a stretcher. In at least eight of the cases the radiograph showed the shadow of a beginning consolidation before the physical signs appeared, or where the signs became frank after the temperature had dropped and where the search for signs of a pneumonia would not have been made. These cases would have been considered sharp postoperative reactions. Contrary to the current belief, the majority of the *x*-rays showed a lobar pneumonia rather than a bronchopneumonia. 2. The prevailing type of pneumonia, considered clinically, had been very irregular in the combination of symptoms and signs. There was no syndrome such as was seen in the typical lobar pneumonia of the medical wards. An atypical onset with a rise of temperature without chill, absence of fastigium, and the fall of temperature by lysis, absence of rusty sputum, the presence, as a rule, of a slight cough, with a relatively slight increase in the respiration rate, in many cases very little toxemia, and in cases uncomplicated by a concurrent or primary infection or by shock or asthenia, a low mortality as compared with the medical cases of pneumonia during the same year, had been the clinical characteristics of the surgical cases of this series. 3. These atypical features of the postoperative pneumonias were explained in a measure by the bacteriological findings in the sputum and blood cultures of the cases. This phase of the study of surgical pneumonia, which had been neglected until this last year at the Presbyterian Hospital, offered the most promising results in establishing the predisposing as well as the exciting causes of the disease as it was encountered on the surgical side. Dr. Whipple referred to the grouping of the pneumococci as demonstrated by Dochez and Avery at the Rockefeller Institute and said that Groups I, II, and III of the parasitical pneumococci were met with in the pneumonias of the medical wards and caused the severe typical syndrome of symptoms. In virulence they were classed in the order of III, II, I. All three of these groups were parasitic in that they were not found in normal throats, or if present in a person not having the disease it was because that individual had been exposed to a patient and was termed a contact case. The smaller subdivision of the pneumococci or the saprophytic group had been named Group IV, and represented about 20 per cent. of the stains obtained from cases of lobar pneumonia, and this frequency seemed to be fairly constant from year to year. This saprophytic group was obtainable in culture from 70 per cent. of the throats of normal individuals who were not contact cases. In connection with these facts it was very significant to note that of the 22 cases of surgical pneumonias in which sputum cultures and mouse inoculations were made after the onset of the disease 77 per cent. gave positive cultures for the Group IV type of bacilli, 16 per cent. gave cultures for the parasitic varieties. These bacteriological findings agreed with the fact that the pneumonias were atypical clinically and that they were of relatively low mortality, and there were no associated complications. The two cases that cultured the Group I had the typical onset and seven-day course of the severe medical type of pneumonia; both of these patients were extremely prostrated and one died. 4. The occurrence of so many cases was due in a measure to the fact that they were diagnosed more frequently than in past years and to factors that caused a lowering of the resistance of the individual to the saprophytic Group IV pneumococcus which was normally in the throats of those coming into the surgical wards. Among other predisposing causes to the development of the disease were recent or concurrent cold, intercurrent infections with which many cases came to operation, lowering of the patient's resistance directly due to operative procedure, as hemorrhage, devitalization of tissues, especially in operations involving the upper respiratory tract, fasting, the recumbent position of the patient often for long periods before and after the operation, change to lighter clothing, and the lower temperature of hospital wards, and exposure during operation. The term ether pneumonia must be discarded and even postanesthesia pneumonia seemed to be a misnomer, considering the many predisposing factors that entered into the etiology of the disease. From the study of this series of cases, considered from the standpoint of the care of the patient, before, during, and after anesthesia, three recommendations might be offered to improve the prophylaxis against the disease: (1) Patients coming into a hospital with a history of recent cold or inflamed condition of the upper respiratory tract should not be operated upon until they were free from this predisposing cause. (2) A thorough revision of the admission routine for the ambulant cases, as regarded cloth-

ing and care from the time the patient had his admission bath until his admission to the operating room, and during, and immediately after the operation. (3) Ether should be served in small cans and any ether remaining in the can after an anesthesia should be sent to the laboratories or used in the preparation of catgut. Cultures of the sputum of every case should be taken during the twelve hours preceding the operation. When cultures showed the Group IV pneumococcus, a second culture should be taken twelve hours after the operation to determine how constant the presence of the pneumococcus was in the throat of the patient before and after the operation. If Group IV was found after the operation the two cultures should be compared for virulence to determine any increase in virulence following operation. If the patient developed a pneumonia, a culture of the sputum should be made to compare with the two preceding cultures. Blood culture of each case developing a pneumonia should be made as soon as the diagnosis was made. Radiographs should be taken in every doubtful case of postoperative rise in temperature. Comparisons should be made of the morbidity records of the medical pneumonias in this hospital and board of health records to determine whether the increased number of pneumonias in non-surgical cases was paralleled by an increase in surgical pneumonias.

Differential Diagnosis between Pneumonia and Acute Appendicitis Made by Roentgen Examination before Physical Signs of Pneumonia Obtained.—Dr. Leon Theodore LeWald read this paper, in which he stated that to avoid the possibility of operating upon an appendix which was not the seat of acute inflammation in a case of beginning lobar pneumonia the Roentgen ray might be used with considerable assurance of making a positive differential diagnosis, in cases in which all other diagnostic signs failed. Abdominal rigidity and tenderness over the region of the appendix might be present in certain cases of acute lobar pneumonia, the explanation of which was not evident. Temperature, pulse, respiration, and pneumocytosis might be exactly the same in both pneumonia and appendicitis. Typical signs of consolidation of the lung might not be obtainable during the first twenty-four, forty-eight, or even seventy-two hours after the onset of the illness, though indefinite signs suggestive of bronchitis might be present. If one followed the usual dictum that in cases of supposed acute appendicitis one should operate within the first twenty-four hours, he would occasionally find that he was operating upon a case of acute lobar pneumonia. In these doubtful cases the roentgenological examination frequently came as an aid. As an illustration of this Dr. LeWald cited the case of a child seven years of age, who was brought to him for roentgenological examination. The child had been ill with cough, slight nasal discharge, and slight fever for about five days; then two days before she had felt better and went outdoors. She came back with a chill and went to bed. Within a short time she began to vomit and complained of severe abdominal pain. There were no signs in the chest except bronchial râles which she had had for a week previous. The abdomen became distended and tender, more so on the right side. The child's temperature was 104° F. Roentgenological examination revealed a distinct area of infiltration involving the central portion of the right lung. A stereoscopic examination confirmed the evidence of consolidation of the right lung. The evidence was presented to a surgeon, Dr. John Douglas, who suggested the possibility of there being a pneumococcus peritonitis. No operation was performed. The following day distinct physical signs of consolidation of the right lung were obtained. The high temperature and abdominal symptoms continued for three days. The temperature came down by crisis on the seventh day, following the initial chill. The patient went on to recovery, except for a slight otitis, which responded at once to paracentesis. A second case which Dr. Le Wald reported likewise showed abdominal symptoms likely to be mistaken for those of appendicitis, but which proved to be due to a pneumonia involving the right lung and in which roentgenological examination showed complete consolidation over the upper third of the right lung at the height of the disease. There were certain difficulties which might be encountered in attempting this differential diagnosis, such as the presence of some old lesion in the lung casting a shadow, or the possible occurrence of a true appendicitis in conjunction with pneumonia.

Dr. Richard Derby made a report on eleven cases of postoperative pneumonia collected from the surgical service of St. Luke's Hospital, between January 1 and November 1 of last year. During this period there were 3,120 cases operated upon, showing a prevalence of this complication of .3 per cent. The anesthetics were given by the two women anesthetists of the hospital except in two cases anesthetized by the attending anesthetist to the hospital and one anesthetized by one of the house staff. Gas and ether was the anesthetic used in all but one case, where gas and oxygen were employed. The greatest amount of ether used in any one case was nine ounces; the average amount fas 4.8 ounces. In all but one case the anesthetic was well taken, the color of the patient remained good, and the recovery to consciousness was not delayed. In the one case where the anesthetic was not well taken, the patient was cyanosed throughout the operation. The nature of the operation was an appendectomy in three cases. Two cases were simple mastoid operations, one was a radical mastoid operation, one an operation for repair of umbilical hernia, and one for repair of double indirect inguinal hernia. In the remainder of the cases the operation was an exploratory laparotomy, a hysterectomy, or a hemithyroidectomy. The longest anesthesia was one hour and forty-three minutes. The average length of anesthesia was fifty-five minutes. Three cases in this series died and no autopsy was made. No reference was made in the histories of these cases as to whether the examination of the sputum was made. No throat cultures were made. In one of the fatal cases, following a simple mastoid operation, a blood culture showed the pneumococcus after twenty-four hours' growth. An *x*-ray was taken in but a single case and the findings were questionable. There was no reference in the histories of any of the patients having a cold previous to the taking of an anesthetic. The physical signs of pneumonia were found in every case. In three of the eleven cases (27 per cent.), the signs found were those of bronchopneumonia; in the remaining eight cases the signs were those of a lobar pneumonia. The course in all but three cases was typical. It was very short, lasting but one or two days in one, and not exceeding six in any of the three cases. In these three cases the course and signs were so transitory that an embolic process was suggested as the origin of the pneumonia.

Dr. Lewis S. Booth continued the discussion, giving a study of postoperative pneumonia that occurred at the Roosevelt Hospital. He said that during the year 1915 there were 2,612 operations at Roosevelt Hospital with 23 postoperative pneumonias, approximately 0.9 per cent. This did not include the operations under the Courtesy Staff, the records of which were not filed. Twenty of their pneumonias were lobar, and the other three involved limited areas. This would seem to indicate that exposure was the important factor in causing the majority of pneumonias, and that aspiration was responsible for only three. At Roosevelt they had no recovery room and every patient on the two general surgical divisions had to pass through the main corridor of the hospital before reaching the wards. In the winter and early spring months, when 15 of their pneumonias occurred, this corridor was often cold and draughty, and in extremely cold weather it had been found almost impossible to heat properly their two main surgical wards, which were unusually large, and which, opening along one side either onto a balcony or onto an open court, and, diagonally opposite, directly into the main corridor, were necessarily draughty. On the other hand, on the gynecological division, where, out of 501 operations, there were only two postoperative pneumonias, both of which were of the bronchopneumonic type, the patients did not have to pass through a corridor as the operating room directly adjoined the ward, which was itself small and more easily heated. Thus the fact that there had been no lobar pneumonias on that division would at least suggest that there was a certain amount of exposure while patients were passing through the main corridor and while they were recovering in a cold ward. Of their 23 pneumonias, 16 followed abdominal operations, which indicated that operative trauma was an important factor in lowering a patient's resistance to infection. Five followed operations on the stomach where the procedure was long and severe, and the patients were of the weaker type. Three followed removal of the gall-bladder, four followed operations for acute appendicitis with local or diffuse peritonitis, two followed abdominal explorations with removal of the appendix, one followed an abdominal hysterectomy, and one fol-

lowed an operation for tuberculosis of the pelvic organs. Of the remaining seven there were three following herniotomy, two after operation for harelip, one following incision and drainage of a periurethral abscess, and one following amputation of the leg for arteriosclerotic gangrene. During the first four months of the year, when fifteen of their pneumonias occurred, there were 41 pneumonias in the medical wards, 21 of which gave positive blood cultures. The infection was obviously running high throughout the city at that time, suggesting the possibility that in a certain number of cases, pneumonia might have developed even without operation. The ages of their patients varied from two to seventy years. In all but three cases, the physical signs of the lungs were normal before operation. One case showed an old healed apical tuberculosis, and two cases presented emphysema. Three patients were operated upon when a known infection was present in the respiratory tract. Ether was used in every case, but in one case only to supplement gas and oxygen. In all but three cases induction was accomplished with nitrous oxide gas. In five cases the induction was stormy with a moderate degree of cyanosis produced. In three cases there was excessive mucus present. The closed rebreathing method with the Bennett inhaler was used in 14 cases; the intratracheal method was used in three cases, all of which were long and severe operations on the stomach; the intrapharyngeal method in three; drop ether in two, and gas and oxygen supplemented by ether in one case. The anesthesias were all managed by the internes or by the paid anesthetist of the division. Postoperative vomiting occurred in all but two cases. In 11 cases the pneumonia appeared on the first day; in five on the second; in four on the third; in one case on the fourth, and in two on the fifth. The left lower lobe was involved in nine cases; the right lower lobe in five; both lower lobes in five; the entire right lung in one, and a limited area in three. In 12 cases the leucocytes were 18,000, or over. In four cases they were within the limits of normal. In the remaining seven cases a leucocyte count was not obtained. The temperature in no case fell by crisis. In three cases it fell by rapid lysis, and in the other cases, in which recovery was prompt, the temperature shaded off to normal in from five to seven days. In one case the temperature never rose above 100.4°. Blood cultures were taken in nine cases, with no positive results. The sputum was cultured in seven cases and no growth was obtained in any case. The diagnosis of pneumonia was verified by *x*-ray in three cases. They had just begun to make use of the *x*-ray for the diagnosis of postoperative pneumonias that did not present physical signs. Death occurred in seven out of the 23 cases, a mortality of about 30 per cent. In 12 of the 16 who survived the pneumonia recovery was complete. One case still had signs of consolidation but no temperature when discharged three weeks later; a second case presented râles at both bases two months after operation, and two cases were believed to have tuberculosis.

A Review of the Postoperative Cases of Pneumonia in the Second Surgical Service of the New York Hospital.—Dr. Frederick W. Bancroft said that during the year 1915 there had been 15 cases of pneumonia in 1,413 operations, or 1.06 per cent. Of these cases of pneumonia seven had died, or 46.6 per cent., giving a total mortality of 0.5 per cent. A brief history of each of these cases and of the operation performed showed that of the seven fatal cases three deaths followed general peritonitis; one of these patients died at the end of the third day, another on the twenty-fourth day of pneumonia secondary to pulmonary embolism, and the third died of pneumonia secondary to suppurative pleurisy, due to subphrenic abscess. The other four deaths were due respectively to typhoid appendicitis, strangulated inguinal hernia, pelvic inflammatory disease, and cholecystitis, and should have been avoided. The diagnosis of the eight cases that recovered was chronic appendicitis three cases, ventral hernia, gastrostomy for carcinoma of the esophagus, inguinal hernia and hypertrophied tonsils, inguinal hernia, and cholelithiasis, each one case. Two of these cases were lobar pneumonias and six bronchial pneumonias. The onset occurred on the first day in three cases, and in one case each on the second, third, fourth, fifth and eighth days. All persisted from four to eight days and subsided by lysis. The *x*-ray taken in two cases showed signs like those of tuberculosis. The age of the youngest of this series was four years and the eldest 62. Everyone of the 15 operations was a laparotomy. The shortest operation lasted 15 minutes and the longest 60 minutes, the average time being 36 minutes. The time of the year did not seem to be a factor since three cases occurred in March and three in August, and one each in the other months. Three of the fatalities were in cases of severe peritonitis and the pneumonias might have been of the terminal type. The anesthesia in 11 of the fatal cases was gas and ether (Bennett inhaler, followed by the drop method), ethyl chloride and ether in two cases, gas and ether followed by chloroform in one case, local novocaine followed by gas and oxygen in one case. The bacteriology of these cases was not studied. The study of the bacteriology in Dr. Whipple's paper was most instructive and would tend to clear up the disputed question of whether the postanesthetic bronchopneumonias were true bronchopneumonias or multiple infarcts. The two cases in his series in which *x*-rays were taken and the signs were suspicious of tuberculosis later cleared up and it seemed probable that the shadows seen were multiple infarcts rather than bronchopneumonia. If the same organism found in the mouth was later identified as the cause of pulmonary infection it would suggest that the lesion was a bronchopneumonia. They had *x*-rayed their patients who had unexplained temperatures, provided they were in condition to move, but they had not considered it advisable to *x*-ray patients with positive physical signs. One of the greatest factors in the etiology of postoperative pneumonias was the operative nightgown. Many of the patients entering a hospital were accustomed to sleep in heavy woolen or flannel underwear; after entering the hospital they were forced to wear light muslin gowns open up the back. Often when the patient was on the operating table there was only a couple of layers of cotton between the metal operating table and the patient's unprotected back. Hospitals should provide undershirts of different weights so that the patient used to heavy weights might be properly protected until he was well out of the influence of the anesthetic.

Philadelphia Neurological Society.

At a stated meeting held February 25, Drs. S. D. Ingham and W. E. Robertson exhibited a patient from whom a spinal tumor had been removed eleven months previously. The case occurred in a young woman who presented progressive weakness and impairment of sensibility in the lower extremities, with loss of knee-jerks and of control of the sphincters. Operation disclosed a cholesteatoma 5½ in. long, in the lower dorsal and upper lumbar regions, within the dura, removal of which was followed by almost complete recovery.

Dr. P. de Long exhibited "A Case of Tabes Dorsalis Associated with Paralysis Agitans." The patient was an elderly man who had presented symptoms of tabes for a number of years, when there developed passive tremor of the fingers, with fixed countenance and other stigmata of paralysis agitans. The association was looked upon as accidental and rare.

Dr. Alfred Gordon exhibited "A Case Presenting Cerebello-cerebellar Symptoms." The patient was a young man who learned to walk and to speak late and who from early life was ataxic in walking and standing. As time went on the disorder of motion grew less, while speech became deliberate and precise, and evidences of mental deficiency appeared.

D. T. H. Weisenburg exhibited "A Case with Unusual Spinal Cord Symptoms." The patient was a man who had lost motor power and sensibility in the lower extremities, but with Babinski response only on heavy stroking on the inner portion of the sole of the foot, together with firm contraction of the upper abdominal muscles on attempts to assume the sitting posture. Heavy stroking over the anterior tibial group of muscles induced dorsal flexion of the foot, while similar stroking over the peroneal muscles brought about rotation of the foot outward.

Dr. H. Maxwell Langdon exhibited "Another Case of Nontraumatic Isolated Cervical Sympathetic Paralysis." The patient was a middle-aged woman in whom the disorder had existed as an isolated condition for a good many years. There was a negative response to the Wassermann test. The upper eyelid on the affected side drooped, the palpebral fissure was correspondingly narrower and the pupil was smaller and acted less well on mydriatic stimulation than its fellow of the opposite side.

Dr. H. Clark reported "A Case of Tic of the Abdominal Muscles of Eighteen Years' Duration, with Necropsy." Some years following an injury of a remote part of the body by a heavy weight, the patient developed a spasmodic tic of the abdominal muscles, which persisted for many years. After death no lesion was found in the nervous system.

Dr. C. M. BYRNES reported "A Case of Bilateral Fifth-Nerve Paralysis." The patient was a man who had had the initial lesion of syphilis and was treated accordingly. While under observation loss of sensibility on both sides of the face gradually developed, together with loss of the sense of taste on the anterior portion of the tongue and dropping of the lower jaw. Under treatment marked improvement in the condition took place.

Dr. G. M. DORRANCE presented a communication entitled "Tic Douloureux." He discussed comprehensively the historical aspects of the disease, its etiology, pathology and treatment, devoting himself especially to a consideration of the therapeutic employment of injections of alcohol into the branches of the nerve or into the Gasserian ganglion. He described a technique developed as a result of extended observations upon the cadaver, supplemented by clinical experience.

Drs. J. H. W. RHEIN and WM. R. ADAMS exhibited "A Brain with a Tumor of the Dura, Showing Some Unusual Symptoms." The patient was found unconscious, with symptoms of hemiplegia and convulsive movements. Death resulted in the course of a few hours and post-mortem examination disclosed a tumor of the dura imbedded in the cortex of the paracentral region.

Progress of Medical Science.

STATE BOARD EXAMINATION QUESTIONS.

LOUISIANA STATE BOARD OF MEDICAL EXAMINERS.

December 2, 3, 4, 1915.

(*Concluded from page* 500.)

OBSTETRICS.

1. Name and describe the signs of pregnancy as determined by touch.
2. State the diagnosis and treatment of an inevitable abortion.
3. Diagnose by abdominal palpation and vaginal touch an R. O. P. presentation.
4. (*a*) What is the second stage of labor? (*b*) What conditions may cause delay in this stage? (*c*) How should such conditions be managed?
5. A primipara at the fourth month of pregnancy presents evidences of albuminuria, with no uremic manifestations; what treatment is indicated?
6. Should delivery become imperative, the head being only partially engaged, and the cervix partially dilated, how is delivery best effected?
7. (*a*) What is prolapse of the funis? (*b*) What the dangers? (*c*) Management?
8. (*a*) What conditions would necessitate artificial feeding? (*b*) Describe the proper modification of cow's milk for the newly born.
9. (*a*) What drugs are of use in labor? (*b*) State their indications and contraindications.
10. (*a*) State the maternal and fetal indications for the use of forceps. (*b*) What are the prerequisites necessary for their safe application?

GYNECOLOGY.

1. Mention the changes of cervix uteri which may be felt on vaginal examination.
2. Give differential diagnosis of syphilitic, tuberculous, and malignant ulcer appearing about the external genitals.
3. Give the principal points of diagnostic importance in connection with an abdominal examination.
4. A patient presenting herself for examination with a mass in right lower abdomen—what might it be?
5. Give special symptoms pointing to tubal pregnancy.
6. Of what use is the uterine sound?
7. What symptoms may follow retroversion of the uterus?
8. Name the causes of dysmenorrhea.
9. Why is gonorrhea in women a grave disease?
10. What is a urethral caruncle, and its treatment?

SURGERY.

1. Describe briefly the technique you would employ for a punctured wound of the foot caused by a pitchfork.
2. Give symptoms and treatment of acute catarrhal otitis media.
3. Differentiate between trachoma and conjunctivitis.
4. What is a carbuncle? How would you treat one?
5. Differentiate between typhoid fever and appendicitis.
6. What arteries need ligating in an amputation at the middle third of the leg?
7. What part of the vertebræ is usually affected in Pott's disease. Describe the pathological changes that take place.
8. Give diagnosis and treatment of acute osteomyelitis.
9. Name some of the bacteria of suppuration. Which ones are the most virulent?
10. Make a differential diagnosis between coma due to (*a*) injury, (*b*) apoplexy, (*c*) opium poisoning, (*d*) acute alcoholism.

PHYSICAL DIAGNOSIS.

1. Name the various abnormal respiratory sounds (râles), and indicate the physical conditions giving rise to each.
2. Differentiate pulmonary hepatization and pleurisy with effusion.
3. Differentiate impacted stone in the right ureter from other similar conditions.
4. What are the physical signs of pyloric stenosis?
5. What are the early symptoms and physical signs in pulmonary tuberculosis?

HYGIENE.

1. Name and describe briefly the methods of purification of public water supply.
2. (*a*) What is natural immunity? (*b*) Acquired immunity? Explain each.
3. Describe the disinfection of a room occupied by a careless consumptive.
4. State briefly the sanitary supervision necessary for the production of pure milk.
5. How are mortality rates calculated?

ANSWERS.

OBSTETRICS.

1. *Signs of pregnancy as determined by touch:*

(*a*) *Ballottement* is the passive movement of the fetus *in utero*, obtained by tapping the lower segment of the uterus with the index finger.

(*b*) *Hegar's sign* consists in a thinning and softening of a segment of the body of the uterus immediately above its cervix.

(*c*) *Braxton Hicks' sign* consists of intermittent contractions of the uterus at about the fourth month of pregnancy.

(*d*) *Rasch's sign* is fluctuation felt when the hand is applied to the cervix of the uterus in early pregnancy, due to the presence of liquor amnii.

(*e*) Active movements of the fetus, which can be felt by the physician's hand placed over the abdomen of the mother.

2. INEVITABLE ABORTION. (*a*) *Diagnosis:* Hemorrhage profuse and continuous, clotted and dark colored; pain cramp-like and severe; cervical canal dilated; uterus soft and enlarged, and the angle between the upper and lower uterine segments is effaced; the discharge consists of dark blood, clots, and portions of ovum; signs of pregnancy present, except amenorrhea.

(*b*) *Management:* "Two methods of treatment have been advised for these cases. The first is *the expectant plan.* Place the patient in bed, and if the bleeding is profuse, insert a tampon of iodoform gauze (one yard) well up against the cervix. If this fails to control the hemorrhage, reinforce it by another yard or two of gauze and a perineal pad and binder. Small doses (3½) of the fluidextract of ergot should now be given every two or three hours. At the end of from eight to twelve hours remove the tampon, when the ovum may be found extruded from the cervix; if not, a vaginal douche of mercuric chloride (1:4000) must be given, and another tampon introduced. If, upon the

removal of this second tampon at the end of ten or twelve hours, the ovum is not discharged, then more vigorous methods to secure its expulsion must be adopted. *Active plan:* The physician's hands and instruments are sterilized; the patient is etherized and placed on an appropriate table; the genitalia are thoroughly cleansed and a vaginal douche of mercuric chloride (1:4000) is given; the anterior lip of the cervix is brought down to the vulvar orifice; the cervix is dilated if necessary; the placental forceps is introduced into the uterus, and as much as possible of the ovum is removed; the uterus is thoroughly curetted, and an intrauterine douche of sterile water is given. A light tampon of iodoform gauze is placed in the vagina; the patient is then returned to bed. A strip of gauze may be placed in the uterus in cases of sharp retroflexion, to secure free drainage, and occasionally an intrauterine tampon will be necessary when the uterus refuses to contract and hemorrhage persists after the use of the curette."—(*Pocket Cyclopedia.*)

3. *In R. O. P. positions, abdominal palpation* shows that the back of the fetus lies to the right side and posteriorly, and that the extremities are above and to the left side and anteriorly. *Vaginal examination* shows that the occiput is depressed and points to the right sacroiliac synchondrosis; the smaller fontanel is also posterior and points to the right sacroiliac synchondrosis. The sagittal suture is directed from the small fontanel forward and to the left in the line of the right oblique diameter of the pelvis; the shoulders are in a line at right angles to this, in the left oblique diameter. Sometimes the anterior fontanel may be felt high up anteriorly.

4. The *second stage of labor* extends from the time that the os is fully dilated until the child is expelled from the uterus.

DELAYED LABOR. *Causes:* Obstruction, uterine inertia, uterine exhaustion. *Management:* The case should be treated early; causes should be removed when possible; a warm vaginal douche, and the administration of morphine, chloral, or quinine have been recommended; delivery by forceps may be necessary.

5. *Albuminuria with no uremic manifestations:* "The urine should be examined every month in the first six months of every pregnancy, no matter how normal it may seem, and every fortnight in the last three months. If albumin is present, the amount should be estimated in an Esbach tube, and the urea in a Doremus ureometer. The total quantity of urine per diem should also be ascertained. The principles of treatment are to relieve the kidneys by free elimination by the bowels and skin, and by diminishing the nitrogenous part of the dietary; and at the same time to prevent any further interference with the renal functions by guarding against cold. In mild cases where the albuminuria is the sole symptom, the patient should be warned to rest and guard against cold. The diet should be restricted to milk food, with bread and butter, and a little fish or chicken once a day, and the bowels should be made to act freely once every day. (Johnstone's *Textbook of Midwifery.*)

6. *If the internal os is persistent,* dilating bags may be tried; if these are not at hand, or not effective rapidly enough, cesarean section offers the safest method of delivery, though it usually entails some delay for preparations unless the likelihood has been anticipated. *If the internal os is obliterated,* manual dilatation is indicated, following this by forceps if the head engages, or by version if the head does not engage; or dilating bags may be used, followed by forceps or version; or the cervix may be incised, and the child delivered by forceps or version. If the patient is a primipara, forceps should be favored if possible on account of the better prognosis for the child and the lesser liability to serious traumatism of the mother's soft parts.

7. *Prolapse of the funis* is the condition in which the umbilical cord hangs down alongside of or in front of the presenting part of the fetus. *Danger:* Compression causes death of the fetus. *Treatment of prolapsed funis* consists in: (1) Not rupturing the membranes prematurely unless there is some positive indication; (2) postural treatment, in which the woman is placed on her back or on the opposite side to that on which the cord lies, with hips and pelvis elevated, or the knee-chest position may be adopted; (3) reposition of the cord, either manually or with some form of repositor; (4) speedy delivery, by forceps or podalic version.

8. *Artificial feeding is indicated:* If the mother dies; if there is absence of breast milk, eclampsia, tuberculosis, septic infection, severe hemorrhage, or chorea on the part of the mother; and in case of persistent loss of weight of the child.

Proper modification of cow's milk includes dilution, and the addition of cream and sugar of milk.

For a newborn infant, take the top 9 ounces from a quart of good milk, of this use 2½ ounces; to this 2½ ounces add one ounce of milk sugar and 17½ ounces of boiled water. This will give 20 ounces. The infant should receive about half an ounce every two hours for the first day, and about one ounce every two hours for the next six days. During the night the infant should be fed twice. This mixture is only suitable for the first week.

9. DRUGS USED IN LABOR. Bichloride of mercury, lysol, phenol, creolin, etc., are *indicated* as antiseptics for the vulva, and hands of physician and nurse. Boric acid and silver nitrate, are *indicated* for use in the infant's eyes, to prevent ophthalmia. Quinine, and strychinine are *indicated* in primary and secondary uterine inertia, but are contraindicated in eclampsia. Morphine is *indicated* early in labor in case of weak and inefficient pains and rigid os; if given later there is danger of fetal asphyxia. Chloral is *indicated* for the same conditions as quinine, strychnine and morphine. Veratrum viride is *indicated* in eclampsia and vascular hypertension; it is *contraindicated* in cases with slow and soft pulse. Chloroform and ether are *indicated* in the latter part of the second stage of labor to alleviate the suffering, and also in all obstetrical operations; chloroform is *contraindicated* in cases of very rapid fetal heart, and where the mother has cardiac disease; ether is *contraindicated* in cases of bronchiectasis, tuberculosis and eclampsia. Ergot is *indicated* in postpartum hemorrhage; it is given during the third stage to ensure good contractions of the uterus; it should *not be given* before the third stage of labor. Pituitrin is given for postpartum hemorrrhage, secondary inertia, and induction of premature labor; it is *contraindicated* if the os is undilated, and must be used cautiously if the soft parts are not prepared for immediate delivery.

10. *Indications for the use of forceps* are: (1) *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (a) Impending exhaustion; (*b*) arrest of head, from feeble pains. (2) *Passages at fault:* Moderate narrowing, 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. (3) *Passenger at fault:* A. Dystocia due to (*a*) occipito-posterior, (*b*) mento-anterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). (4) *Accidental complications:* Hemorrhage; prolapsed funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both (Jewett). *Conditions necessary for the use of forceps* are: (1) The rectum and bladder must be empty; (2) the os uteri must be fully dilated; (3) the membranes must be ruptured; (4) the pelvis must be of sufficient size.

GYNECOLOGY.

1. *Vaginal examination* may show, with regard to the *cervix,* changes in position, shape, size, consistence, together with the presence or absence of erosions and lacerations.

2. "In *syphilis* the inguinal glands are involved, there is a single area of ulceration, and specific treatment gives positive results. In *tuberculosis,* on the other hand, the inguinal glands are seldom involved, the ulceration is multiple, and the results of specific treatment are negative.

TUBERCULOSIS.	CARCINOMA.
Very slow in development.	Not so slow.
Several nodules.	Single nodule.
Ulceration superficial.	Usually deep.
Margins of ulcer not everted.	Everted and undermined.
Margins of ulcer slightly infiltrated.	Marked infiltration.
Surface covered with bright red granulations.	Surface fungoid in appearance.
Tendency to repair ending with cicatrices.	No formation of cicatrices.
Rarely affects general health.	Cachexia.

(Ashton's *Gynecology.*)

3. The *principal points of diagnostic importance in abdomial examinations* are: Inspection, palpation, percussion, mensuration, and auscultation. By *inspection*, we can note the contour of the abdomen (hernia, ascites, tumors, pregnancy), movements of the abdominal walls (fetal movements), and the appearance of the skin (pigmentations, edema, lineæ albicantes, dilated veins). By *palpation*, we can note the presence of a tumor, the situation and origin of a tumor, the shape and mobility of a tumor, the consistency of a tumor, crepitation (peritonitis, adhesions), and local tenderness (peritonitis). By *percussion*, we note the presence of a tumor (solid tumor, ascites, tympanites), situation and origin and shape of a tumor. By *mensuration*, we can note the origin and nature of an enlargement. By auscultation we can note fetal heart sounds, sounds of placental circulation, vascular murmurs in uterine tumors and aneurysms, friction sounds in peritonitis, and movement of gas in the intestines. (From Ashton's *Gynecology*).

4. A *mass in the right lower abdomen* may be: Appendicitis, fecal impaction, intussusception, floating kidney, pyosalpinx, ovarian tumor or abscess or cyst, hematoma or hematocele, inguinal hernia, fibroid tumor.

5. *Symptoms of tubal pregnancy* are the signs of early pregnancy, hypogastric or inguinal pains, probable history of a previous sterility, probable expulsion of decidual membrane or shreds, softening of the cervix, slight enlargement of the uterus, presence of a distended tube, contractions of the wall of the gestation sac; if rupture occurs, there will be sudden, excruciating pains over the lower abdomen and on the affected side, shock, collapse, and symptoms of internal hemorrhage.

6. The *uses of the uterine sound* are: (1) to demonstrate the mobility of the uterus; (2) to show the size of the uterus; (3) to show the presence of intrauterine growths; (4) to indicate deviations in the cervical canal; and (5) as an aid in the diagnosis of uterine displacements.

7. The *following symptoms may follow retroversion of the uterus:* Backache, bearing-down pains, a feeling of pressure in the pelvis, constipation, hemorrhoids, frequent or painful urination, leucorrhea, menstrual disturbances, as dysmenorrhea or menorrhagia, sterility; there may also be *general symptoms*, as headache, indigestion, nausea, anorexia, neurasthenia, and general malaise.

8. *Causes of dysmenorrhea:* Pelvic congestion, pelvic inflammation, malnutrition, overwork, lack of development, neuralgia, stenosis or obstruction of the cervix, prolapse or displacement of the uterus.

9. *Gonorrhea in women is so serious* on account of the possible results: Cystitis, urethritis, vulvitis, endometritis, salpingitis, septic peritonitis, sterility, condylomata of vulva, abscess of Bartholin's glands. It often leads to chronic invalidism, and may be the cause of death.

10. *Urethral caruncle* is a small red fleshy growth generally situated on the posterior part of the meatus of the urethra. There are local pain and tenderness, which may be excessive; a burning sensation is experienced on urination; it may bleed. The proper treatment is to excise it or destroy it with the thermocautery.

SURGERY.

1. In *punctured wound of the foot, made by a pitchfork:* First of all, take a smear and a culture from the wound, and examine for tetanus bacilli; if these are found tetanus antitoxin should be administered in doses of 10 cc. daily for a fortnight. The wound is then to be enlarged by incision, disinfected, and drained; foreign matter must be removed; injured vessels, nerves, or tendons must be treated separately.

2. "*Acute catarrhal otitis media* is frequently caused by acute coryza and the infectious fevers. There is a painless obstructed sensation in one or both ears, impairment of hearing, and tinnitus. The inflammation causes closure of the Eustachian tube. Inflation and aspiration of the middle ear and syringing and douching the nares and nasopharynx must be avoided. A moderate spray of Dobell's solution may be used. If pain is present, dry heat, in the form of hot-water bottle, hot stone wrapped in flannel, etc., may be applied. A few drops (100), warmed, of a carbolic acid solution (1:40), or one of formalin (1:2000), may be instilled into the ear.

3. "*Chronic follicular conjunctivitis* and *trachoma* sometimes resemble each other. The former occurs in youth. The granulations are small, round, in rows, occurring especially on the nasal half of the conjunctiva of the lower lid and edge and extremities of the cartilage of the upper lid. The disease is amenable to treatment and the granulations disappear without leaving a trace. *Trachoma*, on the contrary, is a progressive disease, lasting for many years. The granulations are, as a rule, larger, less prominent, more uniformly distributed, and at last disappear, leaving cicatrices."

4. A *carbuncle* is a localized inflammation of the subcutaneous tissue, which goes on to sloughing, and is of a more extensive character than a boil. Staphylococci are the common exciting cause, while the predisposing causes are lowered vitality from diabetes, albuminuria, or after infective fevers. Inoculation is by autoinfection or directly from the surface. The disease begins as an infiltration of a patch of subcutaneous tissue, which is hard, painful, and tender, and the skin over it is red and hot, The infiltration may extend till it is the size of a dinner-plate, and the inflammation ends in sloughing and suppuration, not only of the subcutaneous tissues, but of small areas of the skin over it, so that openings develop in the skin, and allow of the exit of pus and sloughs. The openings extend, the sloughs separate, and the wound heals by granulation. The back is a common situation. Sometimes the face is affected, and there is then a danger of thrombosis extending to the cavernous sinus and producing pyemia. *Treatment* is very satisfactory if properly carried out. An anesthetic should be given, the slough thoroughly scraped away, the surface left treated with pure carbolic acid and dressed with antiseptic gauze. The patient should be fed on eggs, milk, cream, meat juice, and brandy. Codeine is necessary in diabetes. —(*Aids to Surgery.*)

5. *Typhoid fever and appendicitis:* In appendicitis, the pain and rigidity are more marked than they are in typhoid; in typhoid the pulse is slower than in appendicitis; there is a leucocytosis in appendicitis, and a leucopenia in typhoid; the Widal reaction is present in typhoid, not in appendicitis; as a rule typhoid is gradual in onset, accompanied by headache, backache, weariness and sometimes by epistaxis; in typhoid also there will be found enlarged spleen, steady rise of temperature, relatively low pulse rate, the rash, and the typhoid bacilli may be found in the blood.

6. In amputation at the middle third of the leg, the arteries to be ligated are: Anterior tibial, posterior tibial, peroneal.

7. In Pott's disease, the anterior part of the bodies of the vertebræ are most commonly affected. The body of the affected vertebræ is gradually destroyed, and the affection spreads, under the anterior common ligament, to the neighboring vertebræ. As a result of the destruction of the bodies of the vertebræ, the spine bends, and a posterior angular deformity occurs. Pus may form, and caries be found in the affected bodies.

8. OSTEOMYELITIS. *Symptoms:* Sudden onset; pain, tenderness, fever, chills, swelling of soft parts; sometimes the joint can be moved gently without pain; septicemia or pyemia may be present.

It is to be *diagnosed* from (1) *Rheumatism*, in which more than one joint is affected and the tenderness is *in* the joint, and not *near* it. (2) *Tuberculous arthritis*, in which the onset is slow and the trouble starts in the epiphysis rather than in the diaphysis. (3) *Cellulitis*, in which the bone and periosteum are not affected, and in which there is always a wound.

Treatment consists in relieving the constitutional symptoms and preventing the bone from necrosing. An incision down to the bone is made; if pus is beneath the periosteum, the latter is also incised; a piece of bone is removed by chisel or trephine, pus is removed, the endosteum is hurt as little as possible, the wound is irrigated with hot bichloride solution and packed with gauze; the soft parts are closed and the wound well drained. In case this fails, amputation may be necessary.

9. The chief *bacteria of suppuration* are: Streptococcus pyogenes; staphylococcus pyogenes aureus, albus, and citreus; bacillus coli communis; bacillus pyocyaneus, pneumococcus, bacillus typhosus, gonococcus, and bacillus tuberculosis. The streptococcus is the most virulent, and probably the staphylococcus pyogenes aureus the next.

10. The following table, from Eisendrath's *Surgical Diagnosis*, gives the diagnosis:

COMA FROM INTRACRANIAL INJURY.	APOPLECTIC COMA.	UREMIC COMA.	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; may have history of onset after fall or injury. Evidence of fracture of vertex or base.	Deep coma; sudden onset. If any injury, only a scalp wound.	Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupil dilated on side of lesion. Choked disc.	Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Albuminuric retinitis.	Pupils normal or somewhat dilated.	Pupils contracted to pinpoint size.
Pulse very slow.	Pulse full and slow, often arteriosclerotic high-tension pulse.	Pulse rapid.	Pulse more rapid than normal, and full	Pulse rapid, may be irregular.
Respiration slow and stertorous.	Respiration slow and irregular.	Respiration frequent and irregular.	Regular respiration.	Respiration very slow —may be 6 to 8 per minute.
Temperature higher—101°.	Temperature higher on paralyzed side, but lower in rectum.		May be low or normal.	
Urine normal or contains trace of albumin.	Urine contains trace of albumin, but may be same as in uremia.	Urine shows albumin, casts, and low urea percentage.	Normal.	Normal.
Hemiplegia on opposite side to that of injury. If contusion of brain is also present, may have generalized convulsions.	Hemiplegia with convulsions on one side.			

PHYSICAL DIAGNOSIS.

1. *Râles:* (abridged from *Pocket Cyclopedia*).

VARIETY.	HOW AND WHERE PRODUCED.
Amphoric	By movement of air in a tense-walled cavity containing air and communicating with a bronchus.
Bubbling	By passage of air through mucus in the treachea bronchi, and bronchioles.
Cavernous	By passage of air through a small cavity with flaccid walls, which collapse with expiration.
Crackling, dry	By the breaking down of lung tissue.
Crackling, moist	By fluid in very small cavities, and finer bronchi.
Crepitant	By passage of air into vesicles collapsed, or containing fibrinous exudation. Usually at the base of the lungs.
Dry	By narrowing of the bronchial tubes from thickening of the mucous lining, from spasmodic contraction of the muscular coat, viscid mucus within, or pressure from without.
Friction	By the rubbing together of serous surfaces, roughened by inflammation or deprived of their natural secretion.
Gurgling	By the passage of air through fluid in cavities, on coughing.
Moist	By the passage of air through bronchi containing fluid.
Mucous (of Laennec)	By viscid bubbles bursting in the bronchial tubes.
Râle redux, râle de retour.	By the passage of air through fluid in a bronchial tube.
Sibilant	By narrowing of the smaller bronchi from viscid mucus adhering to the walls, from thickening of the lining membrane or spasmodic contraction.
Sonorous	By lessened caliber of the larger bronchi, from spasm, tumefaction of mucous lining, or external pressure.
Subcrepitant	By passage of air through mucus in the capillary bronchial tubes.

2.—

PLEURISY WITH EFFUSION.	LOBAR PNEUMONIA.
Moderate fever of continuous type; declines by lysis.	Fever, 102° to 104° F.; falls by crisis.
Prostration moderate.	Prostration extreme.
Unilateral distention of the thorax.	Absent.
Countenance pale and anxious.	Mahogany-colored flush of cheeks.
Limited expansion at base of chest on the affected side.	Degree of expansion slightly, if at all, inhibited.
Tactile fremitus diminished or absent.	Increased over area of consolidation.
Interspaces bulging at base of chest.	Absent.
Percussion shows flatness, with great resistance to the pleximeter finger.	Dullness with less resistance, and sometimes a tympanitic note.
Diminished or absent breath-sounds over effusion the rule. Respiration murmur diffuse, distant, and generally unaccompanied by râles. Bronchial breathing may be present over the entire affected side of the chest.	Harsh bronchial breathing and presence of râles in first and third stages, unless a bronchus is plugged.
Friction sound heard in early and late stages.	No friction murmur; râles present.

3. *Impacted stone in the right ureter* causes colic, which comes on suddenly and occurs in spasms of excruciating pain, which is referred to the kidney and ureter and to the testis and penis. Collapse, cold sweats, nausea and vomiting, retraction of the testis, frequency of micturition and strangury are present. To differentiate it from *renal colic*, the röentgen-ray is necessary. "It is diagnosed from *biliary colic* by the absence of jaundice and the localization of pain at a lower level; from *peritonitis*, *appendicitis*, and *intes-*

tinal obstruction by the absence of rigidity of the abdominal walls, distention of the bowels, or stercoraceous vomiting; from *severe lumbago* by the reference of the pain to the urinary organs, and the absence of exacerbations on muscular movements." (Buchanan's *Surgery*).

4. *Physical signs of pyloric stenosis:* There is an abnormal prominence of the epigastric region; a tumor in the region of the pylorus which seems to be connected with the stomach; percussion gives a tympanitic note (if the stomach is empty), extending to or below the umbilicus; if the stomach is full, the note is high pitched; on auscultation, a splashing and rumbling sound is heard.

5. The early manifestations of pulmonary tuberculosis are: (1) *Physical signs:* deficient chest expansion, the phthisical chest, slight dullness or impaired resonance over one apex, fine moist râles at the end of inspiration, expiration prolonged or high pitched, breathing interrupted. (2) *Symptoms:* General weakness, lassitude, dyspnea on exertion, pallor, anorexia, loss of weight, slight fever, and night sweats, hemoptysis.

HYGIENE.

1. *The means of purification of public water supplies* are storage and sedimentation, chemical treatment, and filtration. *Sedimentation.* A part of the impurities in the water may be removed therefrom by storing the water in basins where the suspended matter sinks by the action of gravity, and in the process of settling entangles other impurities, as well as some of the bacteria in the water. In order to get good results, the basins must be shallow, the water left undisturbed, and the accumulated sediment removed from time to time. No complete reliance can be put on this method, as it does not guarantee a germ-free water. *Chemical purification:* The sedimentation of water in the basins may be hastened by the addition to the water of certain chemicals, which act as coagulants and form precipitates, entangling the organic impurities and bacteria, thus freeing the water from a large part of them. Alum (half a grain to the gallon), chlorine, bromine, copper sulphate, metallic iron, and ozone are used for this purpose. Neither sedimentation nor chemical purification are practicable for large water supplies, nor are they free from many objections. *Filtration:* This is the only method which has proved successful in providing a pure water supply. Filtration of large quantities of water is accomplished by means of sand beds of large area, the sides and bottoms of which are concreted, and on the bottom of which are placed numerous perforated and open drains which are to lead off the filtered water into separate special reservoirs. On the bottom of the filter areas, which are usually half or an acre in size, is placed a layer of coarse gravel, upon this a layer of finer gravel, which is then covered by a layer of fine, sharp sand, several feet in thickness, the whole filtering medium being from 4 to 6 feet in thickness. The filter is at first filled from beneath so that all air is driven off, and the filter area is then filled to a level of several feet above the filter bed. A filter of an acre in area may be made to filter two to four millions of gallons of water in twenty-four hours. Such filters act not only mechanically in intercepting all suspended impurities, but the slimy sheet which soon covers the top layer of the sand acts biologically upon the water and destroys a large number of bacteria, so that, it is claimed, the water may be freed from 99 per cent. of its bacteria, provided the rate of filtration is not too rapid and the top of the sand-layers is scraped off half an inch from the surface from time to time. (From Price's *Essentials of Hygiene.*)

2. *Immunity* is insusceptibility, or capacity for resistance on the part of the body to disease or, in the more limited sense, to infection or intoxication or their effects. Immunity may be *natural* or *hereditary.* The absolute or relative insusceptibility of turtles and fishes for tetanus, and of the lower animals for syphilis and for scarlatina, are examples of hereditary or natural immunity. On the other hand, immunity may be *acquired.* Acquired immunity may be secured by an attack of the disease from which the individual has recovered—*natural immunization.* Or immunity may be acquired by the introduction into the body of some material which gradually diminishes susceptibility without inducing distinct disease—*artificial immunization.* (Delafield and Prudden.)

3. "The clothing and bedding which are to be disinfected by means of stream should be carefully wrapped in cloths saturated with 1 per cent. carbolic acid solution, placed in a wagon, and taken to the disinfecting station. After the bed has been stripped, all refuse matter, paper, and articles of little value are wrapped in cloths saturated with carbolic acid and burned in a stove or furnace. The floor, doors, windows, furniture, and the walls for a distance of 1½ meters from the floor should be washed with 5 per cent. carbolic acid solution. The walls and ceiling of the room should subsequently be sprayed with 1: 1000 bichloride of mercury solution. If the walls are papered, it is advisable to remove carefully the paper before beginning the disinfection. The room is then closed as tightly as possible and disinfected by means of formaldehyde." (Bergey's *Hygiene.*)

4. *Essentials for the production and preservation of pure dairy milk:* Vaughan's rules are as follows: "(1) The cows should be healthy, and the milk of any animal which seems indisposed should not be mixed with that from the healthy animals. (2) Cows must not be fed upon swill or the refuse from breweries or glucose factories, or upon any other fermented food. (3) Milch cows must not be allowed to drink from stagnant pools, but must have access to fresh, pure water. (4) The pasture must be freed from noxious weeds, and the barn and yard must be kept clean. (5) The udders should be washed and then wiped dry before each milking. (6) The milk must be at once thoroughly cooled. This is best done in the summer by placing the milk can in a tank of cold water or ice water, the water being of the same depth as the milk in the can. It would be well if the water in the tank could be kept flowing, and this will be necessary unless ice water is used. The tank should be thoroughly cleaned each day, to prevent bad odors. The can should remain uncovered during the cooling, and the milk should be gently stirred. The temperature should be reduced to 60° F., or lower, within an hour. The can should remain in cold water till ready for delivery. (7) Milk should be delivered, during the summer, in refrigerated cans or in bottles about which ice is packed during transportation. (8) When received by the consumer, it must be kept in a clean place, and at a temperature some degrees below 60° F."

5. *Mortality rates* are calculated at so many deaths per 1,000 of the population. The death rate is found by dividing the number of deaths by the number of the population, and multiplying the result by 1,000.

Example: In a population of 4,000 there are 60 deaths, hence the death-rate is

$$\frac{1000 \times 60}{4000} = 15 \text{ per } 1{,}000 \text{ of population}$$

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THE SPRINGS OF SARATOGA—THEIR VALUE IN THE TREATMENT OF DISEASE.*

BY W. GILMAN THOMPSON, M.D.,

PROFESSOR OF MEDICINE IN THE CORNELL UNIVERSITY MEDICAL COLLEGE IN NEW YORK CITY

IN the library of this academy may be found upward of thirty works, both books and pamphlets, upon the subject of the Saratoga Springs. The most notable among them, not only for its priority but for extraordinary elaboration of chemical detail, is the book by that distinguished surgeon to the New York Hospital, Dr. Valentine Seaman, called "A Dissertation Upon the Mineral Waters of Saratoga." This book, published originally in 1779, or 137 years ago, was followed by a second edition in 1809, which was enlarged to 131 pages. Besides a geological map and physiographic description of the location of the Springs, a series of chemical experiments made by the doctor himself is recorded with minuteness, and, when one considers the general crudeness of the chemical analytical methods of more than a century ago, the observations of Dr. Seaman are truly remarkable. In his analysis of the waters such reagents were employed as lead acetate, silver nitrate, ammonia, sulphuric acid, lime water, litmus and turmeric, and he concludes from the effects of these and other reagents that "the waters contain carbonic acid, carbonate of iron, lime supersaturated with carbonic acid, muriatic salt, carbonated alkali and magnesia and a sulphurous impregnation." Methods of evaporation, distillation, and precipitation are described, and there is a complete study of the temperature and other physical properties of the waters. Thereafter follow chapters upon "the use and medicinal virtues of the waters," and while recommending them for "dyspepsias," "rheumatisms," gravel, scrofula, and many other disorders, the good doctor reaches the temperate conclusion that "an universal remedy is a perfect solecism." The book concludes with a comparison of "the artificial mineral waters as prepared in this city" (New York).

Another interesting book, entitled "An Experimental Inquiry Into the Chemical Properties and Medicinal Qualities of the Principal Mineral Waters of Saratoga," was published in 1817 by the famous Dr. William Meade of Philadelphia. In this work still more elaborate chemical analyses are recited in detail, and the author states that "many of the conclusions which are drawn by Dr. Seaman are correct and judicious," while "to him, more than any other writer, are we indebted for much important information." Dr. Meade dwells upon the benefits derived both from drinking the waters and bathing in them, in cases of nephritis, gravel, diseases of the liver, chronic skin diseases, and many other ailments. Speaking of their use in gastric disorders he naively remarks that: "In Boston, in particular, of late years a disorder has prevailed to which the faculty have given the name of dyspepsia; to doubt the propriety of which would seem to be an instance of some presumption"(!) He also dwells at length upon a comparison of the Saratoga waters with those of many foreign spas.

Comment often has been made by our foreign colleagues, while visiting this country, upon the comparative apathy of American physicians toward hydrotherapy in general, and to a great extent this would seem justified. Little attention is given to the importance of this subject in the teaching in our medical colleges, our medical literature gives it scant space, and many an otherwise well assorted physician's library is found to contain no work upon balneology or hydrotherapy. It may fairly be stated that few, if any, among our more noted spas have attained the completeness of development or achieved the reputation for serious and thoroughly scientific treatment of disease comparable to that of a score and more of such health resorts in Europe, and several of them, indeed, are little more than resorts of fashion, in which real hydrotherapy is a secondary consideration. And it is further true that while the well-to-do with the means and leisure for extensive travel may here and there command scientific hydrotherapy, the poor in our cities find almost no public establishment for the proper conduct of this therapeutic measure.

It is therefore most gratifying that the State of New York, which has taken the lead in the conservation of its natural resources by reforestation, establishing State parks, guarding its streams, stocking them with fish and protecting its game, should now have rescued for all time one of the most unique and valuable groups of mineral springs which is anywhere known, and placed it beyond the reach of commercialism.

For many years a multitude of those suffering from chronic ailments have sought relief at foreign spas, often with considerable inconvenience and expenditure of time and money. Patients with advanced cardiovascular diseases, renal diseases, gastrointestinal disorders, nervous disorders and a variety of other disease conditions, have had the waters of these spas applied both within and without, and have acquired such belief in their efficacy that, in many instances, they have returned year after year to their favorite bath cure, where they have either drank the mineral waters or bathed in them, or both, and taken such accessory treatment as their particular resort afforded. We have all seen, from time to time, cases which have strikingly been improved by such procedure. The skeptical among us have attributed this benefit to factors

*A paper read before the New York Academy of Medicine, February 17, 1916.

other than the waters themselves, such as the ocean voyage, the differences in climate or altitude, the novel environment, the freedom from cares which may result from long distance from home, the amusements afforded, and even to the difference in language forced upon one's attention. But those of us who have given serious study to the subject are convinced that, while all these things may be contributory, there is great gain to be derived from the properly directed use of mineral waters. I confess to having for a long time belonged to the first group of critics, but a personal study of a number of the leading foreign spas was converting to the belief that not only is there peculiar virtue in these waters, but that to be of maximum benefit they must be drunk or bathed in at their source. The difference is subtle, but it is nevertheless definite. Vichy, bottled and transported, may still be vichy, but it is not like vichy at its source, and the original Congress or Hawthorne water bottled, was never quite like the same waters taken at the Saratoga Springs. This common experience suggests an analogy between canned and fresh food. Canned vegetables one may live on for a time, but there is no "uplift" in them for a dyspeptic, although chemical analyses and physical tests may reveal no essential difference from the same food when fresh, nor is the superheated or canned air of elaborate closed ventilation systems the optimum air for an invalid to breathe. In the case of mineral waters, it has been asserted that radium emanations were in great part responsible for the peculiar properties which they exhibit at their source, and it is conceivable that there are further physical or chemical factors which are as yet unmeasured by science. Such was the case with the atmospheric air, the composition of which was, for a long time, confidently believed to have been determined completely until argon, helium, and similar new elements were found to exist in it.

It does not now seem probable that the continental spas of Europe will be open freely to invalid Americans for a long time to come, and the moment is therefore opportune carefully to consider what substitutes may be utilized at home. Where may we best send for spa treatment cases of chronic myocarditis and endocarditis, advanced arteriosclerosis, chronic rheumatism, or other forms of arthritic disease, obesity, chronic nephritis, neurasthenia, and other nervous disorders?

This country, like Europe, is richly endowed with mineral springs, whose waters, speaking collectively, may be found, upon chemical analysis, to duplicate those of any noted foreign spa, as any European climate may be duplicated here. In the waters of Saratoga there are found a variety and strength of certain ingredients which may even surpass the foreign waters of similar character, such ingredients particularly as carbon dioxid, the alkaline salts and iron. And in the climate of Saratoga there are clearness, dryness, uniformity, and a general salubrity which leave little to be desired. These facts have long been known, but unfortunately for various reasons, the advantages of this resort have not, until very lately, been fully appreciated scientifically, and the medical profession has fallen quite out of the habit of utilizing them. I take it that the object of this meeting is, so to speak, to reintroduce Saratoga and call attention to the possibilities which exist for utilizing a "definite treatment for definite disorders," as Dr. Ferris has stated, at a spa of exceptional attractiveness and potentiality which lies within our own gates. It is my purpose presently to point out these definite disorders which may now receive definite treatment there.

The Saratoga Springs have undergone a very interesting development which might briefly be summarized as comprising successive phases of evolution, dissolution and resolution—or re-solution—of the waters. There is ethnological and geological evidence that the waters were utilized by the Indians more than three centuries prior to the historic voyage of Columbus, and in early Jesuit records there is mention of a priest of that order who visited the Springs with the Indians in 1643. The real evolution of the Springs began more than two generations past, when their ease of access, attractive surroundings and increasing reputation made them a resort of fashion and place of summer recreation for many years. This was in the days when the so-called "summer resorts" were few and means of travel much less highly elaborated than at present.

Factors such as these enhanced the popularity of Saratoga to an extraordinary degree, attracting there all classes of pleasure seekers, until amusement was more sought than considerations of health, and horse racing, gambling and similar diversions reached a climax far in excess of that anywhere else in the country. It is true that the waters, particularly the laxative ones, were drunk, but quite in haphazard manner, often in excess or too great variety, and other waters were bathed in to a limited extent, largely with the mistaken idea that the mineral salts were absorbable through the skin. Gradually the fashionable element moved away to new resorts. the famous fashion or "peacock parades" of the broad hotel verandas disappeared, and dissolution began. This period was completed by the increasing economic use of carbonic acid gas which was withdrawn from the springs by commercial companies in such quantity that the solubility of certain elements of the waters was hopelessly impaired, and the pressure under which they sought the surface seriously lessened. The period of re-solution followed when the State was induced to take over the control of the springs and permit nature to restore them to all their original potency through redissolving the ingredients of the waters. It is indeed the method of State and municipal control which has placed the principal European spas upon their high plane of efficiency.

Upwards of 1600 American patients a year have been in the habit of going to Nauheim, mainly for treatment for myocarditis, chronic valvular heart lesions, angina, arteriosclerosis, and other cardiovascular conditions. It has been proven at Nauheim that the chief value of the alkaline saline baths was their supersaturation with carbonic acid gas to the extent of 25 per cent, but the report of the consulting engineer for the State at Saratoga, Mr. C. G. Anthony, has shown 33 per cent in the waters of the High Rock Bath House. There seems, therefore, no reason why this group of diseases may not ultimately be treated as successfully at Saratoga as at Nauheim. The elevation at Nauheim is about 450 ft. above the sea, that of Saratoga is 300 ft., and Saratoga, like Nauheim, abounds in fine trees and borders on mountain ranges. Arrangements have been completed, moreover, for the laying out of carefully graded walks on which the patient may take the Stokes-Oertel "Terrain Kur," the value of which is so much emphasized at Nauheim in the treatment of cardiovascular diseases and obesity.

The waters of Nauheim were used for drinking in nervous and digestive disorders long before the

value of their carbonic acid as a cutaneous stimulant was proven by the baths, and those of Saratoga present great variety and potency for drinking purposes. In fact, this use should be emphasized particularly as being in many conditions of equal or greater value than their bathing properties.

Wiesbaden and Baden-Baden are much resorted to by those afflicted with chronic arthritis, sciatica, neuralgias, and other nervous disorders, gout, rheumatism, chronic cystitis, and nephritis. Those of you who have visited these resorts may recall their attractive "Trink-Halles" and the importance which is given to the drinking of the waters as well as bathing in them. Their waters are in many respects quite similar to some of the Saratoga Springs, with the exception that those of Wiesbaden are hot, not cold, as at Saratoga; nor does the latter contain the arsenic of the Baden-Baden Kur. Certainly, from analogy, this group of diseases should derive benefit from the Saratoga waters, nor is analogy unsupported by direct experience, for such cases long ago were dealt with successfully there by potations, as testified in the writings of Seaman, Meade, and very many other experienced clinicians.

Kissingen, which is visited annually by upwards of 34,000 patients, has acquired a well-deserved reputation for the beneficial treatment, particularly of chronic catarrhs of the gastrointestinal and respiratory systems, cystitis, anemia and obesity, and one of its chief resident chemists, Dr. Paul Hoertl, the Director of the Royal Chemical and Balneological Laboratory at Bad Kissingen, has declared that from analyses the Saratoga waters should be capable abundantly of accomplishing similar results when systematically drunk.

At Ems the like diseases are treated with alkaline chloride and chalybeate waters, both of which may be furnished at Saratoga in greater strength.

Dr. Simon Baruch has pointed out the close analogy of the Saratoga Hawthorne Spring No. 2 with that of the Grande Grille of Vichy, which latter has proved of much value as a diuretic in renal and vesical diseases, chronic rheumatism and chronic skin diseases.

The many different springs of Saratoga which may be drunk fall naturally into three general groups, in each of which a half-dozen or more of the most active and copious springs are included. These are (1) the saline laxative group typified by the long familiar Hathorn and Congress waters; (2) the alkaline-saline group, typified by the Geyser spring, in the waters of which alkalinity is the essential feature, together with medicinal quantities of iron and lithium, and (3) the alkaline-iron or chalybeate springs, typified by the Karista, which yields a strong excess of ferrous carbonate. All of these waters are copiously charged with natural carbonic acid gas, which renders them more palatable and efficient, and, in such of them as are used for bathing, excites distinct cutaneous reaction. In detail, as shown by the analyses of the laboratory of the State Commissioners of the Reservation, they contain five chlorides, six bicarbonates, a bromide and iodide, and include such alkaline earths and metals as magnesium, lithium, strentium, iron, and manganese in addition to several ingredients of lesser value. With the exception of sulphur they may be said to include all of the important mineral or inorganic chemical ingredients of the body, and their drinking affords opportunity for the replacement or renewal of these ingredients, as well as for added solvent, diuretic, and evacuant effects.

The saline laxative or aperient waters of the Congress and Hathorn No. 1 springs are those upon which the more than national reputation of Saratoga Springs was first built more than a century ago, and at one time they were exported to foreign countries in considerable quantity. Their laxative effect is due to a high percentage of bicarbonate of magnesia, together with sodium sulphate and other salts. Their usefulness when drunk is in cases of chronic constipation, hepatic congestion, cirrhosis, chronic arthritis, arteriosclerosis with high tension, obesity, gout, diabetes and similar disorders of metabolism. They act without griping, and may be continued in proper dosage for a considerable period of time.

The second group of alkaline-saline waters derive their virtue from their antacid effect, and have therefore been found beneficial in gastrointestinal catarrhs, hyperacidity of the gastric contents, rheumatism, goutiness, lithemia, gravel, neuralgias, neuritis, chronic generalized skin diseases, and the like affections. The active spring of this group, known as the Geyser, equals in flow that of the French Vichy, which it also resembles in type. Its water, being highly diuretic, may prove useful in reducing high blood pressure in cases of arteriosclerosis.

The third group, known as the alkaline-ferruginous or chalybeate waters, were the first springs to be exhausted by the gas pumping process. Among them, however, the Columbia spring has been restored, and a new well has been opened whose waters have been found to be the strongest natural iron waters known. Their use may prove valuable in cases of chronic anemia and retarded convalescence from numerous disorders.

Thus it is seen that from the standpoint of medicinal drinking waters alone Saratoga is capable of supplying the needs of almost any case which is likely to be improved by such agencies, and are well worthy of trial, for such cases as heretofore have been sent in large numbers to Vichy, Marienbad, Kissingen, Homburg, and similar foreign spas.

The influence of radium emanations in drinking waters is not yet fully established, but there is a growing belief in their efficacy in the treatment of arthritic and digestive disorders. The United States Bureau of Mines, in course of an investigation of all the important mineral springs of this country, found that all the Saratoga springs are radioactive, although complete quantitative determinations have yet to be made.

Turning now to consideration of the bathing opportunities afforded by the springs of Saratoga, it is noted that their first use for this purpose was for the treatment of chronic skin diseases, particularly those associated with gout and rheumatism. Their effect may be enhanced by the simultaneous employment of appropriate waters taken internally, an advantage which Saratoga possesses in decided degree over Aix-les-Bains, for example, with its feeble Deux Rennes single drinking fountain.

Arrangements have been made, moreover, for the introduction of the mud bath, or moor bath, which in foreign spas such as Borneo, Leuck and many others, is so extensively employed in the treatment of chronic eczema, psoriasis and other generalized cutaneous eruptions.

The Saratoga baths have also been successful in the treatment of periarticular thickening, anchylosed joints, myalgia, gouty joints, sciatica, lumbago and allied affections. In such conditions, however,

much depends upon coincident massage, douching under water pressure and proper thermic regulation, details which it is hoped in time may receive proper emphasis in the newly constructed bath houses.

Probably the greatest reputation of the Saratoga baths is yet to be won in the development of the carbonic acid saline bath, as it affects particularly cardiovascular diseases, arteriosclerosis and obesity. The effects of such baths upon the peripheral blood vessels and nerves by increasing the capacity of the cutaneous capillaries, relieving the overstrained heart muscle and generally regulating the circulation in congested viscera are too well known to need recapitulation here. That this valuable method of treatment has heretofore been so little developed in this country is due to the fact that the only natural mineral waters in this country east of Colorado Springs, which are saturated with carbonic acid gas, are at Saratoga. I have already alluded to the comparison between the Saratoga waters and those of Nauheim. Now that the former crude and unscientific use of these domestic bathing waters, exploited as they were merely for temporary gain, is being replaced by intelligent management and State control, with the idea of permanence and real use to the medical profession, it will be strange indeed if they do not rapidly grow in popularity and usefulness. The State Commissioners are fully appreciative of this great opportunity, as shown by the statement in their annual report of 1914 that "The carbonic acid gas is one of the most important therapeutic agents in mineral waters, whether used for drinking or bathing, and in respect to this Saratoga Springs is easily first." They further point out that the investments in similar bathing establishments in Europe exceed $50,000,000, all of which have been "paying handsome returns on the investment."

It has been the experience at all the noted foreign spas that there are many accessories which are demanded in order to insure the success and popularity of these health resorts. Many of these spas are in such near geographical relationship, like Nauheim, Schlangenbad, Langen-Schwalbach, Wiesbaden, Homburg and Baden-Baden, for example, that no doubt an element of rivalry or competition has necessitated somewhat extravagant expenditure, as for example in the new million dollar bath house at Kissingen. From such rivalry Saratoga, owing to its unique position, is quite free. Nevertheless, attractive bathing rooms and drinking halls, facilities for manual and mechanical massage, for electrical treatment, Zander apparatus and rooms fitted with appliances for using the waters in douches, irrigations, sprays and gargles, are all accessories which should not be dispensed with in any first-class watering place, and the Saratoga Commissioners are quite ready to install them on a proper scale as fast as the State is willing and able to supply the necessary funds. Of desirable hotels there is already no lack, and the natural beauty of the grounds about the Springs needs but comparatively small expenditure to enhance it. The Geyser Park, for instance, comprising some 250 acres, presents a charming diversity of woods, ravines and streams, with a waterfall and lake. Many thousand additional trees have already been planted, and pleasant walks abound. There is an abundance of good potable water for table use and two outdoor swimming pools have been constructed, which recall in attractivenes that of Glenwood in Colorado.

The soil of Saratoga is porous, and the climate is characterized by dryness and freshness, and what, for this region, is an exceptional number of sunshiny days, the meteorological records showing that fully two-thirds of the days of the year have complete or partial sunshine.

An important consideration affecting the future popularity of the Saratoga Springs is the very abundant supply of waters which they yield, in contrast to certain springs elsewhere in this country and abroad, where the development of the waters has necessitated the sinking of deep and costly wells to augment the original supply. In Kissingen, for example, it was found necessary to sink an artesian well to a depth of 3000 ft. at a cost, with equipment, of $75,000. At Saratoga, on the contrary, the waters rise easily from a depth below the surface of only 150 to 600 ft., and the Commissioners state that it may prove desirable to close about 100 springs in order the better to handle the output of the remainder. Moreover, fifteen years of pumping, which at times amounted to withdrawing a half million gallons of water a day to obtain the carbonic acid gas, has only temporarily interfered with the water flow, which rapidly returned to normal when the destructive process was stopped. There need be no doubt, therefore, that the supply of waters at Saratoga will not only meet all reasonable demands for local drinking and bathing, but permit of the bottling of certain of the waters for use elsewhere, as in former times.

In comparing the Saratoga waters with those of so many foreign spas, one should make no claim for them as a "cure-all." Far from it, for the matter has not yet been thoroughly enough investigated from a modern scientific medical point of view. Nevertheless, it is amply proven that the number and variety of the springs is exceptional, that the supply of waters for both drinking and bathing, as redeemed by the State, is now abundant, the climate and surroundings are in every way attractive and propitious, and the resort is most accessible.

It would seem, therefore, that if the medical profession will co-operate with the State in the full development of the resources of the Springs for the benefit of properly selected cases, results may ultimately be obtained fully comparable to those of the most successful foreign spas. No doubt many invalids who have had what might be termed the "foreign spa habit," and who, since the war, have bitterly complained that "there is no place to go but home," may find that "home" can offer them some exceptional advantages after all!

61 West Forty-ninth Street

THE SURGICAL TREATMENT OF GASTRIC AND DUODENAL ULCERS.*

BY GEORGE WOOLSEY, M.D.,

NEW YORK

THOUGH my remarks are chiefly concerned with the treatment of gastric and duodenal ulcers, a word or two, by way of preface, in regard to the diagnosis. This has become much more exact since we have been able to confirm or correct our clinical diagnoses by the operative findings in a large number of cases. The history is still the most reliable means of diagnosis at our command. In my experience typical cases do not form such a large proportion of cases met with as in the reports of the Mayo Clinic, but

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more nearly equal in number atypical cases. The diagnosis of typical cases is easy from the history alone, but even they are sometimes very closely simulated by extra-gastric conditions giving gastric symptoms, especially chronic appendicitis, gall bladder conditions, chronic pancreatitis, etc. It is much more difficult to diagnose these conditions from gastric and duodenal ulcers with an atypical history. In general, duodenal ulcers give a typical history, with hunger-pain and food relief, much more often than do gastric ulcers, and pyloric ulcers are more constantly typical than ulcers further from the pylorus. As aids in the diagnosis, not as sufficient in themselves, we employ gastric analysis and the *x*-ray.

Not only does the gastric analysis vary greatly in typical as well as in atypical ulcer cases, but various conditions simulating ulcer may give analyses, many features of which strongly suggest ulcer. The disturbance of the mechanics of the stomach is of more diagnostic value than that of its chemistry. That is one reason why the *x*-ray is becoming more valuable than the laboratory analysis. But the use of the *x*-ray to demonstrate disturbance of gastric motility gives only indirect evidence. More and more it is furnishing direct evidence of ulcer or new growth by showing filling defects, the niche of a penetrating ulcer, the crater of a deep ulcer, as well as interference with peristalsis and changes in the form, size, and position of the stomach, and the spastic incisures opposite some ulcers.

It may be a difficult problem to differentiate between many cases of gastric and duodenal ulcers and the several conditions which simulate them. Hence, though we operate with varying degrees of confidence in our diagnoses in different cases, the operation is practically always exploratory at the outset, at least to some extent.

Medical treatment with rest and careful diet, with or without alkalies, atropine, etc., should always be thoroughly tried. Acute ulcers will nearly all yield to treatment and, except for perforations, do not call for surgical treatment. The symptoms due to chronic ulcer will subside with or without treatment, after a time. Proper treatment will hasten their disappearance. But relapse is the rule and there is some question whether medical treatment gives a permanent cure. Mayo stated[1] in 1911, "We have operated in a great number of cases where the symptoms were in abeyance, and it might be thought that the patient was cured, but I have never seen one in which there was definite closure of the ulcer." But if cure follows gastroenterostomy it would seem possible to effect cure by persistent medical treatment, at least in some cases. When, after pyloric stenosis or long-continued gastritis, the acidity becomes lowered, chronic ulcers may cicatrize. In one case I excised an indurated cicatrix on the lesser curvature, which showed no ulcer on gross or microscopic examination. But though admitting the possibility of cure of calloused ulcers, without operation, and advising medical treatment before operation is considered, I regard a so-called medical cure as only temporary in the vast majority of cases. The cases operated on have had one or more "medical cures" and many have relapsed repeatedly. The average hospital patient is not as susceptible as private patients to medical treatment, on account of the lack of time and means to give to it.

After two or more relapses have occurred, in spite of treatment, something more is required to relieve these patients of recurring attacks, with the loss of time, flesh and strength, the danger of pyloric stenosis or adhesions, which render the symptoms continuous, and especially to avoid the risk of perforation, hemorrhage, and malignant degeneration.

Gastroenterostomy is the commonest, simplest, and safest method of surgical treatment for ulcer, It affects both the drainage and the chemistry of the stomach, diminishing the acidity by the presence of a small quantity of bile and pancreatic secretion, relieving the pylorospasm and allowing the stomach to empty without irritation of the ulcer by the passage of food. It thus allows the ulcer to heal, and it does so in over 82 per cent. of cases (Paterson[2]). In this way the conditions just enumerated are relieved, except those due to adhesions or malignant degeneration. Before the ulcer heals, and in case it does not heal, perforation or hemorrhage may occur and gastroenterostomy is not a sure preventive of either, but greatly diminishes the probability of their occurrence. v. Eiselsberg reports[3] seven cases in which death occurred from hemorrhage or anemia, due to repeated hemorrhages, after gastroenterostomy, among 334 cases. He remarks: "Thus it will be seen that gastroenterostomy in some cases not only did not stop the hemorrhage but apparently induced it."[3]

It is generally conceded that no operation should be done unless we can see or feel an ulcer. But in a few cases, where the symptoms were typical and no ulcer or extra-gastric condition could be found, the question has arisen in my mind whether one could be overlooked. It seems unlikely that a chronic gastric ulcer could escape notice, except under rare circumstances, but ulcers of the anterior duodenal wall differ pathologically from gastric ulcers on account of the anatomical structure of this part, as pointed out by Payr.[4] The ulcers here are often small, superficial, with little induration and may appear as a mere erosion or fissure. It is quite possible that such ulcers may be overlooked and search should be made for the not infrequent contact ulcer on the posterior wall, which is more indurated and of the gastric type. In this connection Mayo says:[5] "On several occasions we have examined the stomach and duodenum through an abdominal incision without finding any evidence of ulcer, and the continued symptoms for some months led to a second exploration, when an ulcer was discovered. Either the ulcer had been overlooked at the primary operation or it had been confined to the mucous membrane and the musculoperitoneal coats were involved later."

The class of cases giving the best late results are those where the pylorus is stenosed. Under this class in the Mayo Clinic 71 per cent. of duodenal and 67 per cent. of gastric ulcers were cured, and 94 per cent. of duodenal and 92 per cent. of gastric ulcers cured or greatly improved.[6] Various forms of unilateral pyloric exclusion reproduce this condition of stenosis and are at present much employed, in conjunction with gastroenterostomy, in ulcers of the duodenum and those near the pylorus. Of the various methods I have employed (1) v. Eiselsberg's, the most radical, in which the stomach is divided proximal to the ulcer and both ends sutured; (2) Wilms', in which a band of fascia half an inch wide is fastened tightly around the stomach, proximal to the ulcer, and (3) the method of infolding the pyloric end by suture.

In one of my cases gastroenterostomy failed to relieve the symptoms of a duodenal ulcer, though

the continued symptoms were probably due to adhesions rather than to the ulcer, which had apparently healed. Here v. Eiselsberg's method of exclusion was used, which freed the stomach from the adherent area and resulted in a cure.

The other two methods I have employed in a number of cases with excellent results symptomatically. I have had *x*-rays taken after two or three weeks and all seemed to show that the pylorus was not absolutely occluded, but fluoroscopic evidence of permeability must be added to that of *x*-ray plates to be of value. But perfect occlusion is not necessary in order to obtain a functional rest and cure of the ulcerated area. Even the complete v. Eiselsberg exclusion does not positively insure against hemorrhage. v. Eiselsberg reports,[5] among thirty-six cases, one patient who suffered from repeated attacks of hemorrhage after a unilateral exclusion. Thus no method, so far considered, gives absolute security against hemorrhage. Contrary to the results of Cannon and Murphy's experiments on animals, I believe that in the human subject the gastroenterostomy opening functionates when the pylorus is open. I have demonstrated this by *x*-rays taken some time after operation. Hartmann claims that this is the case when the gastroenterostomy is in the pyloric portion.

Owing to the fact that duodenal ulcer almost never undergoes malignant degeneration, gastroenterostomy, with or without pyloric exclusion, is the operation of choice and is almost universally practised, with excellent results, though W. J. Mayo has reported a considerable number of excisions of these ulcers, followed by Finney's gastroduodenostomy or by gastroenterostomy.

The case is different in calloused gastric ulcers, which not infrequently become malignant. It may be quite impossible at times to differentiate between an indurated ulcer and a carcinoma, and I have done gastroenterostomy in a supposedly hopeless case of gastric cancer, where the ultimate cure demonstrated it to be a simple ulcer. Among 143 cases of gastroenterostomy for supposed carcinoma in the Utrecht Clinic,[7] 30 were alive 3 to 11 years after operation, proving the condition to be indurated ulcer. On the other hand in his series of 317 recoveries in 334 cases of gastroenterostomy for ulcer of the stomach and duodenum, v. Eiselsberg reports 13 deaths from cancer of the stomach, among 41 cases which died at a later date, the cause of death being known in only 23. Several of the remaining 276 patients will presumably die of cancer.

This is strongly opposed to the views of Paterson, who states[2] that his own experience coincides with that of Kocher and Gressot, that less than 3 per cent. of the patients on whom gastroenterostomy is performed for simple ulcer die later of carcinoma. Theodor Kocher believes that early gastroenterostomy is the surest means to prevent the malignant degeneration of ulcers by the cure of the latter.

The material obtained from operated cases in the Mayo Clinic showed that over 60 per cent.[3] of the cases of carcinoma of the stomach were developed on the base of a chronic ulcer, and a clinical study showed that 60.5 per cent.[8] of cases of cancer gave a long previous history of gastric ulcer, 43.8 per cent. a typical ulcer history, and 18.7 per cent. a history of irregular gastric ulcer. Payr found 26 per cent. of cancers developed from ulcer in his resected material, and Kuttner 43 per cent.[4] In general we may suspect ulcers larger than a 25-cent piece of being or becoming malignant.

Whether we accept the lower or higher figures, we must admit that there is a real danger of cancerous degeneration of chronic gastric ulcer, which is much diminished but by no means eliminated by gastroenterostomy. This is a cogent reason for some more radical operation for indurated gastric ulcers. An additional reason, which has even more weight with some, is the difficulty, already referred to, of differentiating between a calloused ulcer and a carcinoma, even after we inspect and palpate the stomach on operation. Another reason for the radical removal of a chronic ulcer, remote from the pylorus, is the fact that such ulcers are cured by gastroenterostomy in a much smaller percentage of cases than are pyloric and duodenal ulcers, according to Payr in about 50 per cent. only.

Two complications of gastroenterostomy, circulus vitiosus and peptic jejunal ulcer, usually of the stoma, may be cited as objections to this operation. Circulus vitiosus is due to a fault in the technique, is not common, and I have never encountered it in a considerable experience. Peptic jejunal ulcer may also be due to faulty technique. Mayo attributes it to the suture ulcerating through along the margin of the stoma. I have met with it in only one case, where the stomach was resected for carcinoma in a syphilitic patient.* Payr attributes the stenosing of the gastroenterostomy opening to peptic ulcer at this point. To obviate the danger of any harm that may result from the suture I now use only fine chromic gut for both suture layers.

Of the more radical operations for gastric ulcer we have excision, pyloric resection and mesogastric resection.

Excision of the ulcer and suture of the opening may be a very difficult operation, especially in the saddle-ulcers extending well onto the posterior surface with considerable induration or with many adhesions. Excision alone is not enough. It, or the resulting cicatricial contraction, may result in stenosis of the outlet of the stomach, especially if the ulcer is not far from the pylorus. If it does not stenose it, excision is liable to distort the stomach, kinking the lesser curvature and interfering with the motility of the stomach. This is increased by the resulting adhesions. Excision does not relieve the pylorospasm or the hyperacidity. I have found it necessary to reoperate and add a gastroenterostomy, and this should be added in all cases, as Mayo, Payr and many others have pointed out. On the whole, excision is not a satisfactory operation and had better be replaced by one of the forms of resection, when the latter are not decidedly more difficult or dangerous. Resection is a more radical operation and often an easier one than excision and is not open to the same objections. Rodman advised this operation many years ago.

In ulcers of the pyloric region of the stomach, comprising the majority of gastric ulcers, the Billroth method is the operation of choice, followed by gastroenterostomy, or the Polya-Reichel modification in which the proximal end of the stomach is sutured directly to the jejunum. The chief technical difficulty is due to adhesions, especially in case of a penetrating ulcer.

*I recently operated on a patient for supposed peptic ulcer of the stoma, on whom I had done gastroenterostomy for duodenal ulcer 2 years before. No ulcer was found but the linen suture was hanging from the opening. This and considerably more within the wall was removed and the patient has so far been relieved of the symptoms. There was some contraction of the stoma which readily admitted the finger.

When the ulcer is further from the pylorus, usually on the lesser curvature, the mesogastric resection, or resection in continuity, is the operation of choice. The ulcer, and the section of the stomach below it, is resected through the greater curvature. By cutting the pyloric side obliquely the two sides can be made of nearly equal length, so that suture is easy. v. Eiselsberg[3] recommends supplementing the longitudinal with a transverse incision of the abdomen to get plenty of room, and Payr[4] advises the free mobilization of the stomach, especially on the lesser curvature and particularly in the thickened indurated part of the gastrohepatic omentum. The stomach is an elastic organ and the bringing together and suture of the two sides of the incision is easier than one would suppose. Owing to the division of the nerves, pylorospasm is avoided and no gastroenterostomy is required. v. Eiselsberg, Payr, Kümmel, and others are enthusiastic in its praise and have reported excellent clinical results and no mortality.

The subsequent *x*-ray in a case I operated on by this method looked at first like an hour glass stomach, but fluoroscopic examination showed that the appearance was deceptive, the entire pyloric portion being narrow and small. The stomach was emptied promptly. The postoperative course was perfect, no pain or nausea, only hunger was complained of. Kümmel reports that the *x*-ray in the majority of his cases showed an hour-glass appearance, which he regards as spastic, with very rapid emptying of the contents and extremely good clinical results.

Of course, the mortality of resection is greater than that of gastroenterostomy, which in ulcer is very low (not over 2 per cent.), but the operation is surprisingly well borne and the mortality is not high. Still the difference is enough to raise the question whether the more dangerous operation should be undertaken as a routine or should be restricted to those cases of markedly indurated ulcer where there is some question, however slight, whether malignancy may not exist. The ease or feasibility of resection, without great difficulty and increased risk, and the general condition of the patient has an important bearing on this question. To justify this operation its mortality should not be as much greater than that after simple gastroenterostomy, as the occurrence of carcinoma after the latter is greater than after resection.

The appendix should be examined and removed if any abnormality exists. Moynihan advises its routine removal. In the Mayo Clinic the appendix showed sufficient evidence of disease to justify its removal in 25 per cent. of cases of duodenal and in 16 per cent. of cases of gastric ulcers.[10] In all cases of gastric or duodenal ulcer the patient should be put on a special diet for some time after operation. I employ either a Lenhartz or a modified v. Leube diet. For some time thereafter a careful diet should be advised. The diet is especially important if the ulcer has not been removed or if unilateral exclusion is not employed. Hyperacidity should be kept reduced by alkalies.

One result of the cicatricial contraction of a gastric ulcer at a distance from the pylorus is the formation of a so-called hour-glass stomach. In the *x*-ray plate the appearance of an hour-glass stomach may be simulated by a deep incisure of a spastic nature opposite an ulcer of the lesser curvature. I have found in one case that an apparent hour-glass stomach was largely due to perigastric adhesions. The principles of treatment of an hour-glass stomach are the same as those of calloused ulcers. Gastroenterostomy gives good results and should be applied to the cardiac pouch. Gastrogastrostomy has also given good results, but is less certain than gastroenterostomy. In order to remove the dangers of malignant degeneration, as well as to radically cure the condition, mesogastric resection is the operation of choice in suitable cases.

Two complications of gastric and duodenal ulcer may be briefly referred to in closing, *i.e.* hemorrhage and perforation.

Sudden acute hemorrhage, not preceded by dyspepsia, is almost always due to acute ulcer and is best treated medically. Few agree with Dieulafoy that one should operate during the first hemorrhage, if half a liter of blood is lost or if it is repeated within 24 hours. The hemorrhage causes collapse which is favorable to the arrest of hemorrhage, not for operation. The initial hemorrhage from a chronic ulcer is less apt to be so severe, but more apt to be repeated. I have had one case of chronic gastric ulcer, about to be operated on the following day, in which a profuse recurrent hemorrhage proved fatal in half an hour, but such accidents are not common.

When recurring hemorrhages occur and threaten to produce a severe anemia operation should be done before the anemia becomes grave.

In any case of dangerous hemorrhage we have a most excellent means of saving life in direct transfusion. I have employed it with great satisfaction to render a case of chronic ulcer, with frequent hemorrhages, an operable risk, as well as in two cases of gastric cancer.* Besides supplying the lost blood it increases the coagulability of the blood and lessens the probability of further hemorrhage.

When we open the abdomen for duodenal or gastric hemorrhage, what should we do? Gastroenterostomy is the safest operation that is at the same time reasonably sure of being successful. As already stated neither this alone or with any form of unilateral exclusion will absolutely prevent recurrence of hemorrhage. If the patient's condition and the situation of the ulcer permit exclusion may be added. I have made the mistake of attempting too much, planning a v. Eiselsberg exclusion but being compelled to resect by the condition of the stomach rendering the closure of the distal pouch impossible. Many methods have been tried, but they are either less safe or less sure than gastroenterostomy.

In a case of hemorrhage from an ulcer near the cardia, where I feared that gastroenterostomy would not fulfill the requirements, I ligated the afferent vessels by ligatures passed by a curved needle, with an excellent result. Opening the stomach to search for the source of hemorrhage, when there is no apparent ulcer, is seldom successful and is not to be encouraged.

There is no question raised as to the need of operation at the earliest possible moment in acute perforation. As the results are better the earlier the operation, an early diagnosis is most essential. Sudden, very acute, epigastric pain, usually but not always preceded by a history of indigestion, and

*I have also used it in a recent case 9 days after gastroenterostomy, when 2 hemorrhages made the patient very anemic, to enable me to explore. The hemorrhage was found to come from the penetrating ulcer and not from the stoma, through which most of the blood entered the stomach, as the pylorus was very constricted, but not entirely closed by infolding.

soon followed by a board-like rigidity and epigastric tenderness are sufficient for diagnosis. Later the maximum tenderness may shift to the right lower quadrant, and I have operated with the diagnosis of appendicitis, made by the visiting physician. Most acute perforations are on the anterior wall and hence are accessible to operation. If closure by suture in two layers is not feasible a tag of omentum may be employed. Packing alone or around a rubber tube has also given good results in exceptional cases. I always employ drainage through a suprapubic stab wound.

The addition of a gastroenterostomy is a disputed point. According to Paterson[2] symptoms return in 23 per cent. of those who recover and 11 per cent. die of a second perforation, hemorrhage, or leakage in the suture line. Gastroenterostomy promotes the healing of a perforated ulcer, prevents a subsequent perforation and the recurrence of symptoms. But Paterson goes farther and claims that it diminishes the mortality by making the closure more secure, facilitating peritoneal drainage through early catharsis, and allowing early feeding. Our immediate concern is with the saving of life, hence Paterson's claims, if confirmed, rather than the ultimate result, would be the strongest indication for gastroenterostomy. I fully believe in gastroenterostomy if the patient's condition does not absolutely contraindicate it and especially if the satisfactory closure of the ulcer may result in stenosis.*

Subacute and chronic perforations result in perigastric and subphrenic abscess, which demand accurate diagnosis to indicate the operation suitable to the case.

In conclusion, I wish to emphasize the following:

1. In duodenal and pyloric ulcer gastroenterostomy, with or without pyloric exclusion, gives excellent results.

2. In indurated gastric ulcers, resection or mesogastric resection are far preferable to excision and are to be employed if there is the least suspicion of malignancy, or if it is doubtful whether gastroenterostomy alone will lead to the cure of the ulcer and so protect the patient against the danger of malignant degeneration.

3. Direct transfusion of blood may play an important part in the treatment of gastric hemorrhage.

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117 East Thirty-sixth Street

*An example of the result of the failure to add gastroenterostomy, after closure of a perforation 2 years before, occurred in a case which I recently operated for continued ulcer symptoms and partial pyloric obstruction. The ulcer was still unhealed and active, and the pylorus was slightly stenosed. It was treated by gastroenterostomy and functional pyloric exclusion, by infolding.

INDICATIONS FOR SURGERY OR DEEP ROENTGEN THERAPY FOR MYOMATA AND METROPATHIES.*

By CHARLES A. PFENDER, M.D.,

WASHINGTON, D. C.

ROENTGENOLOGIST, GALLINGER MEMORIAL HOSPITAL, GEORGETOWN UNIVERSITY HOSPITAL, AND SIBLEY MEMORIAL HOSPITAL.

It is indeed a privilege to be permitted to present for your wholesome interest the subject of deep Roentgen therapy as applied to myomata and metropathic conditions so frequently encountered in your practice. I invite your attention to the consideration of facts, not fancies, and would bespeak a broad-minded and prayerful discussion, bearing in mind the vital question: Should we do unto our patients as we would like to be done unto? As true healers of the sick and afflicted we should well weigh the evidence from the broad standpoint of a world-wide humanity and practical scientific attainments.

It is indeed fortunate that medical men have been slow to accept new theories and adopt with inherent reluctance methods that had perhaps not been fully proved—and such conservatism is commendable; but when a method has been raised from inexperience and doubtful efficacy to brilliant achievements, in some instances even superior to older and more popular methods, it is well for the alert physician, and the surgeon and gynecologist in particular, to take heed early of these progressive measures and become associated with the modern attainments as a leader and not merely a follower of men.

The wonderful possibilities within the area of deep radiation date back, as you are perhaps aware, to the accidental discovery of the *x*-ray by Professor Roentgen of Würzburg, Germany, in 1895. The investigations into the mysteries of this new ray soon crystallized into two divisions of practical utility: Diagnosis and Treatment. As a diagnostic factor it stands to-day unchallenged and supreme. It is the best friend of the surgeon in time of need, and although there are some phases still untouched and veiled in mystery, yet its course has been one of constant improvement with but little variation, and has won universal esteem and confidence.

Roentgen therapy has had a harder row to travel. The difficulties encountered on every hand almost overwhelmed the pioneers in radiation, and it seemed that when one handicap was mastered an even more difficult one would arise to take its place. It took many years to surmount the technical difficulties that were encountered in the treatment of merely superficial lesions, and the possibility of fruitful deep radiation was hardly thought of fifteen years ago.

The factors which seemed to baffle the application of Roentgen rays as a successful therapeutic measure resided largely within the domain of the mechanical instrumentarium, and it remained for physicists to solve the problem. The crux of the situation lay in three salients; the energizing medium, the tube, and the filter. The first to be solved was the development of what is commonly spoken of as an interrupterless transformer of high potential, such as can be seen to-day in practically every Roentgen-ray department. The control of its output was only recently perfected. The second problem was clarified by the discovery of the use of substances as filters for the purpose of restrain-

*Read before Georgetown University Medical Society, Dec. 18, 1915.

ing undesirable rays and yet allowing other rays to penetrate. Water, glass, leather, chamois skin, copper, zinc, lead, aluminum, and other materials were tried in many experiments and in varying thicknesses, and out of these, by processes of exclusion, we arrived at the intelligent and effective use of leather and aluminum filters. These range from one to four millimeters in thickness.

The solution of the third and the most difficult problem was effected in a more gradual way. The ordinary Crookes' tube was used by physicists long before Roentgen's discovery, and I here show a facsimile of the tube used by Roentgen when he discovered the ray which he named the *x*-ray. You will observe upon inspection of these drawings that very little progress or change in appearance of the tubes was noted for many years. The men who attempted radiation with the tubes available in those days found it next to impossible to treat effectively any major lesion because the tubes soon got so hot that they failed to work. A long step forward was the development of a water-cooled tube; and with the introduction of this type deep Roentgen therapy was given fresh impetus. But even this tube was far from satisfactory, and limited the Roentgenologist in many ways. It remained for an American physicist, Dr. W. D. Coolidge of Schenectady, N. Y., to perfect a tube that has revolutionized the field of deep Roentgen radiation.

With these details in the armamentarium of the Roentgenologist, perfected as they are to-day, however, results are being achieved that surpass the fondest hopes of the early pioneers in *x*-radiation. Yet we have by no means reached the crest of the therapeutic wave; far greater results must crown our efforts before we can feel that malignant growths may be generally subjugated and destroyed by *x*-radiation. In the therapy of benign tumors and in metropathic conditions, however, results have been universally successful since the improved technique has been properly employed.

In the light of our present knowledge we can safely say that Roentgen therapy deserves consideration in all operable tumors for the reason that in many instances radiation offers an equally good or better prognosis than surgical procedure.

At the present time a rather uniform technique, with slight individual variations of application, is in vogue in the treatment of uterine fibroids. Roentgenologists are agreed in every detail with the one exception of the number and sizes of areas treated at one series and possibly the size of the fee involved. A few employ very large areas, giving a total of only four erythema doses at one series, while others treat from eight to sixty areas at one series and probably collect proportionately. I usually crossfire in six to eight areas at one series, and repeat in three or four weeks. The tube is brought as close to the body as possible, the skin-focus distance usually being about 8 inches, sometimes less. A spark gap of 8 to 10 inches is enforced and from 5 to 8 milliamperes used over each area until an erythema dose is attained, which usually requires from three to six minutes, depending on the milliamperage and the skin-focus distance. I use four millimeters of aluminum and one piece of sole leather to filter out the soft rays, and I insist on protection of the patient by covering head and body with sheet lead or rubber infiltrated with lead. It may not be absolutely necessary to do this, but I am inclined to apply the maxim, "safety first."

X-radiation causes vital changes in the cells. This is manifested by the arrest of the toxin formation and proliferation of pathological cells and gradual death of these cells which are then absorbed. These cells are more susceptible to radiation than the normal cells in their vicinity, and as a result they can be influenced and destroyed by these rays without injury to normal adjacent cells. In other words, the rays exert a selective action on tumor cells, causing their destruction.

Schultz, Heineke, Martini, Clunet and others have studied the histological changes in the cells of certain tumors that had been radiated and noted first an enlargement of the cells and a distention of the protoplasm and nucleus. The cells then undergo granular degeneration and are absorbed. In place of the tumor there is left a tissue approximately more normal in type, mostly sclerotic connective tissue.

At first roentgenologists and gynecologists did not believe that Roentgen therapy produced atrophy of myomata. This point to-day is generally accepted. Numerous publications report not only a decrease in the tumor but produce evidence to show that the myomata had disappeared entirely. As early as 1902 Deutsch and Morton reported a decrease in the size of tumors they had radiated. Runge demonstrated absolutely positive atrophy in 25 per cent. of cases. Albers-Schönberg noted a decrease in the size of myomata in 45 per cent. of cases, and in 18 per cent. he observed a complete disappearance of the tumor. Siegel found in 36 cases of fibroids that had been treated 9 months previously that the tumor had disappeared entirely in 20, and had been greatly reduced in size in the remainder. Fraenkel observed atrophy of the myomata in 75 per cent. of his cases.

The decrease in the volume of the myoma occurs in one of two ways: (1) Through the ovaries, analogous to shrinking during the climacteric or after surgical removal of the ovaries, or (2) by a direct selective action on the tumor cells.

The latter view met with marked opposition at first, but is now accepted. Schönberg as early as 1910 pointed to this possibility. He observed a shrinking and softening of the tumors in several cases treated in women who were beyond the menopause. One must necessarily attribute this to the direct effect on the myoma cells because in these cases senile atrophy of the ovaries had taken place many years ago. This view was substantiated by others. R. Myer found a decided hypertrophy of the connective tissue, associated by marked disappearance of the muscular elements in very small myomata poor in connective tissue. Some French writers are of the opinion that young myomata react better than old ones. Myomata with rich vascular network undergo atrophy analogous to angiomas. Wetterer believes that the effect on fibroids is caused by hypertrophy and vascular occlusion. Others again believe that very rapidly growing tumors can be caused to shrink more rapidly than those which develop more slowly. Eymer believes, for instance, that the decrease in volume of the fibroids in cases where bleeding still persists is proof that the tumor tissue itself is affected by the radiation. Albers-Schönberg is convinced that the action on the myomata is primarily an ovarian one, but in a notable percentage of cases there undoubtedly is exerted a direct effect on the tumor cells, manifested by atrophy or disappearance of the tumor.

The literature teems with case reports of tumors

of the uterus successfully treated by radiation. Among hundreds of others we note a report by Peyron who observed an interesting case of uterine myoma where the tumor was larger than a child's head and extended from the symphysis to 3 cm. above the umbilicus. This tumor had been growing for 10 years and had so impaired the general condition of the patient that she was completely disabled. Under Roentgen therapy the tumor was reduced in four months to the size of an almond, while the patient's general condition was restored to perfect health.

My own series of cases is not very large, and it may be presumptuous to refer to any personal deductions on the effectiveness of Roentgen therapy in uterine fibroids, but it may prove illuminating, nevertheless, to report one of my first cases by way of illustration:

Case I.—Miss M., aged 36, suffered greatly from general systemic exhaustion; had large right ovarian cyst removed June 20, 1911. Numerous intramural fibroids were noted in the uterus at the time. These tumors were small, however, and hysterectomy was not done. Patient recuperated very slowly from operation and was convalescent for about nine months before she was able to return to her duties as stenographer in one of the Government departments. In August, 1912, she began to notice a small swelling on left side of abdomen which caused considerable pain and pressure on the bladder. Examination proved this to be a uterine fibroid about the size of a golf ball. Patient dreaded another surgical procedure on account of her delayed recovery from the previous intervention and was referred to me by a friend with the view of obtaining electrical treatments. I advised deep Roentgen therapy to which she consented. Exactly five days after the first series of treatments the patient noted a disappearance of the bladder pain and pressure symptoms. A slight decrease in size of the tumor could be observed when she returned for the second treatment one month later. At the end of the third series of treatments the tumor was no longer palpable, and there has been no recurrence of growth or symptoms to date, three years later. I saw the patient only last week, over three years since radiation, and was told that she had had no return of her former symptoms. This case received radiation only over the site of the tumor and perhaps some of the rays reached the left ovary; nevertheless, there was no disturbance of the menstrual function which is still normal and regular.

Roentgen therapy has also won a firm place in the treatment of metropathic conditions. It is true we must bear in mind the effect that intensive radiation exerts on delicate ovarian follicles, with the likelihood of injury to the ovule; therefore, young women should be advised of this sterilizing action. On the other hand, preclimacteric metropathies are treated with brilliant results, and it may later prove possible to bring about amenorrhea in every case regardless of age.

I should like to report a case which came under my observation over two years ago. The results obtained in this case are not at all unusual; in fact, we expect such results in all cases and usually obtain them after a very short period of radiation.

Case II.—Mrs. W., white, aged 48, had experienced menstrual irregularity for past eight years. I first saw her about a year before *x*-ray treatments were given. She gave a history of metrorrhagia with gradually diminishing intervals from thirty days to fifteen days. She presented the clinical picture of extreme anemia and was bedridden most of the time. Rest in bed, ice, ergot, hydrastis, etc., at the menstrual period proved of little value. Surgical interference was declined. On July 19, 1913, deep Roentgen-ray therapy was begun. This was immediately after cessation of bleeding following a menstrual period. The standard water-cooled tubes with 2 millimeters of aluminum as filter were used. The treatments were repeated in three weeks and menstruation had not yet returned at that time. Twenty-four days after beginning of the *x*-radiation a scanty flow appeared, lasting for four days. The amount was less than she had experienced at any time since the beginning of her trouble eight years ago. The patient and family appeared skeptical as to results of *x*-ray treatments in the beginning, but noting the quick result obtained they were encouraged to continue treatments at intervals of a month for three months, after which treatment was stopped. The menstruation ceased entirely after the first treatment and has not recurred. This was over two years ago and the patient is still enjoying perfect health, after a period of invalidism for nearly eight years.

The most convincing statistics at hand today are those reported recently by Gauss, of Freiburg. Whatever else one may think or feel about some of the things that have come from Freiburg the following table merits consideration and study:

Radiation Dose and Percentage of Cures in Roentgen Therapy of Myomata and Metropathies.

Groups	No. of Cases Treated	Cures, per Cent	Improvement, per Cent	Failures, per Cent	Died, per Cent	Recurrences, per Cent	Lost Sight of, per Cent
Group I (50-175X)	693	72	13	4	0.5	4	9
Group II (175-500X)	544	82	11	5	0.0	3	2
Group III (500-1500X)	158	95	5	1	0.0	0	0

Group I was treated by thin filters or no filters at all; the results were therefore relatively poor. Group II shows considerable improvement, and this was due to the use of thicker filter allowing more intensive radiation. Group III gave the best results, and in these the hard metal filters were employed.

It is important to note that the material selected in the three groups varied. The first group is composed of selected—that is, favorable—cases, with the exclusion of all cases that showed any indication of difficult cure. In Group II are included cases that had not been permitted to receive treatment in Group I, and Group III includes practically all the cases of myoma and metropathies that came to the clinic. This is an index of the confidence of the leaders of the clinic in this method, a proof that is further amplified by the fact that the number of failures and recurrences diminish in Groups II and III, in spite of the broadening of the indications for treatment. This is partly due, of course, to improved technique.

With such results of radiation before us it is difficult to escape the conclusion that the great majority of myomata and metropathies should not be brought to the operating table. It matters not how elegant the technique of such operations, how good the operative results, one factor will always weigh heavily against the operation and in favor of radiation, namely, that the operation in large unselected series of myomata and metropathies is accomplished by a primary mortality of 3 to 5 per cent.

When the public awakens to the fact that Roentgen therapy in myomata and metropathies is equally as successful and less dangerous than operative procedure it will demand its employment in these cases.

The opponents of deep Roentgen therapy in gynecology, for want of no better argument, raised the point that so many fibroids are found at operation to be sarcomata. They assume that had these patients been radiated they would have invariably died from the ravages of this disease. Let us see on what facts they premise this argument. The masterful compilation by James Ragland Miller

throws an entirely different light on the subject. The following table shows conclusively that in more than 10,000 cases of myomata which came to operation only less than 2 per cent. were sarcoma. In the next table you will observe that in more than 6,000 radical myomectomies the mortality rate was practically 5 per cent.

Occurrence of Sarcoma.

	Myoma	Sarcoma	Per Cent.
Compiled from 26 operators. . .	9750	192	1 96
Lewis .	1518	22	1.4
Olshausen .	6470	77	1.2

Radical Myomectomies.

	No. of Cases	Deaths	Per Cent.
Compiled from 22 operators. . . .	6646	324	4 87
Doderlein Krönig ..	1982	99	5.00

Not content with the presentation of facts as noted in the foregoing tables, Miller investigated the operative results of sarcoma in 180 cases and found that only 23 or 12.7 per cent. remained free from recurrences 12 months after operation. Roentgen radiation combined with surgery would have saved twice as many or more.

Operative Results of Sarcoma.

	No. of Cases	Died	Not Observed More than 12 Months	Free From Recurrence 12 Months After Operation.
Compiled from 13 references and operators...	180	81	76	23, or 12.7%

Miller also states that "since October 10, 1906, all myomata removed by operation in the Freiburg Frauenklinik have been carefully examined in the pathological institute under the control of Professor Aschoff. Up to February 7, 1911, among 249 myoma cases not a single sarcoma was found. Between February 7, 1911, and July 28, 1912, there appeared suddenly 5 sarcomata among 69 cases. It would be wrong to draw any conclusions from either series of cases.

"In the space of time between January 1, 1909, and February 7, 1911, 47 myoma cases were treated entirely by *x*-rays, between February 7, 1911, and July 28, 1912, 138 myoma cases were rayed. No one of these has up to the present time shown signs of malignancy."

"Among the 318 operated myomata were five sarcomata, *i.e.* 1.6 per cent. If we reckon the *x*-ray cases with these, we should get 501 myomata with 5 sarcomata, or 1 per cent. Furthermore, had we as a matter of principle treated every case with *x*-rays, we should still have rayed only 3 out of the 5 sarcomata. Case 2 was pregnant and Case 5 was previously diagnosed. Again, Case 1 died after operation. She could not have done worse had she been treated with *x*-rays, the probabilities being in favor of prolongation of life for several months." (*Surgery, Gynecol. & Obst.*, March, 1913.)

Now, as to the indications for deep Roentgen therapy in metrorrhagia at or near the menopause. Radiation is *always* indicated in climacteric and preclimacteric bleeding from the uterus. This should be preceded, if possible, by a microscopic examination of scrapings from the uterine mucosa in order to exclude a malignant degeneration of the mucosa.

In all cases of fibroids where the patient suffers from marked anemia or myocarditis or from renal disease or from any other disease that would endanger the life of the patient if subjected to surgical measures deep Roentgen therapy should be done. The one exception would be in cases where the size of the myoma caused dangerous pressure symptoms of equal gravity as an operation for possible relief.

In all cases of fibroids where deep Roentgen therapy fails to reduce the tumor or arrest the bleeding the patient should be referred for operation.

The symptoms produced by myomata are usually considerably improved or completely removed by radiation. The hemorrhages are converted to a normal menstrual type. Oligomenorrhea or amenorrhea are attained. The general condition is improved, and the concurrent symptoms are slight.

The percentage of completely cured cases is high. Permanent cures are obtained with certainty in suitable cases. A small number of myomata remain uninfluenced by radiation. Such cases as have been radiated can still be treated surgicallly if the symptoms justify operation.

Not all myomata are adapted for Roentgen therapy. The contraindications are: (1) Malignancy or a suspicion thereof; (2) large tumors causing severe pressure symptoms; (3) submucous myomata; (4) suppurative or degenerative myomata; (5) cases in which diagnosis of myomata cannot be made with certainty; (6) adnexal complications, such as salpingitis or similar inflammatory processes.

304 Rhode Island Avenue, N. W.

A UROLOGICAL CASE THAT TEACHES THE NECESSITY OF SCIENCE, SYSTEM, AND COMMON SENSE.*

By G. S. PETERKIN, M.D., F.A.C.S.,

SEATTLE, WASH.

The rules of the Swedish Hospital Clinical Society require that a complete history of an authentic case be presented, but not in a manner that will disclose the diagnosis, for the diagnosis is to be made by the members of the society. On invitation the following urological case was presented. This case was selected because a common, ordinary, every day case, yet an example of a class in which the greatest percentage of mistakes in diagnosis is made, due, no doubt, to the simplicity of the symptoms complained of.

The Clinical Case.—M-409, male, aged 19, referred by Dr. G. Ormond, Cumberland, Wash. First visited office on March 24, 1915. Complaint: Urethral discharge; exposure to infection July 19, 1914; discharge commenced three days after exposure. Diagnosis: Chronic gonorrhea. Previous treatment: Local injections and internal medication to within three weeks of consultation. At no time was there a discharge sufficient to soil clothing. Subjective symptoms: Sensation of burning on urination and increased frequency; frequency every four to five hours instead of every six. Discharge more profuse each morning, and could be obtained by stripping during the day. No microscopic examination made.

Clinical symptoms: Complement fixation tests for syphilis and gonorrhea negative. Specimen of urine voided at night in sterile bottle was normal in appearance and color; reaction acid, S. G. 1.030, no albumin,

*Read before the Swedish Hospital Clinical Society, Seattle, Washington, December 7, 1915.

no sugar, no casts. Morning specimen, patient retaining urine eight hours; this urine centrifuged and examined for bacteria. None present. Patient instructed to hold his urine for four hours, and following examination made: Two slides of anterior urethra taken. Few pus cells and staphylococci.

Anterior urethra then irrigated with sterile salt solution to the compressor urethrae under gentle hydrostatic pressure in order to wash out thoroughly any pathologic material hidden between the folds of the collapsed anterior urethra, irrigating fluid caught in sterile basin and placed in sterile ignition tubes (Fig. 1), marked 1, centrifuged, examined microscopically; findings negative. Patient then instructed to void urine retained in the bladder four hours, in sterile ignition tubes 2, 3, and 4. These specimens were centrifuged with the following results: Tube 2 showed condition of posterior urethra, numerous leukocytes, considerable mucus, no bacteria. Tube 3 showed extent of inflammation of posterior urethra, negative. Tube 4 showed condition of bladder, negative.

The patient's bladder was then filled under hydrostatic pressure with sterile salt solution to its fullest capacity. Fifty c.c. voided in Tube 5, or control tube. This was centrifuged and the findings were negative. Therefore I was able to state that the whole urethral canal was now free from infection, since cleansed by anterior irrigation, urination, and twice by sterile salt solution used to fill bladder. The urethra having been thus cleansed and rendered sterile, the prostate and seminal vesicles were massaged, some of the expressed contents placed on warm slide, examined microscopically; they showed spermatozoa normal in size, shape, number, and activity. Therefore, the testicles and seminal vesicles were normal. The sterile salt solution retained in the bladder was now voided, washing out thoroughly from the urethra all contents expressed by massage from the prostate and seminal vesicles. This specimen centrifuged and examined. Findings negative.

Clinical examination of external genitals showed no abnormality. Palpation of prostate with bladder full, bladder empty, and sound in urethra, showed normal prostate. Urethroscopic examination, cystoscopic examination, bougie-à-boule and sound, negative. Yet there is no question, even though all the clinical and

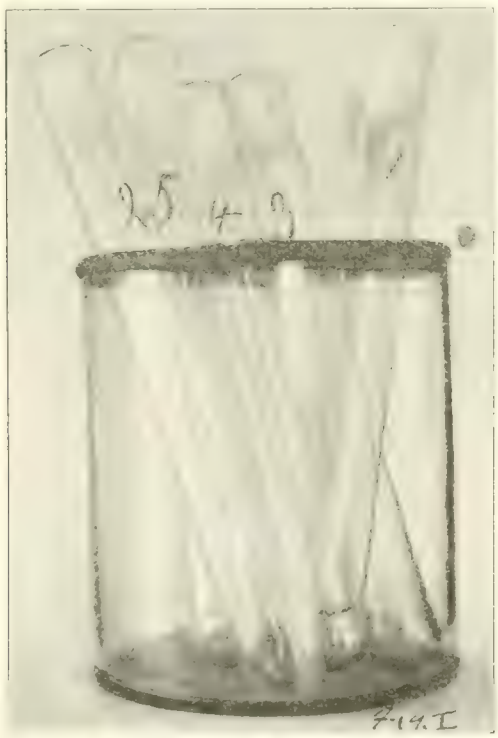

Fig. 1.—Battery of ignition tubes.

laboratory reports showed negative results, that the urethral discharge complained of by the patient did and does exist. It was sufficiently apparent to indicate treatment to a physician.

Question: What are the diagnosis and treatment?

Diagnosis.—The diagnosis is a guilty conscience combined with a crude and imperfect knowledge of the physiology of the sexual organs. Admitting exposure to infection and providing no pathologic condition exists, there are six explanations, any one

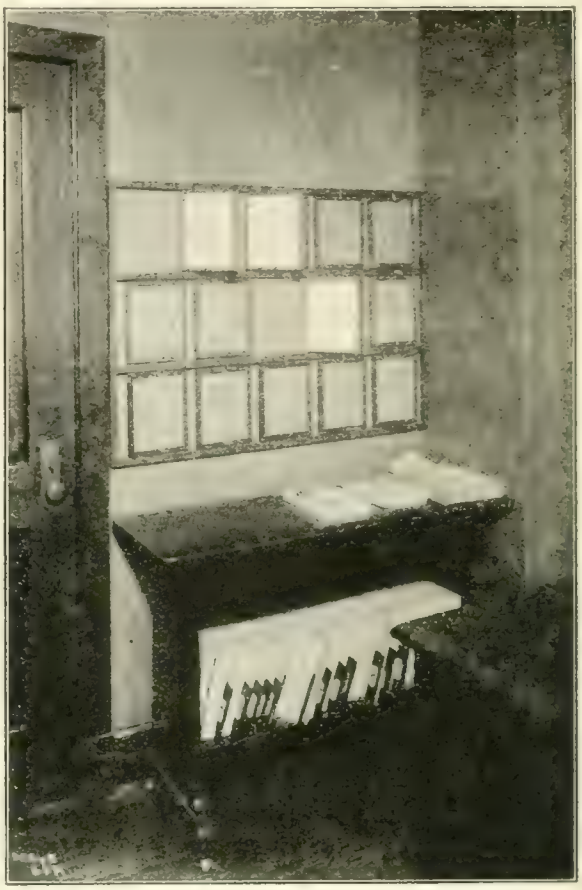

Fig. 2.—Wall charts, open and closed. The economy of time effected by the above arrangement is evident.

of which or any combination of two or more of which, can cause a non-bacterial urethral discharge, innocent in its innocuousness, yet too often credited with the militancy of la Goutte Militaire. These are: (1) Erection and collapsing of organ. (2) Continence, with discharge of overflow from prostate and seminal vesicles. (3) Frequent stripping of normal urethra. (4) Local treatment, no infection existing. (5) Concentrated urine, or urine containing excess of phosphates, uric acid, etc. (6) Meatotomy, producing a non-bacterial catarrhal mucous membrane. In this instance it was a combination of 1 and 3.

Treatment.—The treatment is psychological. Psychological treatment, to be efficient, must be scientific. In other words, the physician's knowledge must be such that he is able to explain on a scientific basis existing phenomena, and above all, to impart this information in a comprehensive manner to the patient, irrespective of his social or mental status. Permission granted, I will here demonstrate the truly practical side of this case, the method of administering this psychological potion scientifically. Before doing this, however, it is desirable to make a few general introductory statements, the bearing of which, if not apparent now, will be sufficiently apparent before I finish.

It is true that 99 per cent. of all doctors practise medicine for a livelihood, therefore as a business; that the business man who can display and demonstrate the value of his wares to the greatest pos-

sible advantage, not only succeeds, but supersedes the man who does not. This is true in medicine, for the physician who can display his knowledge, who writes successfully or talks successfully, or both, succeeds and supersedes the man who does

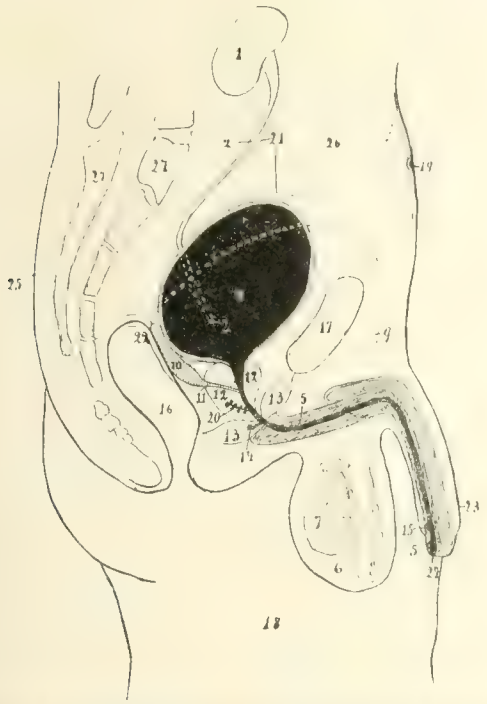

FIG. 3.—Cross-section of the male urogenital organs

not. Yet in this economic era, all businesses and professions, except that of medicine, recognize this fact to the extent not only of devising but continually improving means and methods whereby they can inculcate this principle of action in the individual.

It is characteristic of mortal men that even the best may err, fail. This element, the element of chance, always exists, in every pursuit of life, and medicine is no exception. The battle cry of today, the battle cry of art, science and commerce, is *efficiency*. *Efficiency* signifies here in the profession of medicine, as it does in any walk of life, the reduction to the minimum of this element of chance by thoroughness in detail, using all methods of examination and then checking one method by the other, and finally, as a business man would say, balancing the account. The account balanced, outline the principle of action, then do not hesitate, but go full steam ahead. In other words, possessing efficiency, the time has arrived that medical men should show the public that the scientific physician sells scientific medicine and gives full value received, depends, like the modern salesman, on the quality and the character of the goods (scientific knowledge) he sells, not like the old time drummer, on the antiquated and unsystematized methods of personalities, good fellowship, storytelling, gossip, treating, pretension of friendship, etc., which the medical man of today still employs.

We now come to the gist of the subject—the real object of presenting the case, which is to illustrate the art and method of selling scientific knowledge and the necessity of so doing. In this instance, by this method only—the employment of science, system, and common sense—can we administer this psychological potion scientifically.

First and foremost, classify your patient. Here we have the patient's character, mentality, and environment—a lusty farmer lad of nineteen. Therefore, we must use illustrations and word pictures that will give him a definite mental conception of existing conditions—conceptions so clear that there will be no possibility of doubt in his mind as to the accuracy of the information imparted.

In the private office are wall charts (Fig. 2), which when not in use are kept closed. These charts are diagrammatic anatomical drawings, used to illustrate points made in explaining to the patient his condition. Fig. 3 is the first of the series and is enlarged so as to be distinct.

After the examination, standing in the private office before the open wall charts, the following explanation is given the patient:

Doctor (pointing to corresponding number or anatomical part as explanation progresses): "This drawing (Fig. 3) shows the urinary and sexual system in a man. The urine is manufactured in the kidneys (1), goes down through this canal (2) to the bladder (4), the reservoir where it is stored. When you pass your water, it comes out of the bladder (4) into this canal (5), then goes through it out of the meatus (24) or mouth of the penis. The semen, or the fluid in the man which makes a child, is manufactured here in the testicles (7), comes up through this canal (9), to the reservoirs (10) where it is stored until used. When used it comes out through the small canal (11) into the same canal, the urethra (5), through which the urine is passed, and then goes out through the mouth of the penis, or meatus (24). (13) is the shutoff muscle. This is the muscle which you can open or close when you want to pass your water; therefore, it is under the control of your mind. It divides the canal (5) into a front and back part. Back of this muscle (13), between it and the mouth of the bladder, is a gland the size of a horse-chestnut, called the prostate (12). This gland is made up of fifteen or twenty other glands like bunches of grapes (20), all of which open into the canal (5) and discharge a fluid which passes through the same canal through which the urine and semen pass.

"You see how all these parts connect with one another. Now the germ, or bacteria, which causes gonorrhea, or clap, looks like a coffee bean (illustrated). To look the size of even the head of a pin under the microscope (a magnifying glass) it has to be magnified or enlarged twelve hundred times. To know how small the germ is, try to think of something twelve hundred times smaller than the head of a pin. You can't do it! Yet, because this bug is so tiny, and because the sexual and urinary tracts are connected, this germ which causes gonorrhea may start at the meatus (24), enter any of the glands of the urethra (5), pass back of the shut-off muscle (13), enter any one or all of the different glands of the prostate glands (12), pass into the bladder (4), and up to the kidney (1). Or it may pass behind the shut-off muscle (13), enter the canal (11),

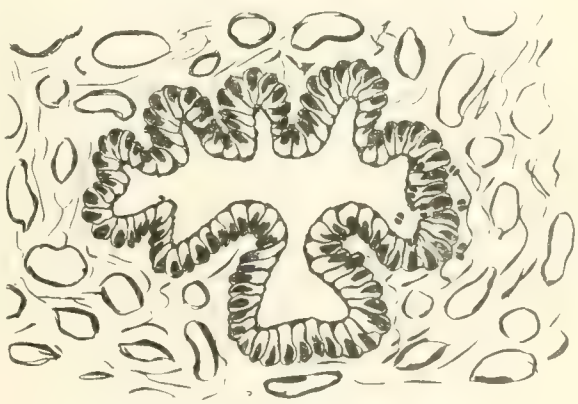

FIG. 4.—Cross-section of the urethra.

the opening to the reservoir for storing semen, and so reach this reservoir, (10), from there it may pass down through the canal (9), to the testicles (7), and then the testicles swell. Since this germ is so small and the sexual and urinary tracts are so connected, you can

see an examination is no good unless it prevents the overlooking anything so small as this germ in a field so great as these connected tracts.

"Now, this is the way we go over this whole tract so that we are dead sure we do not miss any of the germs, if they are present: First we took some secretion or fluid from the front part of this canal (5), put it on slides, or little pieces of glass, and put it under the microscope and examined it to see if the germs were there. If we cut the penis across, we see that the inside of it is thrown into folds (Fig. 4), for anything that expands and collapses must be thrown into folds when collapsed. Therefore, we next wash out the front part of the canal (5) from the meatus (24) to the shut-off muscle (13) with a sterile solution (absolutely clean water), so as to stretch out every fold and get any germs that might be hidden in these folds. This fluid or solution was caught in a sterile, or perfectly clean, basin, centrifuged and examined for germs. You don't know what centrifuged means, do you? Well, a centrifuge works like a milk separator—you put the fluid in and whirl it around very rapidly and the solid part goes to the bottom. This bottom part we examined, for it will show the germs if there are any present.

"Then you passed your water into three tubes. The first urine passed washed out the back part of this canal (5) between the mouth of the bladder and the shut-off muscle (13), just as water running through a slough will wash out dirt and sticks, the second tube would wash out any bugs that were left after the first urine had passed over this part, and the last tube, which is filled with the very last drops of urine in the bladder (4), would show if there was trouble in the bladder. These tubes were centrifuged also, and examined. Then we filled your bladder with a sterile, or perfectly clean, solution, and you passed out fifty c.c.—remember, up to the mark on Tube 5? This water coming out cleansed the entire canal again. You see this water passes over this canal (5) twice, once when we put it in, and once when you passed part of it out. So if this solution in Tube 5 is clean, contains no bugs, we are absolutely sure that the canal (5) is perfectly clean.

"Knowing the canal (5) is clean, then I put my finger in the rectum (22) and massaged the prostate (12), and the seminal vesicles (10), pressing out any fluid or secretion in them into this canal (5), the urethra. Some of this fluid showed at the meatus or mouth of the penis (24), and I put it on two warm glass slides and examined it under the microscope. You see the fluid that comes from the seminal vesicles contains the spermatozoa, or male seed (illustrated). These spermatozoa or seed are alive and have motion, moving like a tadpole. By their appearance, if they are alive and are not misshaped, we can tell the condition of the seminal vesicles (10) and the testicles (7), for if the seed or spermatozoa are all right, the testicles, that manufacture the spermatozoa, must be all right. Then you voided the rest of the fluid in the bladder and this washed out every bit of fluid that we had pressed out from the glands (12 and 10), so that none will be missed. This was centrifuged and examined.

"Now, all these fluids, the first used to wash out the front part, the three tubes of urine, and the two tubes of solution which we put into the bladder, were centrifuged and examined and no germs found in any of them. No germs were found on the slides we took, either. Yet to be doubly sure, we took the blood and examined it to see if gonorrhea was present, but we found no sign of the disease.

"In addition to all this, you were examined by the urethroscope, an instrument with an electric light with which one can see the urethra or canal (5), and by the cystoscope, another instrument with electric lights, with which you can examine the bladder (4). Therefore, if the microscopic examination showed nothing, and we can see nothing, feel nothing, there must be no disease, and there is none. So the question comes up, since you knew there is no disease but that you have the discharge, what makes this discharge?

"The cause of it is as follows: If I turn my lip down, you can see many little drops of water come out from the lining of the lip. These drops of water are saliva or mucus, which comes from tiny glands, so tiny you cannot see them, the purpose of which is to lubricate, or oil the lining of the mouth so that we can talk and eat easily. The penis, you know, is an organ that gets larger and smaller, its lining membrane to stretch must be oiled or lubricated or it will crack, as the lips do when dry and chapped. Now all along the canal (5), there are just as many of these tiny glands as there are in the mouth. You wake up every morning with an erection, don't you? The penis, when erect, hard, measures about six and one- half inches, and when collapsed, not hard, measures only three and one-half inches. When it is erect, Nature naturally thinks that sexual intercourse is going to take place, and therefore lubricates or oils the whole canal (5) with moisture from these glands, so that the fluid, or semen, which is to pass out will slip easily along the canal, for upon the force with which the semen leaves the canal depends the power to impregnate the female, that is, to shoot it into the womb and make the woman have a child. Now, when this act (going with a woman) does not take place, what happens? The organ goes down from six inches to three inches, and all this lubricating fluid is squeezed together. The penis now hangs down and naturally, following the law of gravity, the mucus, or oil, goes toward the mouth of the penis, and very often overflows the mouth (24). This is the discharge you see every morning. This discharge is clear and is present only in the morning, or during the day if you strip the organ, and by so doing squeeze this normal or natural secretion, which is always present along the canal (5), toward the meatus (24) and make a drop. This secretion or discharge is perfectly normal, and you would not see it unless you stripped the penis, and the more often you do this the more secretion you will get, since you irritate the little glands by rubbing them together, and nature, to relieve this irritation, makes more fluid for lubrication, just as the lining of the mouth makes more saliva when you put something hot in your mouth and irritate it. So all you have to do is not to squeeze the penis, go home and forget about the disease, because you haven't it."

Incidentally, the mother of this boy brought the patient to the office. She had spent considerable money in trying to have him cured and was much distressed in mind, having heard of the horrors, dangers, and damnations of venereal diseases, as depicted by the theoretical moralist who would reform through fear. She was not in the office when the explanation was made to the boy. Therefore the following note was penned, to insure instructions being carried out and to provide against further worry on her part:

"My dear Mrs. ————: After a thorough examination of that boy of yours, I find, as I should have liked to explain to you in detail, that there is nothing, absolutely nothing, the matter with him. The only thing he needs is plenty of hard work—put him at it. Then he will forget about his infirmities, which are only imaginary."

1102-1112 Cobb Building.

PULMONARY TUBERCULOSIS AND BODY WEIGHT.

By ISIDOR N. KAHN, M.D.,

NEW YORK.

ADJUNCT ATTENDING PHYSICIAN BRONX HOSPITAL; CHIEF OF CLINIC GOUVERNEUR HOSPITAL.

The lay conception of one suffering from pulmonary tuberculosis is that of a person who is rapidly losing weight. To this idea the popular term "consumption" is due. The physician's mind, too, often harbors this belief. In his premedical career he entertained the lay idea of the disease, and he often subconsciously continues sharing it, despite the fact that he may have seen numerous instances of patients under his treatment for the disease who either have not lost materially or have even gained weight.

The present report is based on the observation of over 200 cases treated during the year 1912 in the tuberculosis clinic of Gouverneur Hospital. The cases comprise tuberculous patients in all stages of the disease. No attempt has been made to select

cases free from complications. The great majority of the patients are Hebrews. Both sexes are considered. Children under fifteen years of age are not included. The patients were under the care of the clinic for a time varying from three years to a few months or even less.

The fact should be borne in mind that the majority of the patients treated at the clinic are very poor. Many subsist wholly, others partly, by the support of charity organizations. Many rely on the clinic for their only extra source of nourishment—a bottle of milk daily. The few who support themselves often are engaged in work requiring great muscular exertion. None of the patients cited in these tables that follow have had any exceptional treatment outside of the ordinary routine care of the clinic.

It is of interest that at the latest Congress on Tuberculosis held in Washington, D. C., nothing was said concerning the loss of weight in tuberculous patients. Prof. Th. Sommerfeld[1] gives a description of the work and results of the Berlin homes for tuberculous patients for the four years from 1903 to 1907. His report is based on a total of 10,245 cases, in all stages of tuberculosis, with and without complications. He divided his patients into nine groups, as follows:

1. Patients suffering from pleurisy, without proof that tuberculosis is present or that the pleurisy is of tuberculous origin.
2. Patients with suspected catarrhal condition of the apex of a lung without tubercle bacilli in the sputum, and even without expectoration.
3. Positive cases of slight extent, without complications and free from fever.
4. Positive cases without fever, and without complications, of such extent that work had to be restricted.
5. Positive cases without complications, and mostly free from fever, of such extent that work had to be permanently restricted.
6. Positive cases, with fever and without complications.
7. Positive cases, mostly free from fever, complicated by disease of the larynx, or of the intestines, or of both.
8. Positive cases, with fever, complicated by disease of the larynx, or intestines, or both.
9. Patients with chronic bronchial catarrh, emphysema and asthma.

"It is a fact," observes Prof. Sommerfeld, "that even among advanced tuberculous cases considerable increase in weight and notable improvement are obtained." The average increase in weight varied in the different groups between 5.97 kg. and 1.5 kg., and only in groups No. 6 and No. 8 did the number of patients discharged without improvement exceed the number improved. No special treatment is used in the Berlin sanatoria, the general treatment consisting mainly of fresh air and good nourishment.

Our investigations permit the same conclusions regarding the weight of our tuberculous patients. Not only do the patients gain weight during the period of treatment at the clinic, but in a great number of cases the weight of the patient exceeds the normal or standard weight of an individual of the same age.

What is the normal weight of an individual? There is no exact standard. If we compare the various tables that are in general use we find a certain amount of variation. According to Mac-Glogan[2] the normal weight of an individual in pounds is the cube of his height in inches divided by 2000. Thus a person 5 feet 6 inches tall should weigh between 143 and 144 lb. Dr. Green[3] gives the weight for that height as 152 lb. The Metropolitan Life Insurance Company's table differs from both. It is customary, therefore, to allow a variation of 10 per cent. above and below the standard, and yet consider the individual as having a normal weight.

I have arbitrarily divided my cases into three groups. Group 1 comprises the cases between the ages of 15 and 30. Group 2 includes all patients between 30 and 45 years of age. In group 3 are all cases over 45 years of age. Male and female patients are considered separately. Each group is further classified into the stages of the disease in which the cases happen to be.

In Table No. 1 (males, first stage, ages 15 to 30), the total weight of the patients is 4,854.75 lb., and the total standard weight is 4,984 lb. The total deficit is 130.25 lb.

TABLE I.—MALES, FIRST STAGE, AGES 15 TO 30.

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	7	166¾	150
5	2	160¼	147
5	1	116	120
5	10	152	164
5	8	151	154
5	2	153	125
5	10	168	164
5	1	101	120
5	2½	150¼	127
5	2	134	125
5	3	121	130
5	3	141½	130
5	6½	122	147
5	4	118¾	135
5	10	169¾	164
5	6¼	156¼	146
5	6	136	145
5	2½	116	127
5	9	149	157
5	5	140	141
5	6	137¼	145
5	10	161¾	164
5	4¾	140	139
5	6	143½	145
5	3¼	154	133
5	8	144	154
5	4½	135¾	138
5	10	154	164
5	1	103½	122
5	7½	150¾	152
5	6	146	145
5	8	147	154
5	4½	141½	138
5	8	153¾	154
5	5	128¼	141
		4,854¾	4,984

In table 2 (males, first stage, ages 30-45), the total weight of the patients is 1,670.75 lb. Their total standard weight is 1,709 lb., giving a total loss of only 38.25 lb.

TABLE II.—MALES, FIRST STAGE, AGES 30 TO 45.

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	5	121	141
5	3½	135	131
5	5½	145	142
5	7	141	150
5	5	168	143
5	5½	137	142
5	5½	138	142
5	7½	137	141
5	5	143	141
5	8	163¾	154
5	5½	118	142
5	5½	135	142
		1,670¾	1,709

In table 3 (males, first stage, ages 45 and over), the total weight at present is 846 lb., and the total standard weight is 872 lb., a loss of only 26 lb.

TABLE III—MALES, FIRST STAGE, AGES 45 AND OVER

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	6	154½	145
5	3¼	129¾	130
5	9	131¾	157
5	8	144½	154
5	5	151	141
5	6	134½	145
		846	872

In table 4 (males, second stage, ages 15 to 30), the total present weight is 1,943 lb. The total standard weight is 2,036 lb., and the loss is 93 lb., by no means a great loss in weight for young second-stage cases.

TABLE IV—MALES, SECOND STAGE, AGES 15 TO 30

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	5	138¾	141
5	5	141¼	141
5	6	179¾	145
5	3¼	129¼	131
5	0½	119½	118
5	4½	120¼	138
5	5	117¾	141
5	4	131½	135
5	0¾	119	119
5	4½	115½	138
5	9	140	157
5	6	123	145
5	2	115½	125
5	2½	113½	127
5	4	138¼	135
		1,943	2,036

In table 5 (males, second stage, ages 30 to 45), the total present weight is 2,661.5 lb., the total normal weight is 2,687 lb., and the loss is only 25.5 lb.

TABLE V—MALES, SECOND STAGE, AGES 30 TO 45

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	0	119¾	116
5	8¾	170½	156
5	5	121¾	141
5	4½	184	138
5	9	133¼	157
5	7	184½	150
5	7	152	150
5	4	132	135
5	4	125¼	135
5	5	132	141
5	5	114	141
5	5	122½	141
5	5	112½	141
5	2½	125	127
5	8½	139½	156
5	6	124¾	145
5	7	163¼	150
5	4½	130¼	136
5	3¼	144¼	131
		2,661½	2,687

In table 6 (males, second stage, ages 45 and over), the total present weight is 2,127 lb., and the total standard weight is 2,130 lb. The loss here is only 3 lb.

TABLE VI—MALES, SECOND STAGE, AGES 45 AND OVER

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	2½	115	127
5	5	129½	130
5	5	143½	141
5	2	117½	125
5	4	141½	135
5	5	143¼	141
5	0½	147½	118
4	10	142	108
5	2	128½	125
5	6	142½	145
5	4	121¼	135
5	6½	128	147
5	4	135	135
5	7¾	150	153
5	4	117	135
5	3	140½	130
		2,127	2,130

A considerable loss of weight is observed in all ages in the third stage of the disease. The total present weight of the seven male patients in this stage is 844.25 lb., and the total standard weight is 1,012 lb. There is therefore an average loss of 24 lb. This should naturally be expected in this stage.

TABLE VII—MALES, THIRD STAGE, AGE 15 TO 30

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	7	104½	150
MALES, THIRD STAGE, AGE 30 TO 45			
5	11	140¾	169
5	5½	125	143
5	6	91½	145
5	3	109½	130
MALES, THIRD STAGE, AGE 45 AND OVER			
5	6½	147	147
5	2¾	126	128
		844¼ Total	1,012 Total

No loss of weight is found in females of all ages in the first stage. Indeed, some gain is observed. Pregnancies and the normal tendency of women to obesity may explain the total gain. The same may be said of women in the second stage of the disease.

In table 8 (females, first stage, ages 15 to 30), the total present weight is 2,269.5 lb. and the total normal weight is 2,255 lb., a gain of 14.5 lb.

TABLE VIII—FEMALES, FIRST STAGE, AGES 15 TO 30

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
4	8½	99¼	106
5	2	126½	120
4	8	104½	104
4	10½	118½	109
5	3	160½	126
5	3¾	152	129
5	1	111	118
5	0	112½	114
4	11¼	106¼	112
5	3	132½	126
4	9	104½	108
5	5	102½	133
5	2½	121	123
5	5	122	133
5	0½	106½	116
5	0½	118	116
4	11	122¼	111
5	2¼	135	122
5	4	114	129
		2,269½	2,255

In table 9 (females, first stage, ages 30 to 45), the total present weight is 1,397 lb., and the total standard weight is 1,293 lb., a gain of 104 lb.

TABLE IX—FEMALES, FIRST STAGE, AGES 30 TO 45

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
4	9	111	108
4	11	104½	111
5	0	121¼	114
4	8	104½	106
5	4	147½	129
4	10¾	134	110
5	1¼	172	119
5	4	144	129
4	11½	125¾	113
5	3¼	121	127
5	2½	111½	124
		1,397	1,290
FEMALES, FIRST STAGE 45 YEARS AND OVER			
5	3	157½	126

In table 10 (females, second stage, ages 15 to 30), the total present weight is 1,779.75 lb. The total standard weight is 1,681 lb. There is a total gain of 98.75 lb.

Table X—Females, Second Stage, Ages 15 to 30

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	1½	106¼	120
5	0	102	114
5	0¼	148	115
5	4	138¼	120
5	3	122½	126
4	11	128½	111
4	11	149½	111
5	3	140½	126
5	2	113¼	120
4	11	108¼	111
5	3	140½	126
5	3	142	126
5	3	117	126
5	2	123¼	120
		1,779¼	1,681

In table 11 (females, second stage, ages 30 to 45), the total present weight of the patients is 2,739 lb., and the total standard weight is 2,570 lb. The total gain is therefore as much as 169 lb.

Table XI—Females, Second Stage, Ages 30 to 45

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
4	10½	112½	109
5	0½	110¾	116
4	11	133	111
4	10	99	108
5	3	178	126
5	2	132½	120
5	5½	106	135
5	0	121½	114
4	10	145½	108
5	1	108	118
5	0¼	127	115
4	10	165	108
4	10	122½	108
5	0½	111	116
5	4	121½	129
5	3	119½	126
4	11¼	112½	112
4	10	122½	108
4	10¾	107¾	110
5	3	107¾	126
5	4	142¾	129
5	1¾	132½	118
		2,739	2,570

There are but six cases in table 12 (females, second stage, ages 45 and over). These are too few to warrant any conclusions. The total present weight of these six cases is 672½ lb. The total normal weight is 630 lb. So that even here there is a gain of 42½ lb.

Table XII—Females, Second Stage, Ages 45 and Over

Height Ft.	In.	Present Weight Lbs.	Normal Weight Lbs.
5	1	118	118
5	1	150	118
5	1	126	118
5	1½	153½	131
5	6	125	145
		672½	630

As was previously observed, a considerable loss of weight is evident in the third stage of the disease. This is, however, to be expected.

The total present weight of the nine patients in this stage is 1,053½ lb., and the total normal weight is 1,115 lb. The total loss is 61½ lb.

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1. Sommerfeld: "Tuberculosis." (Berlin) Vol. VIII., pp. 451-462, 1909.
2. MacGlogan: "Encyclopedia and Dictionary of Medicine and Surgery."
3. Green: ',Medical Examinations for Life Insurance."

1056 Hoe Avenue

Life-Insurance Losses.—It is estimated that the losses of the British life insurance companies during the first thirteen months of the war exceeded £5,500,000, or $27,500,000.

FISTULA OF THE RECTUM.

By CHARLES J. DRUECK, M.D.,
CHICAGO

A FISTULA is a nongranulating sinus within the rectum or about the anus, with one or more openings. This condition is sometimes called fistula in ano, a term which is incorrect and misleading and should be discouraged, as other tissues are always involved and the anus is not always included.

The sinuses nearly always result from abscess in the perirectal or ischiorectal tissues which has opened into the rectum or on the skin surface near the anus. When the abscess develops in the ischiorectal fossa, it burrows outside or above the sphincter; the levator ani muscle forms its upper limit, and the abscess extends along the lower surface of that muscle into the rectum, usually at the upper level of the sphincter. The resulting sinuses are large and often branched or multiple, and their external openings may be quite a distance from the anus. The whole perineum and buttock may be indurated and hard; or if the abscess has emptied and refilled several times, the parts become honeycombed with a great many fistulae which communicate with one another, or with a common abscess. Some part of the labyrinth is always forming an abscess, and causing intense pain. As a result, the sufferer usually becomes an opium wreck. Kelsey reports between twenty and thirty sinuses in one of these cases. The sinuses thus formed do not heal spontaneously because of the retention of septic excretions and feces in the sinus, and also, on account of the dependent position of the veins when the patient is sitting or standing, which causes a sluggish return circulation, the parts being constantly disturbed during defecation or any movements of the pelvis or legs. The small exit of the fistula helps to retain infection, except in the tubercular fistula, where the opening is usually large enough, but the caseous degeneration of the abscess wall promotes a fistula.

The abscess may form anywhere about the rectum, but is found most frequently in the following locations: (1) Beneath the skin near the anus. (2) Between the mucous and muscular coats of the rectum. (3) Between the rectum and the levator ani muscle. (4) In the ischiorectal fossa.

Abscesses of the first location are the most common, and a resulting fistula is just beneath the skin and does not involve the sphincter. The internal opening is in the mucous membrane and within the grasp of the external sphincter.

Fistula are classed as. (1) Complete: (*a*) ordinary; (*b*) external; (*c*) internal. (2) Incomplete or blind: (*a*) external; (*b*) internal. (3) Horseshoe. (4) Rectovaginal. (5) Rectovesical.

The ordinary complete fistula is a sinus with an internal opening into the rectum and one or more openings on the skin. This is the most common type of fistula, and hence its name. An external complete fistula is one with both of its openings on the skin and not communicating with the rectum, while an internal complete is one with both openings within the rectum and not involving the skin. Not every fistula communicates with the rectum, although the great majority of them do.

An incomplete or blind external fistula is one which begins in the perirectal or ischiorectal structures and opens upon the skin but does not extend into the rectum. An incomplete or blind internal fistula has an opening into the rectum and a sinus

extending into the perirectal tissues, but has no other opening into the rectum or upon the skin. It differs from the complete variety in that there is a broad undermining of the mucous membrane instead of narrow channels. The internal opening is situated often at the base of an ulcer or hidden in the folds of mucous membrane.

The horseshoe fistula is nearly always an old case, and takes its name from its fancied resemblance to a horseshoe in shape. In this variety the original openings have become blocked, and the retained pus has burrowed in a new direction and found an outlet. Thus a typical horseshoe fistula has one opening within the rectum and one or more external openings on either side of the anus. The pus burrows around the rectum in the loose areolar tissue and forms a new opening on the opposite side of the anus from the first. In burrowing the pus generally passes posterior to the anus, and very often the internal opening is found in the median line posteriorly. There are many deviations from this typical description, as a horseshoe fistula may have only one external opening, and yet the pus may have burrowed all around the rectum and the resulting fistula be either complete or incomplete in form.

Rectovaginal fistula are of two kinds: First, those high in the vagina, and, second, those in the lower part. On the whole, they are uncommon. If the opening is small, there is little escape of feces so long as the stool is formed; but one of the most common and annoying symptoms is the escape of intestinal gas which produces a bubbling or hissing noise. The patient has, of course, no control over the escaping gas, and the odor finally forces her to avoid society and to stay at home, until she becomes melancholy from brooding over her trouble. A fistula in the upper part of the vagina is usually due to cancer of the cervix, which has generally progressed so far that curative treatment is out of the question. In the lower part of the vagina and at the vulva, fistula often results from imperfect union in repairing a torn perineum or from the sloughing of the septum after tedious parturition. Enterovaginal fistula or openings of the small intestine into the vagina, are traumatic openings produced during an operation, or else either congenital or articicial vaginal ani. Rectovesical fistulae, like rectovaginal, are the result of either traumatism or malignant disease.

Fistula about the anus is a very old disease, being described by Celsus and Hippocrates, whose etiology holds good to-day. Very few cases are seen early in their course by the surgeon, as the sufferer first tries all the domestic remedies, because of the old superstition that a fistula is the vent of the system for certain poisonous humors, which are retained if the fistula is healed, and produce by their retention some other malady, of which consumption holds first rank.

Symptoms.—The first symptom which attracts the patient's attention is the local abscess which has the symptoms of any collection of pus, namely, redness, swelling, pain, and fever. The abscess ruptures and discharges its contents, relieving the local distention; the tissues are soft and tend to retract and contract, leaving only sufficient opening to permit the exit of subsequent discharges. The excretions of a recent abscess are thick, abundant and constant, but as the lining membranes grow old and are covered with lardaceous granulations, the discharges become thin, watery, and lessened in amount. After the abscess has emptied itself, the patient suffers no discomfort except the purulent discharge, which is always fetid in character and sometimes contains gas and feces, making it difficult to keep the parts clean. As the retained pus burrows, forming new abscesses and sinuses, the discharge gradually increases. When the discharge from a given sinus is small in amount and irregular in its outflow, the opening tends to become occluded and retention occurs; thus a new abscess is produced which ruptures through the old sinus or forms a new outlet. In this way two or more fistulæ often connect with a common abscess. In any case, if the discharge ceases or becomes irregular, always suspect new abscesses. The incomplete internal fistulæ are the most painful, because the retained pus causes pressure during defecation. Such a fistula cannot be diagnosed until a digital examination is made and the finger when withdrawn is covered with pus and blood; the feces also when formed are streaked with pus and blood. Constipation is induced from fear of pain during defecation, and the sufferer goes on in this condition for years before he seeks surgical relief.

Examination.—Much valuable information as to the character of the fistula and its extent is learned from the patient's description. If a slight abscess, recently ruptured and having a free discharge of a small amount of pus is found, a small fistula with openings near the external sphincter is indicated. The position of the patient for examination is largely a matter of choice. The lithotomy position is more advantageous where the trouble is at the anus or not too far within. The Sims position, the patient resting on the affected side, is preferred by many, especially when making a specular examination. When the trouble is high up within the rectum, the knee-chest position is better. No one position suits all cases, and even during the examination of a given case it may be of considerable advantage to change the position, because the entire field must be explored. Even if one fistula is found, a thorough search must be made for others or for other rectal troubles. With such an examination, the diagnosis is not difficult except in internal, incomplete, or in the horseshoe variety. Separate the buttocks by grasping the glutei on either side with one hand, the fingers reaching toward the anus, when by gentle traction the external fistulous opening, if near the anus, will be seen in a little depression or in the center of a mass of granulations in the radiating folds of the anus. The external opening may be, however, quite a distance from the anus, even out on the thighs or legs, and be so small as to escape a cursory examination unless a drop of pus be pressed out during the manipulation. It may be so small as to admit only a fine probe, except in tubercular fistula when it is usually ragged or appears as though in the base of an ulcer. By palpating about the anus, the tracts may be detected subcutaneously by their hardness, and by a finger within the rectum pressing toward the induration a drop of pus will usually exude from the external opening. The tract is sometimes direct from one opening to another, but there is not necessarily a sinus, the abscess may open directly on the surface. In a recent, straight fistula the external opening is large. Sometimes the tract is very circuitous, and the pus may burrow under the gluteal muscles and open in the groin, or on the thigh even as low as the popliteal space. Sir Astley Cooper mentions an autopsy where a fistula opened into the groin, but

he traced it back along the course of the spermatic cord and found it ended in apparently an ordinary fistula in the rectum.

The internal opening is frequently just above the external sphincter, and is found as an indurated spot or a raised mass or else as an ulcer with rough edges. All ulcerated and inflamed spots must be carefully examined, because they often contain the internal opening of a complete fistula or the opening of an internal incomplete.

In case the internal opening is not found, it may be located by injecting milk or some colored fluid through the external opening. The anus being dilated enough for inspection, the fluid will be seen as it comes through the internal opening into the rectum. Injecting hydrogen peroxide for diagnosis has been preferred because the gaseous disintegration dilates all parts of the sinus and bubbles through all the internal openings if more than one are present, but there is also the danger of driving infective material into new and healthy tissue. The short cylindrical speculum is always particularly serviceable in these cases. The internal opening is not always the upper limit of the fistula, but the mucous membrane may be undermined for several inches above the opening.

A word about probing a fistula: Probing at times other than when operating is objectionable and dangerous, because it is painful and may produce new channels, and, besides, affords no information but what is gained from careful inspection and palpation. If the probe is forced out of the sinus and into the tissues, it may mislead the examiner as to the condition of the old fistula, besides carrying infection into new fields and thus forming new sinuses. I never probe a fistula until I am ready to operate, nor do I hunt unnecessarily for the internal opening. It matters little whether you find the internal opening or not before the operation, for when you operate you do.

Spasmodic contractures occur during examination if the patient is awake, which make the examination more painful and dangerous, but when the patient is anesthetized and quiet you have no trouble in tracing out any or all sinuses. When probes are used a large variety are essential, from a fine silver probe to a large, soft, uterine sound. The probe must be introduced carefully and without force until it has gone as far as it will, then with the index finger of the left hand within the rectum, one may find the probe projecting through the internal opening, or, in some instances, covered only with the mucous membrane, or, again, it may have passed away from the rectum and cannot be felt at all.

Lardaceous granulations, the result of chronic inflammation, line the tract of the fistula and contain many new formed blood vessels. The granulations prevent healing of the sinus by keeping the walls apart. A recent fistula is, however, sometimes lined with healthy granulations which form new tissue, and such a fistula may heal spontaneously.

Blind internal fistulæ are the most difficult to diagnose and are found only after a careful examination of the interior of the rectum. Any case presenting persistent uneasiness within the rectum and showing the presence of pus in the stool, unless otherwise explained should be thoroughly examined. The following case is cited to show how misleading the apparent findings of a cursory examination may be:

Mr. S. S. W. passed through a mild attack of typhoid fever and at the end of the third week developed a perirectal abscess which was lanced and which promptly healed except a small sinus. From a pinhole opening of this, exuded a discharge imperceptible in amount, but sufficient to keep the ports moist and fetid. A digital examination of the rectum some months later revealed a small amount of induration above the external sphincter, but no distinct cordlike sensation that would signify a sinus. The director was introduced and brought out at the margin of the anus, and the tissues divided along its full length, thus exposing a suppurating surface irregularly circular in outline, about one and one-half inches in diameter. All the edges and pyogenic surface of this ulcer were removed and the openings of two deeper sinuses were brought to view. The first tract led almost to the base of the urethra and important structures had to be separated to lay it open; the second penetrated the rectum just above the sphincter. This latter opening was closed with chromicized catgut sutures after the method of treating rectovaginal fistulæ, and with the connective tissues sutured over the first stitches to give additional support. The sinus leading toward the deep perineum was packed wide open and allowed to granulate from its base. It is important to mention at this time that the finger within the rectum detected nothing that would suggest deep sinuses, but nevertheless, two very important diverticula existed. Inspection of the case gives the impression that this is a simple external, complete fistula which would heal kindly if divided on the director. However, such an operation would have been worse than useless, because only the outer part of the sinus would have healed over, to reform again in a few weeks. The stereotyped operation as set down in the text books, or treating the sinus by astringent injections would have been a signal failure.

This case is related in detail and the illustration given to show that each case must be treated upon its own conditions. Frequently narrow branched tracts lead off into the deep tissues and perhaps encroach upon vital organs.

178 East Forty-sixth Street.

STUDY OF THE BLOOD WITH A NEW STAIN.

PRELIMINARY REPORT.

By B. LEMCHEN, M.D.,

CHICAGO.

I TAKE it for granted that cells and tissues of similar composition will react alike to stains, as it is generally admitted that staining is a chemical reaction.

The stain I have made for blood smears consists of a saturated solution of benzidine in absolute alcohol. After making the blood smears on slides I put this solution on it for about half a minute. This fixes the blood on the slide and also impregnates the stain. Then I add hydrogen peroxide. After about half a minute I wash the slide in water and dry it in filter paper.

I have found on examining the smears that the red cells are stained blue. Nucleated red cells, the cells together with the nucleus, are also stained blue. White cells do not take the stain. The blood platelets do not stain. I have also found, if I let the blood smears stand for a couple of hours so that fibrin will form, the fibrin also stains blue. The conclusions to be drawn from this are that the red cells and the white cells have different origin, that the platelets have not their origin in the nucleus of the red cells as has been thought for some time, and also that the fibrin apparently has the same composition as the red cells. Whether or not the breaking down of the red cells forms a substance necessary for the coagulation of the blood I am unable at present to say, but on the same rea-

soning, in all probability, this process is originated by the red cells. This might explain the great destruction of red cells in pernicious anemia, as it has been thought for some time that pernicious anemia is probably some form of hemophilia. If my conclusion that the coagulation of the blood has its origin, in part at least, in the red blood cells is correct, it will account for some forms of hemophilia producing extreme pernicious anemia. With this same reasoning it might be assumed that the agglutinins in typhoid might have their origin in the red blood cells. This also might account for the marked anemia we get in typhoid, and also for the increase in size of the spleen and the great activity of the lymph and hemolymph glands, as it is known that one of the functions of the spleen and of the hemolymph glands is to destroy red blood cells, and it might be that these glands destroy a number of red cells, which liberate the substance necessary for the production of agglutinins. The substance, whatever it might be, is carried to the liver and there apparently the molecules are rearranged for specific agglutinins. Further study in this line is necessary to come to a definite conclusion.

Chicago State Hospital, Dunning, Ill.

Medicolegal Notes.

Malpractice—Expert Evidence as to Treatment—Patient's Duty to Minimize Damage.—A workman in a logging camp was severely injured by a log rolling on his foot. His hurts consisted of a dislocation of one of the cuneiform bones and two cuts in the top of the foot. In an action for malpractice in its treatment, it appeared that the defendant had the contract to treat the men under the hospital fee system. Infection followed the wound, and the plaintiff was confined to his bed for from six weeks to two months. After leaving the hospital he called on the defendant two or three times seeking relief from pain. The defendant advised him to get some light work, and he would probably have a good foot. The dislocated cuneiform bone—described by one of the medical witnesses as the keystone of the arch of the foot—was pressed downward and forward so that when the plaintiff walked the weight of his body rested on the projecting end of the bone, causing great pain. It was alleged that the defendant was guilty of malpractice, in that he neglected to reset the bones within the first three weeks by manipulation, or in failing to perform an operation by cutting the foot open and pushing the dislocated wedge-shaped bone back into place. The jury returned a verdict for the plaintiff. The trial court entered judgment for the defendant notwithstanding the verdict.

On appeal it was held that, the facts being practically undisputed, the ultimate question was: Was it the duty of the defendant to attempt to set the dislocated bone by manipulation, or, the time passing when this might have been done, it being admitted that nature would grow new tissue as well as adapt the old tissue to the new situation, should the defendant have performed an operation? In some of its features the case seemed to the court to be one of first impression. So far as the main issue was concerned, it could make no more out of the record than that the defendant was charged with an error of judgment. The plaintiff put a medical witness on the stand who expressed the opinion that, if there was swelling and infection so as to prevent a resetting or an operation during the acute stage, an effort should have been thereafter made to restore the functions of the foot. The essence of his opinion was that the sooner the dislocation was reduced by one method or another the better. On the other hand, several medical men and surgeons of equal skill and judgment, so far as the record showed, were most positive in the opinion that the defendant was in no sense delinquent; that it would have been foolhardy, if not impossible, to reset the bone by any process until the wounds had healed completely and all danger of latent infection had passed; that the bruising or cutting of the new tissue necessarily incident to a resetting or an operation would have been hazardous; that the bone would not have remained in place if set (not admitting that it could have been so set); that an operation might have made the infective germs, which may lie dormant after such an injury, active, resulting in the possible loss of the foot, or the life of the patient; that the duty of the surgeon under the conditions disclosed is first to look to the life of the patient. The treatment was described by one of the surgeons as a "monument of good surgery." The real question between the expert witnesses was when an operation might or should have been performed.

The Washington Supreme Court has uniformly held that where doctors of equal skill and learning, being in no way impeached or discredited, disagree on a given state of facts, the courts cannot hold a defendant in a malpractice case to the theory of one to the exclusion of the other. It is enough if the treatment employed has the approval of at least a respectable minority of the medical profession who recognized it as a proper method of treatment. The reason is obvious. A man who is called upon to exercise professional judgment is bound only to the exercise of reasonable skill, learning, and diligence. He is not liable for mistakes if he uses the method recognized and approved by those reasonably skilled in the profession. The court held that if men of skill and learning express contrary opinions upon admitted facts, although not preponderating the one way or the other (as they did in this case), the law would not impose a liability upon a professional man who acts within the reasonable limit of either opinion. Nor will a court hold a man guilty of malpractice when doctors disagree as to methods of treatment, although it be suggested that there is a more modern method to the exclusion of one therefore adopted as a standard It therefore held that the defendant was not liable for malpractice up to the time when the plaintiff had left the hospital.

There was, however, another issue which the court did not decide without difficulty. It was within the bounds of all the opinion evidence that an operation at least to the extent of shaving or cutting off the end of the protruding bone would relieve the plaintiff of the pain incident to the present use of the member. It is the duty of a surgeon to do all that is reasonably necessary and reasonably within the limits of professional skill to relieve pain and suffering. Granting that the defendant had violated no duty up to the time the plaintiff left the hospital, it did not follow, under the testimony of his own witnesses, that he was released from his duty to operate at such time as the foot was in proper condition. He was under contract to treat the plaintiff. His duty was a continuing one, continuing to the limit of reasonable professional ability. It being reasonably clear that an operation was, at the time of the trial, necessary, and would probably relieve the physical suffering so far endured by the plaintiff—as to this there was no substantial difference of opinion—and the parties having offered evidence to show the reasonable cost of such operation, the court directed a judgment for the plaintiff of $200.

The defendant was not held liable for the continued pain and suffering pending an operation. The reason was that he was not responsible for the original injury; he was answerable for proper care and treatment only. Under the plaintiff's own theory of the case that an operation should have been performed while he was still in the hospital, or within a reasonable time thereafter, he could not recover. At the time he consulted another surgeon, which was only a short time after he called on the defendant for the last time, he was advised that an operation would relieve him of his pain. He was under a legal duty to minimize his damages. It followed that he could not recover for the continued pain and suffering, or, to state the proposition in another way, it was the plaintiff's duty, if he conceived that he had been maltreated, to have an operation performed and bring suit for the reasonable cost thereof.—Dahl v. Wagner, Washington Supreme Court, 151 Pac. 1079.

Deceased Physician's Account Books in Evidence to Prove Litigant's Birth.—Under the "shop-book" rule an exception to the general rule against hearsay evidence, it is held that entries in the books of original account of a deceased physician, proved to be in his handwriting, tending to show the date of a litigant's birth, which was in issue, and as to which the physician, if living, would have been a compact witness, were admissible in evidence for that purpose.—Sharp v. Blanton, Alabama Supreme Court, 69, So. 889.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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SARATOGA SPRINGS.

THE tenor of the remarks during the discussion on Saratoga Springs at the meeting of the Academy, reported in the present issue of the MEDICAL RECORD, would indicate that there is necessity for active participation on the part of every physician in the completion of the development of this Spa. The therapeutic value of carbonic acid waters has been too well established at Nauheim, Vichy, Marienbad, and other resorts to require further discussion. It remains now for American physicians to appreciate the fact that the carbonic acid waters of the Saratoga Springs are equal to those of any spa in Europe, and to strive as public-spirited citizens and physicians for the completion of the work of the Reservation Commission, which has skilfully wrested these valuable springs from the ruin threatened by those who were drawing out the carbonic acid gas and wasting the water for many years.

It appears from the historical résumé given by the former chairman of the commission, that the latter has wisely obtained the most expert advice and practical assistance for the restoration of the exploited springs. The results achieved testify to the judicious expenditure of the money appropriated by the Legislature from time to time, and warrant the urgent request by the Reservation Commission now being made for funds to complete the excellent original scheme for developing Saratoga into a health resort that will successfully rival any European one. It behooves the medical men of this State to address personal appeals to their representatives in the Legislature for support of the appropriation now before them. The Legislature has hitherto acted wisely in its caution with regard to the sums appropriated, following the general principle that commissions in charge of developments are naturally ambitious to excel, and regard all reductions of their estimates or budgets as niggardly. It would appear, however, that the present needs of the State reservation enterprise are not exaggerated. The future success of this Spa lies within our grasp, because the European war forces the seekers of health and recreation to resort to our own springs. If those who have hitherto visited the European resorts annually find these scientifically organized springs inadequate because of niggardly financial assistance by the State, failure must result that may handicap it for many years if not permanently, so that the large sums already invested by the State will remain unproductive. If, on the contrary, the Legislature gives the necessary assistance without delay, for the time of preparation is all too short already, the satisfied visitors during the approaching summer will insure future prosperity and adequate return for the capital invested by the State. The Legislature should, however, act promptly in view of the brief period intervening between now and the opening of the season.

THE CONSUMPTION OF MEAT.

THE question of diet is beginning to receive that amount of consideration which its importance deserves, for in the prevention and treatment of disease it is now freely recognized that diet plays a large part. There are diseases which are caused directly by unsuitable foods and there are many diseases and conditions which may be prevented if due care is paid to the quantity and quality of the food ingested.

The undue consumption of meat has been regarded by many authorities as one of the main causes of digestive disturbances which may frequently lead to chronic constipation, intestinal stasis, and alimentary toxemia and which, according to Metchnikoff and Lane, bring about various diseases and affections of a more or less serious character. Especially has the contention been made that meat is the chief factor in the causation of arteriosclerosis, high blood pressure, and gout. Allbutt says that so far as the consumption of butcher's meat is concerned, one or two definite and separable crystalline products produced from proteins by bacteria, especially by a specific bacillus of the coli group, can affect the blood pressure.

Luff, in Sutherland's "System of Diet and Dietetics," ventures the opinion that the contention that a meat diet is poisonous to the human body on account of the uric acid it contains or produces is preposterous in view of the fact that many races have maintained robust health on such a diet, and that for centuries the beef-eating Britons have managed to spread and advance civilization, and to acquire territory in all parts of the world. It might also be mentioned that the Germans are large meat eaters and they seem to be fairly strenuous and active and exhibit no palpable signs of physical deterioration. Dr. Harry Campbell, in his series of articles on "The Evolution of Man's Diet," asserts, rather unconvincingly, that man has evolved from the ape on a highly animalized diet, and that it was on such a diet that the intellectual faculties and the power of language which distinguish him from the beast were developed.

The proteins of animal food are much more completely absorbed than those in vegetable foods. Meat is almost entirely consumed, about 97 per cent., and there is very little residue left in the bowel. This is, however, a manifest disadvantage. The percentage of residue in vegetable foods is very high. In potatoes 32 per cent. being left, while in carrots, beans, and lentils about 40 per cent. is left. The special value of proteins is that they are generally considered as the only true tissue builders and repairers. Muscle and

other tissues consist chiefly of proteins, and it is from the nitrogen containing proteins that they alone can be built. These, of course, can be obtained from vegetable foods as well as from those of animal origin. The ox, whose flesh is popularly regarded as the best "blood-forming" food, is typically a vegetarian.

With regard to the diet of an individual, and perhaps particularly with respect to the animal protein consumption, his age, his manner of life, and the climate must be taken into consideration. A man in the prime of life and vigor doing hard manual labor in the open air manifestly requires more food than the one who leads a sedentary life or is advanced in age. The vigorous hard worker can usually digest and assimilate large quantities of animal protein food. The man leading a sedentary life does not need so much food whether it be protein, carbohydrate, or fat, and whether it be animal or vegetable protein, and the man of advanced age whose powers are failing requires a food which places the least amount of strain upon the organs of digestion, assimilation, and excretion. It must be borne in mind, too, as Noël Paton says, that the availability of almost any article of food varies with the state of the teeth and the digestive organs of the individual, with the manner in which it is eaten, whether leisurely or too rapidly and without proper mastication.

While the pendulum of medical opinion seems to be swinging in the direction of a reduction in animal protein as an article of food for adults, it will not be wise to dogmatize too much as yet. There is little doubt that the habitual consumption of too little protein exposes the individual to a lowering of vitality, which expresses itself in a greater liability to suffer from infective disease. On the other hand, the consumption of too much protein unquestionably accelerates the progress of the degenerative diseases of heart, arteries, and kidneys.

DON'T BLAME THE CATGUT.

In pursuance of the universal human tendency to seek for the causes of failure in our undertakings in the outside world rather than to conduct an introspective investigation, those surgeons who are indignant now and then at finding an infection following a "clean" operation are inclined to blame the suture material rather than to scrutinize closely every separate step of their technique. In most operating rooms a procedure has been outlined which is as the laws of the Medes and Persians and permits not of deviation. It is taken for granted that this technique is followed rigidly and surgeons and head nurses who remain in the operating room for years at a time are perhaps inclined to forget that assistants come and go. These subordinates, no matter how carefully they are instructed, may slur over some point as seeming of minor importance to them, and a chain is only as strong as its weakest link. Then, too, the sterilization of some part of the instruments, dressings, etc., is perhaps being done in a way that modern bacteriology has found to be inadequate, and yet this particular step in the process has never been revised. Of course, these factors may be in existence for several months and the surgeon boast that he never has a stitch abscess, and then a strain of bacilli may find its way into the operating room and wounds become infected constantly, while the surgeon anathematizes everything and everybody, and finally lays the blame on the catgut, as it cannot defend itself and there is no one to defend it.

The real source of the trouble is more apt to be in the operating room technique somewhere, however. Writing in the *Modern Hospital* for December, a bacteriologist who signs himself merely "A Laboratory Technist" reports some of his investigations in operating rooms in an article which every surgeon should read. He visited by request first-class operating rooms throughout this country and Europe, and gave especial attention to those where apparently inexplicable infections had occurred. In each case he found one or more slips in the technique, and taking cultures at these points he usually found pathogenic organisms. In each case he used controls so that no suggestion of the non-sterility of his culture media is possible. In several cases he found a 5 per cent. carbolic solution used as the sole sterilizing agent of both basins and catgut containers; it is well known that this solution does not kill spores. In some cases he found only one wash basin or one soapy solution used by several persons or a soap container which it was necessary to tilt with the hand while using. Rubber gloves were "sterilized" by a single boiling in water, the fingers coming to the surface during this process, instead of weighting down the gloves and boiling them twice, reversed the second time. Catgut containers were found immersed in an aqueous bichloride solution, no other treatment being given them. In one case steam from the sterilizer collected on the ceiling of the room, condensed, and dropped into solutions and on instruments and dressings. One excellent surgeon observed scrupulous care about every detail of his technique, but still had infections. After minute observations the trouble was found to be this: The suture nurse, who had held retractors and assisted similarly in a "dirty" case, lifted up a corner of the sterile cloth covering the suture table, obtained the catgut for the infected case, and replaced the cover. The next case being a "clean" case, everyone changed gloves, fresh instruments were provided, but the suture table remained the same, being supposedly protected by the sterile cloth. In obtaining suture material for the clean case the nurse lifted up the same corner of the cloth, which had already been contaminated, fingered several tubes which she had touched during the previous operation, and selected a tube which she then broke and handled the inclosed material with gloved fingers which had become infected in the manner described.

It will be seen, therefore, that only a constant review of all the steps in an operation and a constant comparison of the methods used with recent bacteriological knowledge, as well as a testing of the technique at various points, can assure the surgeon that he is safe. At any rate, until one has satisfied himself that there is no fault to be found within his own doors, let him not blame the catgut.

SCARCITY OF MEDICAL MEN IN GREAT BRITAIN.

THERE is a dearth of doctors in Great Britain and when the exigencies of the situation are considered this is not to wondered at. The British army at the commencement of the war was in the neighborhood of 350,000 men, and the Royal Army Medical Corps was barely sufficient for the needs of this number. Now that the army has expanded to perhaps 4,000,000 men, the strain on the resources of the country so far as the supply of medical men is concerned is necessarily extreme. Civil practice has become almost dislocated in consequence of the Government calling upon the young and able-bodied members of the medical profession to serve at the front in France and elsewhere and to attend to the wounded and sick in the hospitals in Great Britain, the elder men only being left for civil practice. Already the amount of work which has to be done by civil practitioners is almost beyond their strength, and continually more and more men are being demanded for the army. Moreover, it is certain that in the near future more severe fighting by the British will be waged than ever before and then the drain upon the civil practitioners will be intensified. In order better to cope with the state of affairs, a movement is now on foot to organize the civilian medical service, so that by promoting greater efficiency and better organization at home more medical men may be freed for the army.

The proposed scheme, it is said, is to divide the medical strength of the country into three groups according to age and physical fitness: (1) For service with the army and navy abroad; (2) For service with the army at home; (3) for civilian and public health and institution duties. It is proposed to place those under 35 years of age, who are physically fit for service, with the army in the field; in group 2, those over 35 years of age and under 50, and in group 3 the remainder of the medical profession. In Great Britain there are about 30,000 medical men registered. These have to serve an army amounting in round numbers to 4,000,000, a navy of 350,000, and a civilian population of about 40,000,000.

At the front the organization of the medical service is said to be very defective. There are many square pegs in round holes. Specialists are doing boys' work and young, unskilled men are performing grave operations. All this is to be changed and in future an expert will be set to do work requiring great skill and all medical men will be allotted work for which they are best fitted.

Persons are generally apt to regard the mote in their neighbor's eye and to neglect the beam in their own eye. The army medical service of the country is notoriously undermanned and as we may at any time have a war on our hands we would do well to see to it that the army medical service is reconstructed or rather remodeled on adequate lines. If a man is sufficiently patriotic to volunteer as a soldier, it is only right that his medical and surgical needs should be the object of scrupulous attention on the part of the Government. The serious dilemma in which Great Britain is placed by her scarcity of medical men and lack of organization should act as a warning to this country.

PENETRATING WOUNDS OF THE CHEST.

PENETRATING wounds of the chest have been of frequent occurrence in the present war, and the subject has been discussed at length in the medical journals of the various countries engaged. However, the matter is of sufficient importance to warrant reiteration, or, rather, it might be said that the views of different surgeons are valuable. Therefore a paper contributed by Dr. H. Perreau, surgeon to a French army ambulance, to the *Medical Press*, February 2, 1916, is in the fitness of things and should be instructive to surgeons everywhere. He first of all insists on immobilization of the patient, after a prompt diagnosis of a penetrating wound of the chest has been made, and further recommends that the immobiliziation should be sufficiently prolonged to obviate consecutive complications, or to mitigate their mischief when they do occur. Among these complications may be mentioned: (1) Embolism, which may be caused by any sudden movement, even after considerable time, and may prove rapidly fatal. (2) Pleural effusion, which is very common, serosanguinolent and hemorrhagic, soon becoming purulent. (3) Subcutaneous emphysema, either limited or more or less generalized. (4) Bronchopneumonia and hemorrhage from the lung are rarely met in ambulance hospitals because they are as a rule too rapidly fatal.

Perreau's conclusions are that in penetrating wounds of the chest the duty of the ambulance surgeons at the front is: (1) To make an early diagnosis, whenever possible by the aid of radioscopy. (2) To secure immediate, absolute, and prolonged immobilization. (3) To keep the patients on water diet for the first two or three days, not allowing them to raise the head to drink. (4) Not to transfer such patients until after a fortnight's immobility. (5) To give during the first four or five days a daily dose of 10 c.c. of camphorated oil. (6) Except when conditions make it absolutely necessary, not to attempt the removal of the intrathoracic projectile. (7) To make promptly a wide opening to give issue to any purulent effusions.

WHOLE MILK FEEDING OF INFANTS.

THE methods of feeding infants, who for some reason, good or otherwise, are compelled to forego their natural means of nourishment and are condemned to artificial feeding, are many and various. There are physicians who pin their faith to one method and others who stoutly aver that another is the best. There is no agreement on any one form of artificial feeding. Eric Pritchard of London, England, who is one of the chief British authorities on the rearing of infants, has a paper in the January number of *American Medicine* criticizing the citrated whole-milk method of feeding. In the main he agrees that this gives good results, but he does not believe that it gives the best results. After many years of experimentation in his Infant Consultation at Marylebone, Pritchard has come to the conclusion that provided one is familiar with the principles of physiological feeding it makes very little difference what food one employs; whether, for instance, one uses dairy milk, so-called, dried milk, or condensed milk, provided certain essential conditions are complied with. These may

be stated as follows: (1) The necessary elements for growth, maintenance, heat production, energy production, and the elaboration of secretions must be supplied in the proportions and in the quantities required in each particular case. (2) These elements must be presented in a form capable of being digested and assimilated, and otherwise suited to the special physiological make-up of the infant to whom they are supplied. (3) The food must be of such a nature as to exercise and develop the latent digestive capacities preparatory to a more extensive dietary. After discussing favorably the dried milk method of feeding infants and emphasizing the point that there can be no such thing as a "best" food for infants, for the reason that the best food for each individual infant is that which is best adapted to its general physiological make up, and this will be different in each case—Pritchard concludes, with regard to the citrated whole milk method, that it is physiologically unsound, because it allows no latitude for adaptation to the digestive, assimilative, metabolic, and secretory activities of the individual baby and that its use implies obligatory modification on the part of the infant. If the principles of percentage feeding are understood, he says, synthetic foods can be prepared in a great variety of ways to satisfy the physiological requirements of particular babies.

Successful Transplantation of a Testicle.

Considerable success in conserving the functions of the sexual organs under most unpromising circumstances has been reported in this country, notably by Lydston and Lespinasse, both of Chicago, but it is doubtful if any one has ever obtained a more clean-cut result than was claimed in a case recently reported by Lichtenstern before the K. K. Gesellschaft der Aerzte of Vienna (*Muenchener medizinische Wochenschrift*, December 21). A soldier had been badly wounded in the urethra and testicles, as a result of which he lost the power of erection and was without libido, while his general make-up began to approximate that of a castrate. There was in the same ward another soldier about to be operated on for inguinal testicle. When the latter was removed it was split in two and one-half was grafted into the musculature on either side of the middle line of the abdomen of the first patient. Within six days erections and libido returned and in the course of time the masculine habitus. The result in this case was remarkable, to say the least, and would seem to be attributable rather to a psychic action than to the establishment of an endocrinous functioning in so short a period. In discussion of the report, Tandler stated that the undescended testicle contains for the most part interstitial substance. He had often counseled this kind of implantation. Nevertheless the transplant would become absorbed in about two years, and the operation would have to be repeated.

Two New Journals.

We have received the initial numbers of two new journals. *The Journal of Cancer Research* is edited by Richard Weil and the editorial committee of the American Association for Cancer Research. *The Journal of Immunology* is edited by Arthur F. Coca and has on its advisory and editorial boards practically all the leading immunologists of England and the United States. It is the official organ of the Society for Serology and Hematology and the American Association of Immunologists. The appearance of these important members of the rapidly growing group of special journals in this country is, no doubt, due in part to the war which has closed the pages of so many foreign publications to American writers. Nevertheless, it is significant of the growing amount of productive research work which is being carried on here and will have a stimulating influence upon scientific circles. It is very gratifying that we are thus made independent of foreign periodicals, and there is no reason why these two publications should not become examples of the highest type of special journals. The contents of these two first numbers give high promise that such will in fact be the case.

News of the Week.

New York City Death Rate.—During the week ending March 18 the death rate in New York City was 14.39 per thousand of population, as compared with 16.63 for the corresponding week of last year, the total number of deaths being 1,541 and 1,743 respectively, an actual decrease of 202. Influenza, bronchitis, and Bright's disease were the only causes of death which showed an increased mortality; in all others a decrease was recorded. During the first twelve weeks of 1916 the death rate was 15.71, while for the corresponding period of 1915 it was 14.99, the higher rate being due to the epidemic of grip last January.

The Hay Bill Condemned.—At a meeting of the Medical Society of the County of New York on Monday of this week, the Hay military bill in Congress was strongly opposed on account of its provision for abolishing the Medical Reserve Corps in the Army, and a resolution was passed in favor of raising the strength of the Medical Corps of the Army so that there shall be, in time of peace, one surgeon to each 1,000 enlisted men.

Treatment for Rabies.—The Department of Health announces that on and after Monday, March 20, 1916, the Brooklyn Anti-Rabic Clinic at 29 Third Avenue will be open daily from 1 to 4 P. M. and on Saturdays from 1 to 3.30 P. M. On Sundays and holidays the hours will be from 10 A. M. to 12 noon, the anti-rabic service of the entire city being then cared for at the Brooklyn clinic.

Varicella and Whooping Cough.—Owing to the present low census of scarlet fever patients in the Willard Parker Hospital, New York, the Bureau of Hospitals is prepared to care for cases of whooping cough and varicella in the infectious stages of these diseases. Application for admission to the hospital should be made through the Bureau of Preventable Diseases, the procedure being the same as in cases of scarlet fever. Physicians in the Borough of Manhattan are invited to avail themselves of this opportunity for the care of those cases which are in need of hospital treatment.

Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination for men only for the position of assistant physicist, qualified in spectroscopy, there being a vacancy in the Bureau of Standards, Department of Commerce, Washington. The salary ranges from $1,400 to $1,800 per year, and the duties include the precise measurement of light waves and other spectroscopic research. The applicant must have received the degree of doctor of philosophy, or have had three years postgraduate

training in optics, including spectroscopy. The examination is open to all men meeting the requirements who are citizens of the United States and between the ages of 25 and 45. It will be held in various places in the United States on May 3, 1916. Applicants for the examination should apply at once to the Civil Service Commission, Washington.

On April 25, 1916, the commission will hold an examination for the purpose of filling a vacancy in the position of chief statistician for vital statistics (male) in the Bureau of the Census, Department of Commerce, Washington, at a salary of $3,000 a year. The chief statistician is the administrative and statistical head of the Division of Vital Statistics and has full charge of the work therein. Graduation from a recognized medical school and at least four years' experience in charge of the vital statistics of a city or State, or in a position of similar importance requiring expert knowledge of vital statistics are prerequisites for this position. Special credit will be given for experience in the practice of medicine and in positions of an executive character. Applicants must be between the ages of 30 and 50, and must have been actually domiciled in the State or territory in which they reside for at least one year previous to the date of the examination. Application blanks may be obtained from the office of the United States Civil Service Commission, Washington, D. C.

Hospital Ship Reported Torpedoed.—Reports from Berlin state that the hospital ship *Elektra*, in the Austro-Hungarian Red Cross service, was torpedoed on March 18, while bound from the North Adriatic to South Dalmatia.

Isaac L. Rice Memorial Hospital.—The incorporation of the Isaac L. Rice Memorial Hospital for convalescents, which, as announced last week, is to be built at Irvington, N. Y., is provided for in a bill introduced in the New York State Legislature on March 21. The object of the incorporation is stated to be the establishment of a non-sectarian hospital for the gratuitous care of patients recovering from illness.

Opposition to the Mount Sinai Pay Clinics.—The following resolution was unanimously adopted at a meeting of the Medical Society of the County of New York, held on Monday evening of this week:

"It is proposed by a large hospital in this city to establish a night clinic for the medical and surgical treatment of persons on the general basis of $1 a visit. A provision is also made that the institution will endeavor to confine its aid to persons having incomes of $1,200 a year or less. It is evident that this method could be ultimately extended to every hospital in the city and take a large section of the general and special practice from the profession and place it in the hands of medical institutions.

"*Whereas*, Past experience has shown the impossibility of limiting the benefits of medical charity to those entitled to it by an arbitrary income rating;

"*Whereas*, Employed persons earning $1,200 a year are by no means objects of medical charity;

"*Whereas*, Employed persons earning the above income are a very large part of the clientele of the general practitioner and specialist;

"*Whereas*, Hospital dispensaries have been established to care for the sick poor only;

"*Resolved*, That the Medical Society of the County of New York condemns and opposes the scheme of pay night clinics in medical institutions as an unnecessary pauperization of individuals and as an injury to the medical profession."

Mind Test for City Lodgers.—Commissioner of Charities Kingsbury of New York City has recently appointed a committee to formulate a plan for examining the mental condition of applicants at the Municipal Lodging House. The examinations will be carried out for the purpose of determining what work the men are capable of doing. The committee consists of Dr. Menas G. Gregory of Bellevue Hospital, Dr. August Hoch, director of the Psychiatric Institute of the New York State Hospital, and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene.

Medical Society Election.—At a meeting of the Homeopathic Medical Society of Western Massachusetts in Springfield, Mass., on March 15, the following officers were elected: *President*, Dr. E. W. Capen, Monson; *vice-presidents*, Dr. J. W. Crawford, North Adams, and Dr. Bina Seymour, Springfield; *secretary-treasurer*, Dr. M. W. Conrow, Springfield.

The Influence of the Medical Profession in World Reconstruction is the title of a lecture to be delivered by Dr. F. E. Sondern, president of the Medical Society of the County of New York, on Sunday, April 2, at 10 A. M. in Mt. Morris Baptist Church, Fifth Avenue, between 126th and 127th Streets. The lecture is open to all, but members of the medical profession are especially invited. Dr. A. Jacobi will introduce the speaker. At 9.30 A. M. there will be an informal reception to Dr. Sondern in the church parlors.

Personals.—Miss MARY KATHERINE WOLFE of New York, a volunteer nurse who has been connected with the American Ambulance in Paris since the institution was opened, has received from the French Government the silver medal as an acknowledgment of her self-sacrifice and devotion.

Dr. JOHN G. STANTON of New London, Conn., has been appointed a member of the Connecticut State Board of Education.

Dr. EVA HARDING of Topeka, Kan., has announced that she is a candidate for the Democratic nomination for congressman, on a platform opposing militarism, and favoring national prohibition, woman suffrage, and mothers' and old age pensions.

Obituary Notes.—Dr. CHARLES MARTIN CAMPBELL of Paterson, N. J., a graduate of the Bellevue Hospital Medical College, New York, in 1894, a member of the American Medical Association, the Medical Society of New Jersey, and the Passaic County Medical Society, and physician to St. Joseph's Hospital, died at his home, March 20, aged 59 years.

Dr. CARLOS E. HUSK whose death at Laredo, Tex., was reported last week was a graduate of the University of Illinois, college of medicine, in 1898, and was 43 years of age. Dr. Husk was chief surgeon of the American Smelting and Refining Company. He had joined the Mount Sinai Hospital doctors who were studying typhus in Mexico, and contracted the disease in the course of his investigations.

Dr. WILLIAM S. S. GAY of Cleveland, Ohio, a graduate of the Jefferson Medical College, Philadelphia, in 1869, died at his home on February 26, aged 70 years.

Dr. GASPARD UPTON PELTIER of Cohoes, N. Y., a graduate of the University of Bishop College, Faculty of Medicine, Montreal, in 1873, died at his home

on March 2, aged 67 years. Dr. Peltier was, until recently, city physician of Cohoes.

Dr. SAMUEL H. LINN of Rochester, N. Y., a graduate of the Medical Department of the University of Pennsylvania, Philadelphia, in 1877, died at his home on February 28, aged 72 years.

Dr. EDWARD J. CUNNINGHAM of Philadelphia, a graduate of the Medical Department of the University of Pennsylvania in 1900, died at his home on March 2, aged 38 years.

Dr. JOHN JACOB DETWILER of Easton, Penn., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1854, and a life member of the American Homeopathic Society, died at his home on February 28, aged 82 years.

Dr. CHARLES HAROLD GOLDSMITH of New York, a graduate of the Eclectic Medical College of the City of New York in 1906, and of the Long Island College Hospital, Brooklyn, in 1910, died at his home on February 29, aged 43 years.

Dr. GEORGE LANE TANNEYHILL of Baltimore, Md., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1865, died at his home on March 2, of heart disease, aged 76 years. Dr. Tanneyhill was a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, the Baltimore City Medical Society, and the Association of United States Military Surgeons.

Dr. OSCAR HOWARD MORRIS of Rockmart, Ga., a graduate of the Southern Medical College, Atlanta, in 1898, died at his home on February 20, aged 41 years.

Dr. LOOMIS C. BLANTON of Blanton Station, Ky., a graduate of the Hospital College of Medicine, Louisville, in 1906, died at his home on February 21, after an illness of six months, aged 33 years.

Dr. WILLIAM LEET KREIDER of Prairie City, Ill., a graduate of the Rush Medical College, Chicago, in 1859, died at his home on February 19, from a paralytic stroke, aged 84 years.

Dr. CLARENCE F. COCHRAN of Griffith Station, Arvado, Col., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1873, died at his home on February 18, aged 66 years.

Dr. ALICE AMELIA GOODRICH of Des Moines, Iowa, a graduate of the State University of Iowa, College of Homeopathic Medicine, Iowa City, in 1889, died at her home on February 20, aged 64 years.

Dr. THOMAS BOYD MORRIS of Atlantic, Iowa, a graduate of the Rush Medical College, Chicago, in 1900, died in the Atlantic Hospital on February 19, from injuries received in an automobile accident, aged 50 years. Dr. Morris was a member of the American Medical Association, the Iowa State Medical Society, the Cass County Medical Society, and the Botna Valley Medical Society.

Dr. DAVID P. MILLER of Huntingdon, Pa., a graduate of the Jefferson Medical College, Philadelphia, in the class of 1884, died of uremia, at his home on February 16, aged 80 years.

Dr. BUCKNER FAIRFAX SCOTT of Terra Alta, West Va., a graduate of the Jefferson Medical College, Philadelphia, in 1906, and a member of the West Virginia State Medical Association and the Preston County Medical Society, died suddenly at his home on February 21, aged 37 years.

Dr. JOHN A. DOWELL of Albany, Ind., a graduate of the Eclectic Medical College, Cincinnati, in 1881, was killed by a train February 19, while on his way to visit a patient. Dr. Dowell was 58 years old.

Dr. ALLEN WALKER of Washington, D. C., a graduate of the University of Maryland School of Medicine, Baltimore, in 1886, and a member of the Medical Society of the District of Columbia, died at his home on February 21, after an illness of six months, aged 64 years.

Dr. CHARLES TEBBS PEPPER of Los Angeles, Cal., a graduate of the Jefferson Medical College, Philadelphia, in 1869, died at his home on February 19, after a long illness, aged 69 years.

Dr. LUTHER ORIN MARTIN of Springfield, Mass., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1875, died suddenly at his home on February 26, aged 64 years.

Dr. JULIUS HENRY MOORE of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1874, died at his home, on March 11, aged 79 years.

Dr. HENRY BETZ of Brooklyn, N. Y., a graduate of the New York University Medical College in 1886, died at his home from pneumonia, on March 12, aged 58 years.

Dr. CHARLES O. MAINE of Stonington, Conn., a graduate of the Dartmouth Medical School, Hanover, in 1871, died at his home after a lingering illness, on March 12, aged 73 years.

Dr. WILLIS A. MERICK of Monticello, Ia., a graduate of the Hahnemann Medical College and Hospital, Chicago, in 1878, and a member of the Iowa State Medical Society and the Jones County Medical Society, died suddenly from heart disease at his home, March 1, aged 62 years.

Dr. BENJAMIN FRANKLIN CAMPBELL of Brookline, Mass., a graduate of the Harvard University Medical School in 1857, died at his home, March 9, aged 82 years. During the Civil War Dr. Campbell was acting assistant surgeon in the army of the Potomac.

Dr. JAMES C. BLICKENSDERFER of Denver, Col., a graduate of the Washington University Medical School, St. Louis, in 1877, and a member of the Colorado State Medical Society and the Denver City and County Medical Society, died suddenly from heart disease at his home, March 3, aged 69 years.

Dr. JAMES LANIER DARWIN of Huntsville, Ala., a graduate of the Bellevue Hospital Medical College, New York, in 1888, and a member of the Medical Association of the State of Alabama and the Madison County Medical Society, died from heart disease in Memphis, March 3, aged 57 years.

Dr. M. F. SCRUGGS, a graduate of the University of Louisville, Medical Department, in 1882, and a member of the Mississippi State Medical Association, and the Marshall County Medical Society, died suddenly at his home near Holly Springs, Miss., March 2.

Dr. GUSTAVE ADOLPH KRAUSS, formerly of Jersey City, N. J., a graduate of the New York University Medical College in 1898, died in the Trenton State Insane Asylum, March 16.

Dr. JOSEPH A. TREMBLAY of Butte, Mont., a graduate of the Victoria University, Medical Department, Toronto, in 1869, died from heart disease at his home March 6, aged 70 years.

Dr. PATRICK JOSEPH BARRY of Carroll, Ia., a graduate of the State University of Iowa, College of Medicine, Iowa City, in 1891, died at his home recently, aged 49 years.

Dr. ASA STEWART IGLEHART, formerly of New York, a graduate of the New York University Medical College in 1897, and a member of the Alumnæ of St. Luke's Hospital, died at his home in Iquique, Chile, on March 18, aged 46 years.

Dr. EMLEN PHYSICK of Cape May, N. J., a graduate of the University of Pennsylvania, department of medicine, Philadelphia, in 1897, and a member of the Medical Society of New Jersey and the Cape May County Medical Society, died suddenly, from apoplexy, at his home, March 21, aged 58 years.

Dr. CHAUNCEY S. LAMB of New Haven, Conn., a graduate of the University of Buffalo, medical department, in 1893, and a member of the Connecticut State Medical Society and the New Haven County Medical Society, died at his home, March 23, aged 44 years.

Dr. BERNARD WOLFF of Atlanta, Ga., a graduate of the University of Virginia, department of medicine, Charlottesville, in 1888, died at St. Joseph's Infirmary, March 22, following an operation, aged 49 years. Dr. Wolff was clinical professor of diseases of the skin in the Atlanta College of Physicians and Surgeons, and was a member of the American Medical Association, the Medical Association of Georgia, and the Fulton County Medical Society.

Dr. WILLIAM H. CAMPBELL of Cincinnati, Ohio, a graduate of the Miami Medical College, Cincinnati, in 1891, died suddenly in Los Angeles, Cal., aged 54 years. Dr. Campbell was a member of the American Medical Association, the Ohio State Medical Association, the Cincinnati Academy of Medicine, and the American Academy of Ophthalmology and Otolaryngology.

Dr. J. E. BROWN of McGregor, Tex., a graduate of the medical department of the Tulane University of Louisiana, New Orleans, in 1888, died from Bright's disease, at his home, March 13, aged 51 years.

Dr. THEO. MCL. NORTHRUP of St. Paul, N. C., a graduate of the University of Maryland, school of medicine, Baltimore, in 1897, and a member of the American Medical Association, the Medical Society of the State of North Carolina, and the Robeson County Medical Society, died from Bright's disease at the Charlotte Sanatorium, March 13, aged 46 years.

Dr. EDMUND R. P. FOURTIN of Waltham, Mass., a graduate of the Harvard University, medical school, in 1890, and a member of the Massachusetts Medical Society, and the Middlesex District Medical Society, died suddenly, March 15, aged 50 years.

Dr. FRANK J. LUTZ of St. Louis, Mo., a graduate of the Washington University Medical School, St. Louis, in 1876, died from heart disease at his home, March 24, aged 61 years. Dr. Lutz was chief surgeon of Josephine Hospital, attending surgeon of the Barnard Free Skin and Cancer Hospital, and professor of surgery in Washington University, St. Louis. He was a Fellow of the American College of Surgeons, and a member of the International Surgical Association, the American Surgical Association, the St. Louis Surgical Society, the American Medical Association, the Missouri State Medical Association, and the St. Louis County Medical Society.

Dr. WILLIAM GEORGE SIEGEL of Brooklyn, N. Y., a graduate of the Long Island College Hospital, Brooklyn, in 1910, and assistant surgeon on the staff of Trinity Hospital, Brooklyn, died at his home, of pneumonia, after a brief illness, on March 25, aged 28 years.

Dr. GRANVILLE PRIEST CONN of Concord, N. H., a graduate of the Dartmouth Medical School, Hanover, in 1856, died, March 24, at Wayne, Pa., aged 84 years. Dr. Conn was emeritus professor of hygiene in the Dartmouth Medical School, and was president of the State Board of Health. He was a member of the American Medical Association, the New Hampshire Medical Society, acting at different times as secretary, vice-president, and president, the District Medical Society, the International Association of Railway Surgeons, and the Medicolegal Society of New York.

Dr. EDWARD D. PAYNE of Towanda, Pa., a graduate of the Jefferson Medical College, Philadelphia, in 1857, by act of Congress, medical director in the United States Army, having entered the service in 1861 and served until 1876, and a member of the Medical Society of the State of Pennsylvania and the Bradford County Medical Society, died at his home, on March 24, aged 81 years.

Dr. THOMAS B. EARLEY died of bronchopneumonia at Philadelphia, March 21, at the age of 49 years. He was graduated from the Medico-Chirurgical College of Philadelphia in the class of 1890. He was a member of the Philadelphia County Medical Society, and of the Medical Society of the State of Pennsylvania, and of the American Medical Association.

Obituary.

GUSTAV ADOLF LANGMANN, M.D.

NEW YORK.

DR. GUSTAV A. LANGMANN died at his home in this city on Monday of this week of cardiac disease. He was born in Mecklenburg in 1842 and was graduated from the University of Greifswald in 1866. Three years later he came to New York and had practised here since that time. He was a member of the New York State and County Medical Societies, of the American Medical Association, the New York Academy of Medicine, the German Medical Society, the New York Pathological Society, and the American Association of Pathologists and Bacteriologists, and was attending physician to the German and Mt. Sinai Hospitals. Dr. Langmann was an authority on poisonous snakes and snake venom, and was the author of the article on "Poisonous Reptiles" in the Reference Handbook of the Medical Sciences, and of other articles on this subject in various scientific publications.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

TRENCH NEPHRITIS—CEREBROSPINAL FEVER—OBITUARY.

LONDON, March 4, 1916.

THE Royal Society of Medicine has held a combined meeting of its sections on Medicine and of Pharmacology and Therapeutics for a discussion on trench nephritis. It was opened by Sir William Osler, who had not found previous accounts of the disease, except some cases reported as occurring during the American Civil War. Its clinical characters are those of ordinary acute nephritis, coming on usually without previous disorder, but with slight differences; thus the edema is transient and generally local, while anasarca is rare. Dyspnea is prominent and slight fever has been noted in a few of the cases which have returned to England. Probably this is more frequent in the earlier stages. The dropsy disappears rapidly when improvement

sets in, and restoration to seemingly good health may often be observed while the urinary symptoms and high blood pressure continue. Cases had been admitted to St. Bartholomew's Hospital having albumin with casts and blood in the urine but without history of dropsy. Recovery was the rule, but some cases had been fatal. Three post mortems had been made: in one a typical large milky-white kidney was found identical with Bright's description except for the absence of infected stellate veins. There was no sign of fatty degeneration. In Case 2 acute nephritis seemed planted on an old nephritis. In Case 3 death occurred from intercurrent pleuropneumonia; but the kidneys were sclerotic with marked recent tubular and glomerular nephritis. In two other fatal cases no necropsy was made; they had died from rapid uremia. Sir William feared many of these cases would become chronic and considered it highly probable they would do so if the albumin continued in the twelfth week.

Professor Andrews had examined specimens from six cases and exhibited the sections. Only one was at an early stage; in that sudden death followed cerebral hemorrhage. The others were typical examples of severe trench nephritis and showed changes in the glomeruli, tubules, and interstitial tissue; in the glomeruli the usual proliferation of the epithelium of the capsule; in the tubules degeneration and desquamation of the epithelium. Few fatty changes, or none; some cellular infiltration in the interstitial tissue, the infiltrating cells being chiefly leucocytes, while plasma cells were absent. This corresponded with the condition of the urine, from which a deposit of leucocytes was noticeable. So many polymorphonuclear cells appeared in one case that pyelitis was suspected. An example of old-standing nephritis had superimposed on it the trench nephritis. There was nothing to distinguish it from other varieties of nephritis; the acute glomerular form of scarlatina was comparable with it in all respects.

Dr. Mackenzie Wallis spoke of the value of estimating the diastatic output as an index to the efficiency of the renal tubules; in no other disease was this so low. As the ferment is secreted by these tubules, its diminution indicates the amount of damage. The test is further of use in prognosis; diastase may diminish after albumin has disappeared. Casts, mostly hyaline, were always present, as was a relative excess of white corpuscles as in the scarlatinal form. In some cases retention of nitrogen even after the diastase excretion has become normal, a point to consider respecting the ability of the patient to resume employment. The urine is remarkably toxic, but the chemical characters of the toxin have not been determined. Two animals infected died in six days of albuminuria, but in post mortem no evidence of nephritis was found. Urine produced no symptoms if it were previously heated to 55° C., but an unheated filtrate did.

Capt. R. G. Abercrombie had worked in France and spoke of having seen about 500 cases in the acute stage. They presented the characteristics of acute nephritis of medium severity. Headache and dyspnea were constant, blood pressure varied from 30 to 60 mm. of Hg, the morning reading low, the evening high. On first fever, the temperature about 101° Fahr. In about half the cases premonitory symptoms were bronchitis, pains in back, limbs, and abdomen, and vomiting. In one group there were symptoms suggestive of pyelitis, cystitis, or prostitis, but no fever, edema, or blood pressure, though casts might occur in the urine. Of about 500 cases, four were fatal—one in the first week. In this there were but slight ordinary changes in the kidneys, but the microscope revealed the tubules with some interstitial change; spleen was large; tracheal mucous membrane granular. The cases were scattered, but chiefly in small definite epidemics at the front and in certain areas. His impression was that the disease is infective.

The report of the special advisory committee appointed by the Medical Research Committee (National Health Insurance) on bacteriological studies of cerebrospinal fever during the epidemic of the first eight months of 1915 has been published. The members of this committee were Profs. F. W. Andrewes, W. Bulloch, and R. T. Hewlett, and their report is based on the results of experience in different laboratories throughout the country, and also on reports transmitted to the committee by workers engaged in the study and control of the disease among the military forces.

Surgeon-General Ch. Edwin McVittie, late of the I. M. S., Hon. Physician to the King, has died at Exmouth. He had been Hon. Physician to Queen Victoria from 1898 to 1901, to King Edward during his reign. He received a distinguished service reward in 1894 and retired in 1900. He was a Fellow of the Edinburgh College of Physicians and of the Irish College of Surgeons. He served in the Afghan War in 1880, for which he had the medal, and with the Burmese Expedition in 1886-7, when he was mentioned in dispatches and received the medal with two clasps.

Deputy Surgeon-General Eugene Francis O'Leary has died at Sidmouth in his eighty-first year. He entered the army in February, 1856, and was placed on the retired list in December, 1883. He served many years in India and China and was in the Egyptian campaign in 1882, for which he received the medal and the Khedive's star.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 16, 1916.

1 Fourteen Cases of Diabetes Mellitus Unsuccessfully Treated by Fasting. Elliott P. Joslin, F. Gorham Brigham, and Albert A. Horner.
2. Gunshot Wounds of the Thorax. Walter M. Boothby.
3. How can We Detect Slight Enlargements of the Heart George Cheever Shattuck.
4 Recent Progress in Psychiatry. Henry R. Stedman

3. How Can We Detect Slight Enlargements of the Heart?—George Cheever Shattuck states that if slight cardiac enlargement is to be detected, that is, an increase of two or three centimeters in the transverse diameter of the heart, the first essential is an adequate standard of the normal. He reviews the work done in this direction by Veith, Groedel, Dietlin, and Claytor and Merrill. He states that the tables of Groedel are valuable for providing maximal, minimal, and average figures of normal heart size, but that the relation of the figures to stature is not clearly apparent. Dietlin founded his figures on the relation of the heart size to body weight, which method Shattuck considers the correct one. He summarizes as follows: that heart size is dependent first on body weight, and second, apparently on age, and that stature *per se* is not important; that tables of heart size based on stature are not satisfactory. The tables of Claytor and Merrill are based

on weights, and their table for men is divided into six groups. The first four groups ascend by ten pounds and the last two by twenty pounds. That for women ascends by ten pounds in six groups, and in the seventh by fifteen pounds. The maximum weight for women is one hundred seventy-five, and for men two hundred pounds. The authors point out that there is a rapid increase of heart size in men up to one hundred twenty-eight pounds of body weight, and after that the increase is more gradual. In the higher weights, the increase is very slight. The increase in women was found to be less marked. Other factors influencing heart size or heart measurements are occupation, posture, size and depth of the chest, change of position due to breathing, the effect of corset pressure in women, and the position of the diaphragm, which Shattuck says seems to be the most important of all factors. The normal heart varies in shape and position. Claytor and Merrill's figures for men show variations of 4.0 centimeters within the normal for the greatest distance from the median line to the left horizontally, designated as "ML"; Groedel found differences of 3.0 centimeters and Dietlin of 3.6 centimeters. A heart originally small might become pathologically enlarged by three centimeters, or even more, before this could be detected by measurements alone; but, in such a case, if nutrition, position of diaphragm, and age, when necessary, were considered, it might be possible to discover enlargements of not more than two centimeters. Shattuck quotes Groedel's four measurements for heart size, namely, the greatest distance from the median line to the right horizontally designated as "ML," a similar measurement to the left, "MR," the sum of these two, the transverse diameter, "T," and the length, measured from the apex to the angle formed by the junction of the curve of the great vessels with that of the right border, known as "L." Shattuck calls attention to the importance of skillful physical examination and careful history as means of discovering abnormality in the circulatory system and slight signs of enlargement of the heart; when these are inconclusive the *x*-ray, fluorscope, or orthodiagram, or a teleoroentgenogram may clear up the outline or measurements of the heart.

New York Medical Journal.

March 18, 1916.

1. Obscure Cases of Mastoid Involvement. Edward B Dench
2. Therapy as Related to the Immunology of Tuberculosis. Edward R. Baldwin.
3. Mental Deficiency. Alfred Gordon.
4. Study of Drug Action. (Fourth Paper.) Thomas J. Mays.
5. The Electrocardiograph. Edward B. Krumbhaar.
6. Large Congenital Hydronephrosis in an Infant Six Weeks of Age. M. S. Kakels.
7. Complete Separation and Anterior Luxation of the Epiphysis of the Left Femur. Ulysses S. Kahn.
8. Natural Radioactive Waters. William H. Deaderick.

1. Obscure Cases of Mastoid Involvement.—Edward B. Dench states that there are a large number of cases of mastoid involvement in which the development of the inflammatory process is so insidious, and the symptoms are so slight, that a diagnosis is made with the greatest difficulty, even by those who have seen a large number of cases. He cites several cases of his own, in which there had been middle ear involvement to a slight extent, but which had cleared up apparently, until, as in one case, a persistent headache, and in another case, a narrowing of the external auditory canal and lack of drum membrane lustre, caused him to search for the cause, to find it in each case in a mastoid involvement. Operation cleared up the condition. He says that the actual cessation of discharge in middle ear condition is no absolute indication that the mastoid is healthy. Infection of the middle ear always means infection of the mastoid process. If the mastoid infection occurs in the immediate proximity of the middle ear, it is more than probable that free drainage of the tympanum will relieve the mastoid infection. How can we tell in a given case of acute aural suppuration that there will be probably serious mastoid involvement, or how can we tell that any involvement has disappeared, when the middle ear condition has completely recovered? The site of the inflammatory process is important. Inflammations confined to the lower part of the tympanic cavity are less liable to be followed by serious mastoid infection, than when the upper part of the cavity is involved. Middle ear involvement which does not resolve very definitely at the end of two weeks is one of mastoid involvement sufficiently extensive to demand at least exploratory operation. Local tenderness is a very valuable sign and appears in a large proportion of cases, but its presence is not always indicative of mastoid involvement. Tenderness at the beginning of an attack of acute otitis is of comparative insignificance; tenderness which appears after the fourth or fifth day of the attack is of great significance. Tenderness over the mastoid antrum is of more value as a diagnostic sign than tenderness over the tip. The nature of the infection is another diagnostic aid. A staphylococcus infection does not usually involve the mastoid; but a streptococcus demands careful watching, and the mastoid process should be opened up earlier than would be the case with a milder infection. Dench places his dependence on the state of the external auditory canal. In the majority of his cases of difficult diagnosis of mastoid condition, the external auditory canal showed decided narrowing near the drum membrane. Not the bulging of the drum membrane, but the actual shortening of the external meatus occurs, in many of these cases. Ordinarily there is symmetry of the external auditory canals. A symmetry between the two is to be regarded with suspicion, and with the history of acute otitis a narrowing of the deeper portion of the canal is almost pathognomonic of mastoid involvement. At the present time his operative findings always agree perfectly with the radiographic pictures, but it needs study, both before and after operation, of the plates in order that the full value of this method of diagnosis may be obtained.

Journal of the American Medical Association.

March 18, 1916.

1. The Recognition of General Paresis While It is Still Susceptible to Treatment, with Remarks on the Course and Clinical Features of the Disease. Joseph Collins.
2. Tabetic Ocular Crises. William G. Spiller.
3. The History of Intravenous and Subcutaneus Administration of Drugs. David I. Macht.
4. A Rational Treatment of the Morphine Habit. Charles E. Sceleth.
5. Treatment of Cases of Epidemic Meningitis, Illustrating the Importance of Frequent Repetition of the Injection. Josephine B. Neal.
6. Dyed Fur (Paraphenylendiamin) Dermatitis: With Report of Five Cases. George Manghill Olson.
7. Alarming Symptoms Caused by Diarsenol. Abner H. Cook.
8. Arsenobensol in the Treatment of Syphilis. Oliver S. Ormsby and James Herbert Mitchell.
9. Retarded Ossification as an Etiologic Factor in Traumatic Arthritis and Epiphysitis. John McWilliams Berry.
10. The Standardization of Digitalis and the Potency of American-Grown Digitalis. L. G. Rowntree and D. I. Macht.
11. A New Hemorrhoidal Operation: The Snare and Bullet. W. F. Burrows, and E. C. Burrows.
12. The Practical Application of Blood Pressure Findings. J. J. Rowan, Jr.
13. The Operative Treatment of Brachial Plexus Paralysis. William Sharpe.
14. Variations in the Strength of Positive Wassermann Reactions in Cases of Untreated Syphilis, with Remarks on the Variations Which Follow the Use of Mercury. David A. Haller
15. Recurrent Paralysis of the Facial Nerve and Its Relation to the So-Called Facioplegic Migraine. J. Ramsay Hunt.
16. Extragenital Syphilitic Infection: Report of Case. William W. Cadbury.
17. Infection of Ovarian Dermoid Cyst with Typhoid Bacillus. A. L. O'Shansky.

3. History of Intravenous and Subcutaneous Administration of Drugs.—David I. Macht considers it to be our duty to ascertain as far as possible and to commemorate the names of those who discovered or invented the above-named procedures and remedies. Transfusion of blood is said to have been practised among the Egyptians. The earliest explicit record of it was in 1492, when it was recommended for the treatment of Pope Innocent VIII. It was Sir Christopher Wren, professor of astronomy at Oxford, who first tried the experiment of injecting drugs into the veins of animals in 1656, and in 1657 repeated the experiment on man. Opium was one of the first drugs injected, and syphilis was one of the first diseases treated by intravenous injection. The second period in the history of this work began about the end of the eighteenth century and extended to the middle of the nineteenth century, while the third period extended from then to the present time. The second period covered experimental work along toxicological and pathological lines, and in this connection are noted the names of Fontana, Magendie, Bichat, Nysten, and others. Baron Magendie and Percy attempted to cure tetanus and hydrophobia by intravenous injections, publishing reports in 1814 and 1823. Halford, in 1869, reported results of his experiments on the injection of ammonia in cases of snake bite. The third period is distinguished by the development of bacteriological knowledge, and injections were made either to increase the patient's resistance to infection or for the destruction of the agents of infection. Under the first comes the injections of balsam of Peru and later of sodium cinnamate in tuberculosis by Landerer in 1892, and the injections of sodium cacodylate for pernicious anemia and other conditions by Gautier about 1897. Under the second heading comes the work of Baccelli in 1890 on intravenous injections of quinine in malaria, and the work of Credé in 1901 on the injection of silver salts in all kinds of infections. The discovery of hypodermic injections was a great intellectual achievement. The epidermatic method, also the endermic method, was first used. These were followed by the inoculation method used extensively when LaFarge, in 1836, proposed its use for other remedies than cowpox virus. The invention of hypodermic injections in therapeutics was first made by an Irish surgeon, F. Rynd, in 1844, or about ten years earlier. Macht credits Pfender of Washington, D. C., with this valuable information, for Alexander Wood of Edinburgh has been given the credit of this discovery in 1853. Wood, however, applied this method of drug administration to a large number of cases, wrote up his work, and considered that the maximum effect from the hypodermic was exerted at the place of injection. Charles Hunter in 1859 demonstrated that it is unnecessary to make the injection at the seat of pain. Ruppaner of Boston introduced the hypodermic method of medication into the United States, and John S. Billings tells of its use in the Civil War. Rynd used a syringe devised by himself; Wood first used one made by Ferguson, while the hypodermic syringe of Charles Pravaz of Lyons is the prototype of the hypodermic syringe of today.

4. A Rational Treatment of the Morphine Habit.—Charles E. Sceleth outlines the method of treatment he has employed for the cure of the morphine habit. There are many angles to the plan; its essence rests in the formula: scopolamine hydrobromide, gr. 1/100; pilocarpine hydrobromide, gr. 1/12; ethylmorphine hydrochloride, gr. ½; fluidextract cascara sagrada, m. 15; alcohol, ♏ 35; water, qs. ad ℥ 1. The amount prescribed and the indications for its continuance or modification vary with the case. Patients who are addicted to the use of more than 10 grains of morphine a day are given 60 minims of the mixture every three hours, day and night, for six days. This is reduced to 30 minims on the seventh day, to 15 minims on the eighth day, and on the ninth day to 15 minims three times during the day only. On the tenth day the mixture is discontinued altogether and tonic treatment begun. Addicts accustomed to the use of less than 10 grains of morphine a day and more than five are started with a dose of 45 minims, which is reduced on the seventh day in a manner analogous to that just detailed; to those who have been taking less than 5 grains, only 30 minims are given as an initial dose. If on the third or fourth day of treatment the pupils are dilated and react to light and accommodation, the patient is reacting properly and the outlook is good. The patient on admission is put to bed, given three compound cathartic pills, followed by a saline cathartic (Epsom salt), and at once started on the scopolamine mixture. During the first few days the diet should be light and liquids should be pushed, the patient drinking 3 pints or more of water a day. On the tenth day strychnine nitrate, gr. 1/30, is given for three doses; the following day the amount of strychnine is reduced to gr. 1/60, which is continued three times a day for a week. By the fifth day the patient's desire for morphine is gone. A substantial diet is requested and he begins to put on weight rapidly. Graded exercises are begun, if possible, in order to promote strength and induce bodily fatigue, which combats the insomnia. A warm bath and carbonated waters aid in this effort. Sceleth says that there is no specific treatment for the morphine habit, but the above-outlined plan seem to meet most accurately the specific indications from the pharmacological point of view. Other advantages of this regimen are its simplicity, because it can be carried out in a private hospital or home and by the non-specialist, and its freedom from abstinence symptoms, especially the more dangerous ones. No plan of therapy, however logcial or successful, can assure freedom from recurrence. This is entirely a matter of the individual. One with no natural force of character, or one who returns to a former vicious environment, is likely to relapse; while the man of higher type who is anxious to reform is capable of doing serious work and, if given the opportunity, has an excellent chance of permanently remaining cured.

5. Treatment of Cases of Epidemic Meningitis.—Josephine B. Neal states that the most common two mistakes in serum treatment of epidemic cerebrospinal meningitis seem to be giving too few doses of serum, if the patient improves considerably after the first one or two injections, and failing to persist with the serum if the improvement is very slow. It has been the experience of the meningitis department of the Bureau of Laboratories, Department of Health, New York City, during the past five years that it is rarely safe to give less than four doses of serum on consecutive days, even if the improvement clinically is very rapid and the organisms disappear from the fluid after one or two injections. In cases which have been running on for some time and in which the patients are evidently improving when first seen, one or two injections of serum are sometimes sufficient. A case of average severity usually requires from four to seven injections. It is safer to give the injections on consecutive days until it seems evident that the patient is out of danger than to skip a day or two when a slight improvement occurs, thereby giving the organism a chance to increase. Puncture for the relief of pressure may have to be done several times during convalescence, and at such punctures a little serum may be injected, especially if a large amount of fluid be withdrawn. In a small per-

centage of cases—from 5 to 10 per cent.—a large number of injections may be necessary before the termination of the case, and a certain number of such cases terminate fatally. Autogenous vaccines have not been used in a sufficient number of cases to show their value definitely, but Neal says that it is the custom of the department to use them in cases that tend to become chronic and in a number of cases they seem to have been beneficial. It has been the experience of the department that doses of serum larger than 20 c.c. need to be given with extreme caution, even though very large amounts of fluid are withdrawn. Untoward effects from the withdrawal of large quantities of fluid have never been observed. The punctures are always made with the patient lying down. The serum treatment should be continued until the fluid has been sterile for two or three days and until the patient clinically is much improved. Hexamethylenamin is given as a routine. It certainly tends to prevent cystitis if retention develops, as it often does. Sedatives must be used if the patient be delirious or restless, preferably some preparation of opium, as it has a less depressing effect on the heart. The eyes, mouth, skin, and bladder, and bowels all must receive careful attention. Most important of all is the feeding, for in many instances swallowing is very difficult on account of the retraction of the head, and the greatest patience must be exercised to induce the patient to take even a little nourishment.

14. Variations in the Strength of Positive Wassermann Reactions in Cases of Untreated Syphilis.—David A. Haller states that the explanation sometimes offered for the difference in the results of the Wassermann reaction on the same individual done at different laboratories is that antigens have been used which vary in strength. He reports that in a recently completed series of more than 6,000 Wassermann reactions done on the serum from 5,000 individuals at the medical clinic of the Peter Bent Brigham Hospital, Boston, only one antigen has been made use of, so that any variation reported here cannot be attributed to this factor, as this antigen for all practical purposes is constant. A group of twenty cases of untreated syphilis including all stages of the disease was selected. The blood from each of these individuals was obtained every day for seven days. In several cases the blood was tested against seven different hemolytic systems, and in every case the seven specimens were kept until the end of the period and then tested against a single hemolytic system. The results when daily tests were made were variable within narrow limits but very minute. Nineteen other cases showed either an absolutely constant titer for each specimen or a variation which was decidedly within the limits of mechanical accuracy. The tendency of salvarsan to bring out a positive reaction is well shown by a comparison of the cases Haller reports; and they bear out the statement of Swift that the early cases are more quickly rendered negative by mercury than the older ones. An attempt has been made by Haller to determine how long it is necessary to wait after treatment with mercury before any dependence can be placed on a negative test, and also to determine how much mercury is necessary to convert a reaction to a temporarily negative one. After following a fairly large number of cases for more than a year, doing their Wassermann reactions repeatedly, the conclusion was reached that the individual variation in cases is so great that rules of only doubtful value can be established and no hard and fast statements can be made. He concludes that the variations from month to month in the degree of positiveness of serums in cases of untreated syphilis are slight. The fixing unit for the serums in cases of untreated syphilis does not vary appreciably from day to day; and that any variation found in daily titration for the fixing unit is due, provided the antigen is constant, to variation in the hemolytic system. On the majority of positive Wassermann reactions mercury has a prompt and powerful though fleeting action. Haller and his co-workers cannot agree with the statement that mercury is of little value in the treatment of syphilis.

16. Extragenital Syphilitic Infection. — William W. Cadbury reports the following unusual case, and calls attention to the fact that many cases of syphilis arise from extragenital infections of which the patient is wholly innocent as well as ignorant until some late manifestation of the disease appears. A physician, Celtic, aged 29, whose parents were living, in good health, and who had two brothers and one sister, all in good health, had measles as a child but otherwise no illness. No history of any venereal infection. Patient was married in 1910, and the wife, aged 29, had five brothers and sisters, as well as both parents, all living and well. She had had no serious illness and no history of venereal infection. A healthy child was born in 1911. In the spring of 1912, while engaged in an active surgical practice, the patient developed what he and a consultant supposed to be a felon of his finger. The sore healed after about six months' local treatment. The following fall an epidemic of dengue occurred in the physician's town, and he believed he had an attack. He suffered for several days with pains in the bones and joints, and had an eruption over the body resembling that usually seen in dengue. Later he suffered from insomnia and lost in weight. His wife had been perfectly well during the entire course of her husband's illness. In November, 1912, in the eighth month of pregnancy, her older child kicked her in the abdomen, and from then all sensation of quickening ceased and ten days later a macerated fetus was born. Death was attributed to injury. In 1913 she noted some tendency to alopecia, which was transient. In October, 1914, a healthy male infant was born at term. The labor was uncomplicated and the child perfectly normal apparently. In the fifth week the child was brought to the hospital for a cold in the head of several days' duration. Examination showed the infant to be moribund. There was a scaly eruption about the finger nails, and liver and spleen were enormously enlarged. After five hours the child died. Necropsy was partially performed and sections of the liver and spleen taken, which showed spirochetes in both organs. The father denied any venereal infection. Examination showed the scar on the finger from the felon and the postcervical glands were enlarged. Wassermann tests were made then on the patient, his wife, and oldest child. Those of the parents were both positive, but that of the child, evidently born before infection in 1911, was absolutely negative. A vigorous course of treatment with salvarsan was immediately instituted in both parents, in which the serum reaction ultimately became negative.

The Lancet.

March 4, 1916.

1. Investigations on Clinical Thermometry: Continuous and Quasi-continuous Temperature Records in Man and Animals in Health and Disease. G. Sims Woodhead and [illegible] C. Varrier-Jones.
2. A Tabular Statement of 500 Abdominal Gunshot Injuries. Cuthbert Wallace.
3. Diagnosis of Fevers among the Mediterranean Expeditionary Force. R. Athelstane P. Hill.
4. The Puerperal Fever Fiction and the Notification Farce. W. E. Fothergill.
5. The Treatment of Septic Wounds with the Simpson Light. J. A. Menzies.
6. [illegible] as a Factor in the Causation of Mental Disease. Charles Mercier.
7. Observations on the Etiology of Sarcoma in the Rat. Albert S. [illegible] and Helen G. Layton.

5. The Treatment of Septic Wounds with the Simpson Light.—J. A. Menzies states that after the use of the Simpson light for over seven months he considers that a report of his favorable results opportune at this time. He has seen great improvement following such treatment in three cases of lupus; one case of 18 years' standing was entirely healed, and two cases of advanced Graves' disease, in which the thyroid gland became smaller and the signs and symptoms decreased. He cites also the results on cases of wounds of the elbow, thigh, knee-joint, and leg in soldiers which were cured. Over forty cases were treated. The dose given was two and a half to three minutes at each sitting, and there were usually two sittings per week. The following may be regarded as among the distinctive features of Simpson light treatment: 1. The relief of pain, which often followed on the day after the first application. 2. The increase of movement, also following shortly after the first treatment, but does not apply to wounded joints. 3. The relief of swelling, tenderness, and inflammatory induration markedly reduced. 4. Absorption of scar tissue; this was shown by the results on old scars on the cornea, which cleared up. 5. Improved appearance in wound tissue, in which unhealthy granulation tissue became healthy. 6. Diminished discharge from the wound, a very marked feature.

7. Observations on the Etiology of Sarcoma in the Rat.—Albert S. Leyton and Helen G. Leyton offer the results of their experiments in the department of pathology of the University of Leeds on this subject. Some previous work on the hemolytic properties of the serum of rats inoculated with sarcoma showed them that these properties were to be found also in diseases of bacterial origin, and they proceeded to investigate into the possibility of a bacterial origin for sarcoma. They argued that the site of infection would probably be the cell nucleus, since most of the characteristics of malignant growth point to irritation of the nucleus. Rat sarcoma was made into an emulsion and filtered through a Chamberland filter. The filtrate was plated and a streptothrix isolated in several cases. They have also isolated a streptothrix from mouse carcinoma. They concluded that the streptothrix would hardly be a filter passer, but that the spores of the streptothrix had been filtered. A spore, too, might more easily enter the cell nucleus and also reproduce the streptothrix, either directly or through an alternate generation. They accordingly inoculated three rats in the axilla with 1 c.c. each of the sarcoma filtrate, which should contain the virus of the new growth. Tumors developed at the site of inoculation. They mention the fact that while several sarcomata have a filterable virus, it has not been mentioned in connection with the Ehrlich rat sarcoma. In order to test the relationship of the streptothrix to the formation of sarcoma, it was injected several times into the subcutaneous tissue and into the peritoneal cavity of rats, and several were fed with it weekly for some time. So far a tumor has resulted in one of the fed rats only, and it has all the characters of a spindle-cell sarcoma and is inoculable; from it the streptothrix has been isolated again. The streptothrix in question appears to be either very pleomorphic or several species are to be found in rat sarcoma. They also isolated one by the same method from the washings of the hair of a sarcomatous rat, but not, so far, from that of a normal rat.

British Medical Journal.

March 4, 1916.

1. The Treatment of Gunshot Wounds. Sir Berkeley Moynihan.
2. Remarks on Delayed Tetanus. Gilbert Barling.
3. The Treatment of Tetanus. R. G. Abercrombie
4. The Visual Neuroses of Miners in Their Relation to Military Service. Charles P. Harford.
5. A Method of Treatment for Conjunctivitis. Frederick Jefferson and W. E. M. Armstrong.

2. Remarks on Delayed Tetanus.—Gilbert Barling reports three cases of this condition seen at the Second Birmingham War Hospital in which the tetanus developed in the first case after an incubation of fifty-one days, in the second after fifty-three days, and in the third after forty days, which was followed by gas gangrene seventy-three days after injury and forty-two days after the wound had healed. The first and second cases were given 37,500 units and 153,000 units of antitetanic serum in divided doses respectively. It is not known whether the third case received a prophylactic dose of serum. This man died about three months after he had received his wound. At the post-mortem examination cultures were made from the spleen and from the gangrenous area near the right shoulder. The former yielded the streptococcus and the latter an anaërobic bacillus in addition to the streptococcus. The bacillus was recognized as *B. perfringens* or *B. aërogenes capsulatus*. Barling's impression is that the *B. perfringens* was activated by the association with it of a streptococcus in a subject exhausted by a severe attack of tetanus. The occurrence of gas gangrene seventy-three days after the infliction of a wound and forty-two days after the wound had healed appears to be unique, and detailed search brought forth no other such case in current literature. With regard to the effect of the serum, Barling wonders whether a prophylactic dose may delay the onset of tetanus by directly influencing the growth of the infective organism and so reduce its virulence that it only shows its clinical effect under some special condition favoring more vigorous growth. Or, alternately, does the antitoxin thus given neutralize the first-formed toxin and so prevent the development of clinical symptoms, despite the growth of the infection, until all the antitoxin has been saturated? He cites several other cases in which a latent organism once active has been made active again as a consequence of injury and the resulting lowered resistance of the patient.

4. Visual Neuroses of Miners in Their Relation to Military Service.—Charles F. Harford records some of the cases of so-called miner's nystagmus which have been met with recently among miners coming from some of the counties of England who have found their way into the army. He considers the name miner's nystagmus to be unfortunate, as the nystagmus is only one symptom out of a group which may be absent even when the disease is present in a marked form. He enumerates the other symptoms that may be found, as follows: Defect of vision, hypermetropia, myopia, and astigmatism. But in no case was any abnormality of the fundus detected, temporary giddiness occuring often in the early morning; photophobia, or intolerance of light, was present in practically every case; headache, especially through the temples, either at night or in the early morning; perverted visual impressions, such as dancing lights or glittering lights, occurred with the nystagmus; the mental factor, shown by great mental depression, accompanied the majority of these cases; the nystagmus was not present in those cases in which the men had been above ground for a length of time, showing that the circumstances under which these men had been living was a factor in the development of this condition. There is no doubt but that it is a serious mistake for men who have any tendency to this complaint to be subjected to the arduous strain of military service, which places such tremendous demand on all the powers of mind and body, particularly of the eyesight.

Berliner klinische Wochenschrift.

February 14, 1916.

Disturbances of Voice and Speech in the War.—Gutzmann asserts that these are of much more frequent occurrence than is commonly believed. They accumulated to such an extent even early in 1915 that they formed a special class for treatment. A ward of 24 beds soon filled up and it was necessary to provide a special hospital division. At the present time 50 hospital and 20 dispensary cases are under treatment. There was great need of trained assistants, such as deaf and dumb instructors, but with one exception all the original lady volunteers deserted and she was the wife of one of the medical men. Later, deaf and dumb teachers came and remained steadfast. The author now proceeds to answer his own question, "How do soldiers come by these disorders?" The answer is "through injury or through illness." Mild transient cases of aphonia and aphasia follow fright and shock, but these are not considered in any connection. More serious and protracted conditions are caused by wounds of the organs of speech and injuries to the head. These need not detain us. Serious disturbances, however, are produced by wounds of remote localities and are not necessarily psychogenic. The shock of the wound may cause prolonged unconsciousness from which patient emerges speechless or voiceless. Physical shock must be invoked to explain such cases. A reflex cause could be excluded. The disturbances in question comprised aphasia, phonastema, dysarthria including the spastic form, and kinetoses of all kinds, very often accompanied with exhaustive states. Treatment was for the most part imperfectly successful with occasional good results. One soldier upon recovering from shock after protracted unconsciousness showed total aphasia. As this passed off dysarthria and dysphasia were left and persisted for eight months. After this bradylalia was the only symptom in evidence. Thirteen months expired before he could resume his duties as officer. The author writes at great length on the various forms of speech disturbances encountered, including stuttering, and preserved a number of phonographic records for demonstration.

War Literature of Internal Medicine.—Reckzch continues his review of this subject and mentions the literature of army rheumatism. One-third of these cases consist of polyarthritis acuta, which as a rule were mild and in almost all instances due to sojourn in damp trenches. Certain cases, however, could be attributed to an angina. Diarrhea was not infrequently a prodrome. The joints of the lower extremities were most frequently attacked. No distinction could be made between neuralgias and myalgias. Chronic affections of the joints have a marked static factor and demand orthopedic correction. One writer finds that in chronic rheumatism so-called muscular affections predominate. There is often extreme tenderness over the tendons, muscular insertions and periosteum. Drugs have little influence on chronic rheumatism of any type. Perhaps, in contrast to the general opinion, the German psyche has shown a high degree of resisting power to the psychic insults of warfare. This find proved a welcome surprise to the Germans themselves. Psychoses are few in number. Neurasthenia, while common and severe, responds rapidly to treatment.

Münchener medizinische Wochenschrift.

February 15, 1916.

Peculiar Late Exanthems After Inoculation Against Cholera and Typhoid.—Friboes refers to a series of 10 or 12 cases of soldiers admitted to a clinic with apparent scarlatina. Inspection showed, however, that the latter could be readily excluded. The exanthem appeared to be quite unknown and could only be interpreted as a late result of immunisation,—as afterward appeared some three or four weeks after the injections. A second batch of nine cases was received at a later period and here a complete history was obtained. Despite notable points of difference the rash could readily pass for atypical scarlet fever, which would lead to unnecessary isolation. The eruption may show considerable diversity, especially in mild cases and early stages. The well developed case is confusing, because despite dissimilarities in the rash there may be associated with the latter vomiting, fever. The buceal phenomena of scarlatina may be present, such as the strawberry tongue; and while the angina is of a mild, diffuse type, in one case there was ulceration and otitis media. Conjunctivitis, coryza, and bronchitis were more or less in evidence. Enlarged cervical glands were absent. The most striking property of the exanthem is a slightly yellowish tint such as has never been observed in scarlatina. The affection appears to be quite new in medicine and its relation to inoculation is obscure; typhoid immunizing bodies cannot of course be accused of provoking a specific rash because cholera vaccine produced a like result.

Dangers of Pyelography.—Professor Simmonds concludes his paper as follows: Not alone is collargol poisoning a possible danger, but there is a far more serious sequela encountered at times, to wit., septic infection. To guard against the latter the bladder and renal pelvis must be sterile when the injection is made, and all pains taken to prevent injury of the kidneys. In any death whatever which was preceded by a pyelography, blood tests should be made. To return to collargol, this substance has been pronounced nontoxic by authorities, *i.e.*, no form of argyrism has been described. Affections imputed to it—as acute hemorrhagic diathesis—may have been caused by sepsis, or, as happened in one case, by the anesthetic. A case of the author's is as follows: Man, aged 34, was submitted to pyelography because of the general vagueness of his symptoms. They were irrigated with 15 c.c. of 5 per cent. solution, and the operation caused a sense of pressure. At night the patient vomited and passed much bloody urine, followed by a hemorrhagic exanthem. Death took place on the third day. The autopsy showed the picture of hemorrhagic sepsis. There was evidence that the kidney pelves had been directly injured, while both kidneys were the seat of a diffuse process (anuria had suceeded hematuria). All doubt as to the nature of the disease, Simmonds said, vanished after hemolytic streptococci had been cultivated from the blood.

Paratyphoid Fever in the Tropics.—Professor Castellani says that paratyphoid is a milder and shorter disease than true typhoid, of course, with exceptions. In the Tropics the two conditions cannot be differentiated clinically, as true typhoid often runs a most atypical course and may begin quite abruptly. The diagnosis, therefore, is based on bacteriological findings. His treatment is the same as for true typhoid, and he adheres to the older treatment of strict fluid diet during the whole course of the fever, and for some days after its subsidence. The newer method of treatment by a more substantial diet had been tried, but the mortality had been much greater than on the fluid diet, and as the cases in both Ceylon and India often show a malignant type, a return had been made to the old treatment. Prophylaxis is to be found in antiparatyphoid inoculation.—*Proceedings of the Royal Society of Medicine.*

Book Reviews.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in medicine and surgery, under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School, Chicago: The Year Book Publishers, 1915.

Volume I. GENERAL MEDICINE. Edited by FRANK BILLINGS, M.S., M.D., Head of the Medical Department, and Dean of the Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, A.M., M.D., Professor of Medicine, Illinois Post-Graduate Medical School. Price, $1.50. This volume deals with such infectious diseases as tuberculosis, pneumonia, poliomyelitis, smallpox, rheumatism, and pellagra; likewise the diseases of the lungs, heart, arteries, blood and blood-making organs, ductless glands and kidneys, and the metabolic diseases. The book gives one an opportunity to review the progress made in the diagnosis and treatment of these diseases.

Volume II. GENERAL SURGERY, edited by JOHN B. MURPHY, A.M., M.D., LL.D., F.R.C.S. England (Hon.), F.A.C.S., Professor of Surgery in the Northwestern University; Attending Surgeon and Chief of Staff of the Mercy Hospital and Columbus Hospital; Consulting Surgeon to Cook County Hospital and Alexian Brothers Hospital, Chicago. Price, $2.00. This volume contains abstracts of the literature covering pretty thoroughly the whole realm of general surgery. Where indicated, comments have been made by the editor, and this enhances the value of the book.

Volume III. THE EYE, EAR, NOSE AND THROAT, edited by CASEY A. WOOD, C.M., M.D., D.C.L.; ALBERT H. ANDREWS, M.D.; WILLIAM L. BALLENGER, M.D. Price, $1.50. This volume contains abstracts of a great many interesting papers. Thus it proves valuable for a quick review and study, to both the specialist and the general practitioner.

Volume IV. GYNECOLOGY, edited by EMILIUS C. DUDLEY, A.M., M.D., Professor of Gynecology, Northwestern University Medical School; Gynecologist to St. Luke's and Wesley Hospitals, Chicago, and HERBERT M. STOWE, M.D., Assistant Professor of Obstetrics, Northwestern University Medical School; Attending Gynecologist to Cook County Hospital. Price, $1.35. The author discusses in order general principles, disorders of menstruation, displacements and injuries, infectious and allied disorders, malformation and tumors, and sterility.

Volume V. PEDIATRICS, edited by ISAAC A. ABT, M.D., Professor of Pediatrics, Northwestern University Medical School, Attending Physician Michael Reese Hospital. ORTHOPEDIC SURGERY, edited by JOHN RIDLON, A.M., M.D., Professor of Orthopedic Surgery, Northwestern University Medical School, with the collaboration of CHARLES A. PARKER, M.D. Price, $1.35. Although there has been no particular advance made in either pediatrics or orthopedics, the many interesting cases recorded in the literature of the past year furnish material for a very instructive volume.

Volume VI. GENERAL MEDICINE, edited by FRANK BILLINGS, M.S., M.D., Head of the Medical Department, and Dean of the Faculty of Rush Medical College, Chicago, and J. H. SALISBURY, A.M., M.D., Professor of Medicine, Illinois Post-Graduate Medical School. Price, $1.50. In this book the editors treat of the infectious diseases not considered in Volume 1 of the series, and the diseases of the gastrointestinal tract. Many instructive cases are recorded and newer methods of diagnosis and treatment discussed. A very helpful book is the result.

Volume VII. OBSTETRICS, edited by JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics, Northwestern University Medical School, with the collaboration of HERBERT M. STOWE, M.D. Price, $1.35. The editor divides the book into four parts, namely, pregnancy, labor, puerperium, and the new-born. In the part devoted to labor are a number of articles dealing with twilight sleep, with a summary by the editor. A perusal of these articles convinces one that the method should be employed only by the specialist in obstetrics, and then only if the patient is cared for in a well-equipped maternity hospital, having a thoroughly competent staff. Even then one is not sure that the treatment is desirable. There are many other interesting articles which add greatly to the practical value of this volume.

COLON HYGIENE. Comprising New and Important Facts Concerning the Physiology of the Colon and an Account of Practical and Successful Methods of Combating Intestinal Inactivity and Toxemia. J. H. KELLOGG, M.D., LL.D., Superintendent of the Battle Creek Sanitarium; Author of "Neurasthenia, Its Causes and Cure," "Rational Hydrotherapy," "The Art of Massage," "Light Therapeutics," etc. Price, $1.75. Battle Creek, Michigan: Good Health Publishing Co., 1915.

THIS book covers in a thoroughly sensible and reasonable manner the physiology and therapeutics of the intestinal tract, especially that of the colon. It is written in a semi-popular style, which, while in no way detracting from the benefit to be derived by the physician, places it within the scope of the intelligent, nonmedical reader. The reader is asked in the preface to note especially that no panacea is offered for colon miseries; there is no "cure all" for constipation. The way out of the slough of intestinal toxemia with its "biliousness," headaches, neurasthenias, and multitudinous maladies is to be found only through living biologically, and making use of the "safe and sane" helps which recent scientific progress has provided. The purpose of the work is rather to enable the patient who may read it to cooperate intelligently with the wise up-to-date physician. Besides complete descriptions of exercises for the treatment of constipation, baths, and electrical methods, a diet is given, containing valuable recipes for the preparation of some of the foods.

A TEXT BOOK OF PHYSIOLOGY FOR MEDICAL STUDENTS AND PRACTITIONERS. By WILLIAM H. HOWELL, Ph.D., M.D., Sc.D., LL.D., Professor of Physiology in the Johns Hopkins University, Baltimore. Sixth edition, thoroughly revised. Price $4.00. Philadelphia and London: W. B. Saunders Company, 1915.

FOR those who are already familiar with Professor Howell's book, the news that a fresh edition has appeared will be both interesting and agreeable, while for the benefit of those who do not know the work it may be stated that the event is truly one of importance. Physiological science has become so complex and its problems ramify in so many directions that it is almost impossible for a single mind to have authoritative command of the entire subject. Yet the advantages of the one-man book when it is well done are so great that for the ordinary reader it is to be preferred to the collaborative works produced by a group of contributors, which are so very popular and numerous in Germany. However well edited such a treatise may be, it must inevitably suffer to some extent from its patchwork character—there are always gaps and duplications, and often conflicting points of view—while a book from a single but competent pen often makes up by its greater coherence and continuity of thought for any possible shortcomings in special fields. The present volume is a shining example of how good such a book may be, when it is the work of a master, and it is a pleasant task to call attention to its appearance in a sixth edition. Much new matter has been added, especially in the section on nutrition and that in the internal secretions, which latter forms a most comprehensive summary of what is known and what is believed in this very mysterious field. It is altogether a valuable and important book which thoroughly deserves its popularity with teachers, students, and general readers.

A TEXT BOOK OF THE PRACTICE OF MEDICINE. By JAMES M. ANDERS, M.D., Ph.D., LL.D., Professor of Medicine and Clinical Medicine, Medico-Chirurgical College, Philadelphia. Twelfth Edition, Thoroughly Revised. Octavo of 1336 pages, fully illustrated. Price, cloth, $5.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

WHEN a medical work reaches its twelfth edition there is little left to tell about the contents except that the book has been brought thoroughly up to date in every branch of the practice of medicine. In this book new sections have been added on Colon Bacillus Infections; Tuberculosis of the Thyroid Gland, and Hypophyseal obesity. Also a rewriting and addition of Acute Anterior Poliomyelitis; Rôle of the Cockroach in Spread of Cholera; Glycyltryptophan Reaction in Cerebrospinal Meningitis; Neosalvarsan; d'Espiné's Sign in Tuberculosis of the Bronchial Lymphglands, and Bárány and Neumanns' Test in Diagnosis of Labyrinthine Disease. Dr. Anders' work has stood out prominently for the past eighteen years in a field of medicine, the literature of which has vastly increased in that length of time.

Society Reports.

THE NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held February 17, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THE President announced that the subject of the evening would be "Saratoga Springs." New York State had purchased and restored the mineral springs of Saratoga. Through a Commission it was maintaining and administering them in the interests of the people.

What the State Has Done at Saratoga.—GEORGE FOSTER PEABODY, Esq., formerly chairman of the Saratoga Commission, said that the State had accomplished a great deal at Saratoga but he could make only a short report because of the time limit. There was one great thing that the State had done in connection with the work at Saratoga Springs: it had obtained the aid of experts and the men of science had produced an element of faith. As was well known, some people were inclined to lose their faith in the waters but now the science of medicine had demonstrated the power of faith. The citizens of the State, as well as those of Saratoga Springs, had been given much knowledge which showed them the natural value of the resources located there. The history of the Springs was such a long one that Mr. Peabody said he could not enter into a full account of it. He wished to call attention to the fact that there was a great profit to be had from the sale of the waters; the mineral springs at Saratoga, which have been taken over by the State, were fully as potent in medicinal value as those abroad, but it was necessary to acquaint physicians throughout the country with the curative value of the springs. The reputation of the springs had been much impaired by the commercial exploitation of the gas. When the springs were nearly ruined then the matter was up to the citizens of Saratoga Springs and to the Legislature. Under the leadership of Senator Bracket a bill was finally presented and passed appointing a Commission to look into the matter and to report. This Commission spent a great deal of time in gaining information and recommended the purchase by condemnation to rescue this great reservation for the State. Finally a bill was signed by Governor Hughes endorsing the action taken. The property was acquired gradually by the State. But there were some people who did not believe that the waters could be recovered; they were very skeptical. After the Commission had made a careful study and learned certain facts, it was warranted in having this faith strengthened and it felt that it could go forth and take some risks. At this time the Commission was fortunate in having the advice of Dr. Simon Baruch, a member of the New York Academy of Medicine, who was in London at that time. Without compensation Dr. Baruch devoted months of his time in making observations at the European spas and he brought the Commission, as it proved to be, a complete guide to the building up of Saratoga as a cure. Not less important was it that Dr. Baruch took a broadminded view of the situation and in a public spirited manner gave them his observations, particularly as to the conditions in Kissingen and Nauheim, the waters of which resembled those of Saratoga Springs. At Kissingen he met Dr. Paul Haertl, who was in charge of the Royal Laboratory. Finding him an exceptionally able man in all matters appertaining to mineral springs, Dr. Baruch immediately secured his services subject, of course, to the approval of the Commission. The latter accepted Dr. Baruch's advice and obtained from the United States authorities permission from the Royal Bavarian Government to invite Dr. Haertl to Saratoga Springs. He found that some of the waters had been ignorantly exploited. It seemed to be a clear case of "killing the goose that laid the golden egg." The reputation of the cure abroad was based on a long knowledge and expression by physicians of the helpful qualities of the waters there. So far as Mr. Peabody had been able to discover, the confidence of the physicians in this country regarding the beneficial qualities of these waters needed to be assisted almost as much as that of the patients. The physicians abroad believed in the value of the springs there, but American physicians seemed to show more faith in the springs abroad because they had not until now been properly investigated. The Commission had been able to demonstrate that the springs would recover their mineral content. The quantity of CO_2 now demonstrated to be available seemed to be sufficient to warrant the belief that the springs at Saratoga would come back, and with full power. The State should be aroused to the necessity of having proper buildings and proper environment, for the Commission had had a very limited amount of money at its disposal. The fact that there were so many fine trees, pine growths and a great variety of tree growths in the Adirondacks, at the foothills of which Saratoga lay, should make the basis for an attractive resort. About $1,500,000 were needed for the acquisition of properties, for repairing damages of retubing, etc. The bulk of this money, however, was spent for acquiring properties necessary. At the present time there was only one bathhouse open during the winter and hotel accommodations were badly needed during the winter at the springs. Just at this time when patients could not be sent abroad on account of the war, the State should make the best possible provision for those at Saratoga Springs. It was too bad that there was such a lack of hotel accommodations during the winter. Only one spring was run during the winter, but some could get places at boarding houses. The State of New York would certainly be doing a great service in conserving the waters at Saratoga Springs now. The cost of what was necessary to effect these changes should be properly placed before the people of the State. Mr. Peabody said he had been particularly impressed among the business people he had been associated with, by the number of those who had heart troubles, and it seemed to him that in this city of New York, where the stress of life was so very strenuous and severe, it was very important to have a place where this class of patients could be conveniently sent, such as Saratoga Springs, with its climatic advantages and other attractions. This would be an enormous economic advantage for these men of large affairs, because they could take the cures in this country without the danger and risk of an ocean voyage.

The Springs of Saratoga; Their Value in the Treatment of Disease.—Dr. W. GILMAN THOMPSON presented this paper. (See page 589.)

The Geology of the Saratoga District, and the Source of the Mineral Waters.—Dr. ALBERT WARREN FERRIS delivered an extemporaneous address, describing the stratified rock of the Saratoga quadrangle, the change of the topography caused by the oscillations of the earth's crust, and the action of the ice sheet, as well as the pores, bedding planes and solution channels existing in dolomites, limestones and sandstones. He outlined the theories of the origin of the mineral water and explanied the solution of various minerals in the water, the presence of the gas and the foreign chemistry of the mineral constituents. His talk was illustrated with colored lantern slides showing features of Saratoga Springs as a health resort, some examples of the work of the State Reservation, and the famous High Rock Cone first seen by a white man in 1643, when Father Isaac Jogues was taken prisoner by the Mohawks and brought down from the Algonquin country to the flowing springs of the Kayaderossearas country.

Stated Meeting, Held March 2, 1916.

VICE-PRESIDENT, DR. EDWARD D. FISHER, IN THE CHAIR.

THE program was arranged by the Sections on Medicine and Surgery. The subject for the evening was "The Importance of the Early Recognition of Cancer of the Stomach for the Purpose of More Frequently Obtaining Successful Surgical Treatment."

The Reasons for Early Diagnosis of Cancer of the Stomach.—Dr. CHARLES H. PECK told of their experience at the Roosevelt Hospital during the past six years. The statistics showed that in the year 1913 there were 75,000 deaths from cancer in the United States, and that of this number 30,000, or about 38 per cent., were due to gastric carcinoma. The stomach was more frequently attacked than any other organ. The disease was more common in males than in females. Smithers in a series of 921 cases proven by operations or autopsy, found a proportion of 3.04 males to 1 female. In their own series of 95 cases, there were 71 males and 24 females, slightly less than 3 to 1. Since January 1, 1910, they had had under treatment in the surgical wards of Roosevelt Hospital 95 cases of gastric carcinoma, 71 of which were verified by operation. The remaining 24

were either inoperable when admitted (18) or refused operation (6). Of the 71 operations, 26 were simple explorations, the advanced stage of the disease or metastatic deposits prohibiting further operative interference; 18 had secondary deposits in the lymph nodes, pancreas, liver, peritoneum or colon; 2 were extensive growths without definite metastasis, and in 6 instances details were lacking. Eight of these cases died in the hospital following operation. Careful consideration of the extent of the disease made it possible to recognize more frequently inoperable types and fewer fruitless explorations would be performed in the future. Such operations brought no relief to the patient and no credit to the surgeon. This comment did not apply to exploration in the early or doubtful cases. In 21 cases palliative gastroenterostomy was performed; 5 died in the hospital and 16 were temporarily benefited. Some of their failures could be charged to ill-advised surgery in advanced cases without definite pyloric obstruction. Secondary deposits were present in the lymph nodes in 14 of these cases, in the liver in 1, and the pancreas in 2. Of the 71 operations performed, therefore, 55, or 77 per cent. were exploratory or palliative, and only 16 were radical excisions of the growth. The education of the public and the profession in regard to the prevalence and dangers of gastric cancer, the difficulty of distinguishing its early stages from benign conditions, and the promise of early improved results from surgical treatment if cases could be operated upon in the early stages, offered their best hope of improving results. Two of his own cases not included in this series were alive and well after radical operation for what was believed to be at the time benign callous ulcers but in which the microscopical examination showed early carcinoma. If one could consider every callous ulcer successfully excised as potential carcinoma, then indeed they could take heart and feel that some progress was being made in the battle against this disease. Wide differences of opinion still existed as to the frequency with which benign ulcer actually developed into carcinoma. In 61 cases of their series in which the duration of symptoms was not recorded, only 12, or 20 per cent., gave a history of long preceding chronic dyspepsia, the time varying from 3 to 15 years. Eight cases had symptoms from one to two years; 12 from six months to a year; 13 from three to six months, and nine for three months or less. If any inference was to be drawn from these figures it would be that many of the cases developed carcinoma without a preceding ulcer history. Sixteen cases were treated by partial gastrectomy with five deaths, an operative mortality of 31.3 per cent. Few of this group could be called examples of the early stages of the disease; many had large ulcer growths, nine of the 16 having definite lymph node metastasis at the time of operation, and two being adherent to the pancreas. Of the 11 cases which recovered from the operation, two lived three years and two and a half years respectively; two sixteen months and one fifteen months and finally died of recurrence. Where the growth was movable and partial gastrectomy was possible, the operation was quite worth while. In this brief résumé of their experience the cases diagnosed or presented for surgical treatment early had been a rarity. The material analyzed had consisted of cases so advanced that palliative results alone could be hoped for in the majority of the cases. Among the many reasons why the disease was so often far advanced when first seen by the surgeon were the following: (1) Failure on the part of the patient to seek advice through inattention to early symptoms, fear of an unfavorable prognosis or other reasons; (2) disregard of advise, through lack of confidence, fear of operations, or meddlesome interference of friends; (3) ill-advised prolongation of medical treatment for supposed dyspepsia or ulcer; (4) insidious onset and rapid progress of the disease in a certain percentage of the cases. With the modern diagnostic means at their disposal much delay could be saved and many more cases could reach the surgeon in an operable and curative stage than had been the case in the past. The idea that gastric carcinoma was essentially hopeless from the beginning should be combated, for in the early stages it was favorably situated for wide excision and lymph node involvement and metastatic deposits were in many cases of late occurrence.

Methods by Which Early Diagnosis of Gastric Cancer May Be Made.—Dr. THOMAS MCCRAE of Philadelphia, in considering this phase of the subject, said that the question of the early diagnosis of gastric carcinoma was one of the most difficult problems of medicine and there were many reasons why this was so. Gastric carcinoma might give no symptoms until it reached a comparatively advanced stage, gastric complaints were common, and the early symptoms of carcinoma sometimes responded so readily to the same methods of treatment that were effective in these trivial disorders that people were lulled to a sense of security. As regarded the history, Dr. McCrae said that in medical clinics only in a small proportion of cases did gastric carcinoma seem to be engrafted on chronic ulcer. In 150 cases reported by Osler and McCrae, only thirty-three gave a history of any previous gastric disturbance, and in a control series selected from patients with other diseases there was practically an equal incidence of history of gastric symptoms. Dr. Friedenwald reported 1000 cases, among which only 23 per cent. gave a history of previous gastric disturbance. This seemed to be the general experience of medical clinics. In two groups the history was suggestive, the one in which it developed on gastric ulcer and the other in which the symptoms began suddenly. One point to be emphasized was that a diagnosis could not be made on any one sign or symptom alone. As regarded the examination, the internist must spend sufficient time in the study of a case to reach a diagnosis. The general physical examination usually gave very little help in reaching an early diagnosis. The study of the gastric contents should be done by the continuous method throughout the whole course of digestion. In speaking of the various tests of the stomach contents, Dr. McCrae said he felt that the simpler things offered the best chance of reaching a correct diagnosis for most physicians. The finding of pus cells and blood in the empty stomach and again two hours after the meal was important. As to the secretions, a definite drop in the curve of acidity, as though the stomach had become exhausted or as though something had inhibited the secretion, might excite suspicion. The finding of pus, blood, and some mucus two hours after a test meal was important evidence. The study of removed material for tissue fragments, although laborious, was sometimes a means of making a definite diagnosis. In speaking of some of the other tests of the gastric secretion, Dr. McCrae referred briefly to the tryptophan and glycyltryptophan tests. These were not pathognomonic and their value was doubtful. The work of Hawk, Rehfuss, and their associates showed that the trypsin enzyme was almost constantly present in the stomach. If that was so it took away the value of these tests. This work showed that the trypsin enzyme was very resistant to the action of acid and pepsin, and that the tryptic value was high when the acidity was low or when there was anacidity. The same applied to the formol index, the test for erepsin. The test for soluble albumin was regarded very differently by different observers, but might be of more value at the end of two hours than at the end of one hour. Another point with reference to the study of the protein curve through the process of digestion was a divergence of the protein curve from the acid curve, which became more marked as digestion proceeded. There were a number of other tests more or less difficult to do and more or less disappointing. One point to be emphasized was that simple methods persistently carried out gave information of great value and, though not one of the tests alone was pathognomonic, if a number of them agreed the evidence might be depended upon. With reference to the value of the *x*-rays, perhaps a clinician was not qualified to speak; but in growths about the middle of the stomach there was a more or less constant deformity into the lumen of the stomach. If the growth was at the pylorus it was often annular, and one found a more or less permanent condition and the permanence of this condition was important. Sometimes we must decide whether a laparotomy should be done for diagnosis rather than try to make a positive diagnosis of carcinoma. If there was a reasonable doubt as to the diagnosis, an exploratory operation was a method which one should not hesitate to employ.

Dr. GEORGE D. STEWART said that he did not believe that he could add much to the exhaustive study of the subject that had been presented; he could merely reaffirm what had been stated or affirm what he believed. They were all agreed that gastric carcinoma, like all other carcinomas, had a stage during which it was a localized disease. Hence the making of an early diagnosis during the stage of localization was of the greatest importance. Too frequently, however, the onset of symptoms in cases of gastric carcinoma was very sudden, there being few or no preliminary symptoms to

give warning of the presence of cancer. That 71 per cent. of the cases of gastric carcinoma began in gastric ulcer he thought was overstating the matter. Because young men liked rules and because a well-stated rule was of great service as a guide, even if experience brought many exceptions, Dr. Stewart said he would repeat a rule. In Patterson's work on the surgery of the stomach the author argued in favor of an early exploratory operation in cases in which one could not make an accurate diagnosis. He asked, "When should one perform an exploratory operation?" and replied, "When the probability of cancer has been established." To the further question, "When has the probability of cancer been established?" he answered, "When a patient in or past middle life suffers from progressive gastric disease which does not yield to treatment and also exhibits any two of the following symptoms: First, absence of free hydrochloric acid and impaired digestive power; second, marked diminution of protein hydrochloric acid; third, constant presence of blood in the feces, macroscopically or occult; fourth, gastric stasis and impaired motility; fifth, abnormal excretion of uric acid." Like all of the rules, there were certain exceptions; but it seemed to Dr. Stewart that this was a fairly good guide. After all, it was, as Dr. McCrae had stated, frequently not a question of determining whether a cancer was present or not, but of determining whether or not there was a condition in abdomen or stomach which demanded operative interference.

Dr. Adrian V. S. Lambert said that from the standpoint of the surgeon there might be some extenuation of the position of which Dr. McCrae spoke when he stated that the surgeon held that the internist did not take full histories. This was probably because by the time the surgeon saw the case there was a definite history, and then he wondered why the internist had not made an earlier diagnosis. At the present time there was no fair criterion by which one could say that cancer was present. It seemed as though we were waiting for cancer to declare itself instead of reaching out to the allied conditions with symptoms that pointed to cancer. At present it was interesting to observe the number of conditions for which patients were treated who subsequently came to be treated for carcinoma. A severe anemia of unknown origin and not benefited by proper dietetic measures occurred with sufficient frequency in connection with carcinoma to suggest the possibility of carcinoma. Patients had come under his observation who had had such anemias for from six to eighteen months and had been treated more than once for the anemia, and yet not one had had a gastric analysis made. With a knowledge of the allied conditions that might lead to the development of cancer, and with heed to an anemia of unknown origin and resistant to treatment, we should have taken a step toward the early diagnosis of carcinoma of the stomach. Dr. Lambert said that he did not believe that the history of ulcer established the diagnosis of gastric carcinoma. This seemed to be the experience of those who had treated ulcers. He did not believe any one was able to say when a carcinoma was engrafted on an ulcer. In view of the difficulties that surrounded the early diagnosis of gastric carcinoma, early removal of deforming ulcer of the stomach was indicated. It did not seem that they would ever be able to make an early diagnosis in cases in which the patient had no symptoms to indicate the presence of carcinoma. The *x*-ray was a very reliable method of telling whether the patient had a deforming ulcer or not.

Dr. George R. Lockwood said that when a patient in whom there might be a bare suspicion of the possibility of cancer presented himself to the internist, the latter found himself in a serious predicament. If he waited for the development of definite symptoms before sending the patient to the surgeon, when he finally did send him it might be too late; he had only one other alternative, and that was to send the patient, as Cæsar sent his wife to the divorce court, on suspicion alone. It was sometimes helpful to formulate rules for the exclusion of non-malignant conditions. It was helpful to remember that a so-called chronic gastritis, aside from that form due to alcoholism, was more than a gastritis if accompanied by pain or vomiting. One could not depend upon the lack of hydrochloric acid as a sign of carcinoma of the stomach, since this lack was found in both malignant and benign conditions. Of the total achylias only a little over 3 per cent. were malignant cases; the remaining 97 per cent. were examples of the benign form. In the non-malignant achylias the motility of the stomach was good, but should stagnation of gastric contents coincide with the achylia one should suspect carcinoma. Many such cases were treated for neurosis. It seemed that if a patient had stood the stress and strain of life until reaching the age of forty-five years without a nervous break, the development of gastric symptoms at this age could not be ascribed to neurosis. As to a previous history of ulcer, Dr. Lockwood said that his figures were almost identical with those of Dr. McCrae; 13 per cent. of his cases gave a history of gastric symptoms, and gastric analyses had shown that in but 7 per cent. could the symptoms be ascribed to ulcer. So he could only reiterate that the most suspicious symptom of gastric carcinoma was the occurrence of gastric symptoms in individuals who had hitherto been free from such symptoms. The diagnosis between ulcer and carcinoma was often difficult. In case of doubt the patient should be treated by a rigid ulcer cure, such as the cure commonly spoken of as von Leube. If the symptoms resisted such a treatment for four weeks, or if at the end of that time occult blood was found in the stools, or if there was a progressive chloranemia, or if there was a loss of weight not accounted for by the limitation of diet, the case should not be considered one of uncomplicated ulcer, but justified that such case be referred to the surgeon.

Dr. Jacob Kaufmann said that he frequently met with the erroneous conception that when a patient presented sufficient symptoms to give a positive diagnosis of carcinoma of the stomach he was already inoperable. This conception had produced an indifference that did not help in getting the patient to the surgeon. The term "early diagnosis" was vague; it was meant to convey the idea that the diagnosis be made at a time when a tumor was still removable. The operability of a growth, however, did not depend only on its duration, but much more on the character of the growth. A scirrhus might still be operable after a long period, while a soft tumor might be inoperable at an early date. Again, with improved methods of operation a tumor might be considered operable to-day which a short time ago would have been regarded as inoperable. We could reach a diagnosis more frequently if we avoided placing too much emphasis on the general picture and abstained from formulæ that were supposed to be applicable to all cases. There was a difference in the symptoms of cancer engrafted on ulcer and those of primary cancer; a difference between cancer of the pylorus producing obstruction and cancer in the middle portion of the stomach with a tendency to early anemia. If one were familiar with the idea that cancer presented different pictures the suspicion of its presence in any given instance would occur much more readily than if one had in his mind a more general picture of carcinoma. One was handicapped by that group of patients which showed a period of latency. But once the patient reported to the physician a diagnosis could usually be made, if only proper examinations were made. He regretted to say that the majority of cases that had come under his observation had been treated, often for many months, as nervous dyspepsia or gastric catarrh, without even an attempt at a more thorough examination having been made. An important point in the history of these cases was the abrupt onset of symptoms. When a patient reported that he had formerly enjoyed good health and now suddenly suffered from loss of appetite and loss of weight one's suspicions should be immediately aroused. The history was different in the cases of carcinoma engrafted on ulcer, which usually gave a history of a long period of suffering. In regard to the frequency of these cases, his experience had been the same as that of most medical men in that the percentage of ulcer cases that became cancerous was rather small, and, on the other hand, that primary carcinoma formed by far the majority of the cases. The question of cancerous transformation became of practical value in the ulcer cases which had become intractable to medical treatment and thereby had become subjects for operation. In such cases he gave the patient the benefit of the doubt in regard to cancerous degeneration and favored resection all the more, as this procedure was the only operation from which one could expect a cure of the ulcer. As to the value of the *x*-ray which at present claimed the center of the stage, there was no doubt that it was very valuable, but extravagant claims had been made that the *x*-ray alone could settle the diagnosis of carcinoma of the stomach. Dr. Kaufmann said he had a series of cases in which the diagnosis of cancer had been made by the *x*-ray and no cancer was present, and still worse were those cases

in which the *x*-ray had failed to make any diagnosis, particularly in infiltrating tumors. Schuetz of Vienna, in a series of 220 cases of cancer coming under his observation, had made the diagnosis in 196, or 88 per cent. in the majority of the cases before or without *x*-ray examination. In order to test the value of the *x*-ray he had 130 cases examined in the Institute of Holzknecht. All were examined by modern methods and 100 gave positive results, while thirty were negative or very uncertain. In twenty-six of the thirty cases in which the *x*-ray had failed to give the diagnosis it was made by physical or chemical methods. In sixteen of the 100 positive cases the *x*-ray settled an otherwise doubtful diagnosis. He personally had had such experiences and they certainly proved the great value of the *x*-ray. But the *x*-ray should not dominate at the cost of physical and chemical methods of examination as was the tendency at present. Dr. Kaufmann said he regretted that the time would not allow him to discuss the great importance of physical and chemical methods of examination.

Discussion on the Importance of the Early Recognition of Cancer of the Stomach, Etc.—Dr. WILLIAM V. HAYES said there were a few points in connection with this subject which would bear emphasis. One might have cases of carcinoma of the stomach with the free hydrochloric acid 78 and the total acidity over 100. In many cases one must not expect to find a diminution of the hydrochloric acid. Again many cases develop carcinoma without showing any cachexia. Where there was anemia without distinct cause it should arouse the suspicion of a malignant condition, but the fact that the patient did not show this sign did not exclude the possibility of cancer. Progressive loss in weight, steady diminution in the gastric acidity, the finding of occult blood which did not yield to treatment were suggestive of carcinoma of the stomach; nevertheless one would find himself very much deceived in some instances if he put his dependence entirely on these clinical methods without using the *x*-ray. The *x*-ray in the hands of a competent man gave more light on this condition than any other procedure. Unfortunately many radiographs were worthless, and herein lay the difficulty. Many live where it was impossible to have a good *x*-ray examination made, but where it was possible to get a competent radiologist the *x*-ray was the most valuable diagnostic measure available at the present time in reaching a correct diagnosis in suspected carcinoma of the stomach.

Dr. FENTON B. TURCK spoke in regard to the supposed origin of carcinoma in chronic gastric ulcer. He said the anemia preceding cancerous symptoms for some little time was no argument for a simple ulcerative cause of the carcinoma; it was merely an early symptom of malignancy. The experiments on animals to produce peptic ulcer showed that a primary induced anemia was quite as likely to be an underlying cause of gastric ulcer as the presence of an ulcer was likely to be the cause of a secondary anemia. After all we *did* know that carcinoma tended to ulcerate. We were not at all sure of the reverse process. Cases of gastric ulcer proved to have been such by operation had had recurrence of the symptoms with a cure by the internist; but the symptoms were those of ulcer as distinct from carcinoma. It seemed that the trend of opinion of this meeting agreed with the most recent authoritative literature, that in a very small percentage of cases could we feel sure that carcinoma formed on the basis of a chronic ulcer. The reasonable corollary of this should be that operation for pyloric ulcer, except in cases of perforation or obstruction, should not be considered the procedure of choice.

Dr. MAX EINHORN said that this subject had occupied the attention of the medical profession for twenty-five years and all were agreed that cancer should be operated upon as early as possible, and early diagnosis was the aim of every practitioner not only in cancer but in all other diseases. We could make a diagnosis of cancer of the stomach if we took into consideration the whole picture of the disease and not any one thing alone. If carcinoma developed to a sufficient extent to interfere with some function it might be detected, but if it was not that far advanced one could not discover it; it seemed that they must all accede to this limitation. All they could hope to do was to find it where it had already done something. Many patients called upon the physician with stomach trouble and the physician must do the best he could for the patient, not only for the cancer patient but for all patients. Now if one saw a patient who complained of pain in the abdomen and vomiting once or twice the physician would frighten that patient by speaking of cancer with the result that the patient would suffer much more and would probably be sick for a much longer time. It was better to keep such a patient under observation and not to frighten him unnecessarily. A very careful examination by all the measures at our command should be made, and the rule should be that while we were doing everything we could to make a diagnosis we should never frighten the patient, but when we have enough proof to justify a suspicion of cancer we should arrange that something be done.

Dr. A. V. MOSCHCOWITZ said that both from past experience and from the two papers and subsequent discussion of the evening, he had gained the impression that patients with a carcinoma of the stomach were in a bad way. To some extent this was undoubtedly due to the fact that the medical profession was still divided into two camps, namely, internists and surgeons; and there was as yet an evident lack of harmonious cooperation between the two. Even so eminent an internist as Dr. McCrae spoke in his paper of his "surgical friends," and to Dr. Moschcowitz it appeared that the emphasis was strong enough to lead him to believe that "surgical enemies" were meant in reality. Dr. Moschcowitz was also of the opinion that first of all the idea of some internists, that to refer a case to a surgeon was a reflection upon his ability, should be abandoned, not only was it no disgrace to do so, but more than that, it should be looked upon as an agreeable duty.

Dr. WILLIAM H. STEWART said he wished to endorse the remarks of Dr. Hayes as to the value of the roentgen examination in the diagnosis of malignancy of the stomach. The most accurate findings made by means of the roentgen examination were in gastric cancer. These findings were persistent deformity in the outline as shown by the barium meal, which when combined with the clinical history of rapid onset with progressive loss of weight made the diagnosis almost certain. Cases showing deformity in the stomach outline that did not give the history of quick onset with loss of weight, were probably caused by contractions and scarring from ulceration. It was not always possible to differentiate between an old ulceration and an early malignancy, nor could we, from the examination, say that an ulcer was in the stage of beginning malignant degeneration. The safe rule was to consider all cases with persistent defects as malignant until proven otherwise.

Dr. MCCRAE, in closing the discussion, said that the point which Dr. Hayes brought out with reference to the choosing of an *x*-ray man was very good. The internist must be a good diagnostician of the *x*-ray man. In laying emphasis on the need of thorough examination it was not necessary to frighten the patient, but some patients were not willing to give the time unless the need for it was put strongly. In speaking of the relation of the internist and the surgeon he wished to place emphasis on the importance of sending the patient to the surgeon for an exploratory operation when that seemed to be indicated and not delaying too long.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Stated Meeting, Held Wednesday, January 26, 1916.

THE PRESIDENT, Dr. JOHN D. MCLEAN, IN THE CHAIR.

Diagnosis, Complications, and Treatment of Pneumonia in Children.—Dr. H. BROOKER MILLS in this paper said that various ages had been suggested before which the attack of pneumonia was apt to be in the form of bronchopneumonia and after which, lobar. Personally he felt that the age of five years was too low an age to be the dividing line. In diagnosing bronchopneumonia three important points for consideration were the age of the patient, history of previous illness, and the existing bronchitis. Three other symptoms nearly always present were increased pulse, respiration rate, and fever. Dilatation of the algæ nasi and definitely localized mucous rales also facilitated diagnosis. The physical signs, which were many and varied, developed early. The most common complication of bronchopneumonia, he said, was otitis media. The prognosis was always grave and the mortality was estimated by some at 50 per cent. The treatment was largely symptomatic with special attention to preservation of strength and upbuilding of vitality. A temperature of 65°, with plenty of fresh and frequently changed air

in the room, a maximum amount of liquid nourishing diet, daily colonic irrigation, daily bath, and plenty of water were indispensable in treatment. Counterirritation was valuable, and frequent and thorough cleansing of the nose and throat was absolutely necessary. For the cough inhalations were preferable to expectorant mixtures. For the high temperature Dr. Mills used hydrotherapy exclusively. In addition to the usual hydrotherapeutic measures he had found of advantage the wrapping of the hands and arms to the elbows, and the feet and legs to the knees, in wet cloths covered with a dry cloth, for twenty minutes three or four times a day. His patients were never disturbed after 7 P. M. for treatment, but in the event of their waking advantage was taken to meet the indications. The natural stimulation from nourishing, well digested food, was far superior to the artificial stimulation frequently employed too early in the disease. When, however, the heart needed assistance it should be given. Dr. Mills felt that he had been fortunate in having his hospital cases on a well lighted, protected porch adjoining the ward. He had made little use of the bacterin treatment because of the great variability of reported results and the uncertainty of dosage and reaction. Lobar pneumonia in children, he believed, was ushered in by high temperature oftener than any other disease of childhood, except scarlet fever. The onset was sudden with high temperature, rapid respiration, vomiting, prostration, and abdominal pain. For the first 24 hours, pulmonary symptoms and physical signs in the chest were absent; the chill, usually present in the adult, was rare in children, rigor seeming to take the place of the chill. There was practically no cough or expectoration in the first few days. Empyema was a frequent complication and there was no relation between the amount of fluid present and lung involved. In the present epidemic of pneumonia in Philadelphia many cases of lobar pneumonia had been observed in children below the age when expected, and these had occurred in debilitated children rather than in the robust child, as was usual. There had been also an increased tendency in bronchopneumonia toward coalescence of diseased areas, and the elevated temperature had been sustained rather than being of the usual irregular and moderate type. In several cases in the present epidemic an unusual fact was the enormous excursions of temperature between the hours of 7 P. M. and 7 A. M. He was at a loss to offer any satisfactory explanation of these various peculiarities; possibly the virulence of the epidemic itself might be a factor in their production.

The Diagnosis and Treatment of Pneumonia.—Dr. HOBART AMORY HARE said that consolidation of any part of the lung, whether due to the pneumococcus, the tubercle bacillus, or other cause, was in one sense pneumonia. Although from the etiological standpoint every case of pneumonia was identical, from the clinical aspect one case was often as different from another as smallpox was from chicken pox. In all cases of true lobar pneumonia it was to be remembered that the patient was suffering from an acute, infectious disease quite as specific as scarlet or typhoid fever. In the absence of a specific antitoxin one should not treat the disease, or the patient, with drugs except when definite assistance was demanded. In both bronchial and lobar pneumonia absence of positive physical signs as a group was often misleading in diagnosis. Fine râles and bronchial breathing were often apparently absent because of the great amount of exudate present. In such cases percussion might reveal dullness over a silent area; but even percussion might mislead because a deep-seated consolidation might give hyperresonance on light percussion over the area affected. The differentiation of effusion and pneumonia was easy in typical cases, and still easier in the textbooks, but often one of the most difficult problems in practice. Croupous pneumonia might assault a man frankly, or as insidiously as did a sapper his enemy in warfare. The sputum might vary greatly. In Dr. Hare's opinion it was well to recall the words of Sir William Jenner, "The brighter the blood, the less the weight of the patient, the better the prognosis." To this might be added, the higher the fever, the slower the pulse, the better the prognosis. In the treatment of croupous pneumonia Nature's laboratory should be allowed to make the needed drugs. Attempts to treat the pneumonia should be withheld. Cotton jackets and poultices, in the treatment of pneumonia, he regarded as remnants of barbarism. Coal tar antipyretics, he said, wkere contraindicated in all instances. There was a large amount of evidence that fever was a protective process or was indissolubly connected with the protective processes. Except in cases of distinct hyperpyrexia with the temperature above 105° for a long period, even cold sponging was as a rule to be avoided, for the patient would not react. On the other hand, an agent which tended to lower temperature and permitted oxidation and which was as nearly a specific remedy as any in use, was cold, fresh air. When William Perry Northrup of New York instituted this treatment a great advance was made in dealing with pneumonia. Personally he would rather employ this method in treating croupous pneumonia than any drug with which he was familiar. It was hard on the nurses but life to the patient. A frequent mistake was that of treating symptoms simply because they were not in accord with the normal state. Any attempt to force the pulse, the respiration, or the temperature to the normal line was futile and dangerous. When, however, any symptom or series of symptoms became so widely separated from normal as to be dangerous or to indicate the approach of danger it should be fearlessly curbed. The administration of ten drops of tincture of belladonna three or four times in twenty-four hours throughout the great part of the attack of croupous pneumonia tended to prevent complications in the vascular apparatus. Atropine and strychnine were to be kept in reserve to be used in full dose to meet threatening collapse. Alcohol in the form of a good whiskey was often of great value in those of advanced years and in those who had been accustomed to its use. In certain cases, in which there was great cyanosis in plethoric individuals free venesection was sometimes of advantage. Estimation of the difference between the diastolic and systolic pressures was important. A diastolic pressure of 60 with a systolic pressure of 150 showed relaxed vascular tone, but a powerful heart stroke, and that cardiac stimulants were not needed; whereas, a diastolic pressure of 70 and a systolic pressure of 110 might indicate, in certain cases, that both vascular and cardiac stimulation was essential. With the possible exception of belladonna, used to prevent the sudden arising of complications, Dr. Hare had never seen any case of pneumonia which needed the same remedy in the same dose day after day. The skilled physician would fit the drug and the dose to the need of the patient at each visit. Expectorants in either type of pneumonia were never useful until the stage of resolution was developed.

Dr. JUDSON DALAND said one should be on the alert to diagnose bronchopneumonia in the absence of the ordinary physical signs, since the *x*-rays showed that the disease, particularly in very young children, was very frequently overlooked. He had oftentimes wondered whether in cases of bronchopneumonia with associated nasal obstructions exposure of the patients to the outer air, thus allowing direct entrance of the air through the mouth, was beneficial. He believed that the fatal result in many infectious diseases was often due to the lack of resistance rather than to the infection. With close study, the probable degree of resistance under certain circumstances might be estimated.

Dr. WILLIAM N. BRADLEY said that in his experience with bronchopneumonia in children the larger number had been of the primary type. In a series of 100 cases Holt found one-third to be of this type, a larger percentage than that given by Dr. Mills. Dr. Bradley said he agreed with Dr. Mills regarding treatment, expect possibly in his hydrotherapeutic measures. In his experience cold water was not well borne by quite young children. The initial chill of pneumonia he believed to be of more frequent occurrence in children than was generally thought. Whether or not the profession wanted to accept serum therapy this treatment, in his opinion, offered the ultimate solution of the problem of pneumonia. To be kept clearly in mind and taught was the fact that pneumonia was an infectious process.

Dr. WILLIAM EGBERT ROBERTSON said he was not a fatalist in believing that the pneumonia patient must die. He believed rather that the large number of deaths was due to the profession's ignorance of the disease and of the method of handling it. More frequently than was thought, he believed, pneumonia developed upon a substratum of a tuberculous process. It was his experience that pneumonia developed usually in individuals with a disease focus, if not tuberculous, probably intranasal or an old sinus disease. In some cases beginning apparently as pneumonia treatment of the nose would abort the disease, which fact supported the view that the nose might be a factor in the development of toxic forms of the organism. Whatever the

character of the pneumonia, the important element was recognition of the type in order that there might be evolved a successful treatment.

Dr. MILLS, in closing, agreed with Dr. Daland that there were probably many more cases of pneumonia than were diagnosed as such. He knew from experience that the *x*-ray was a very valuable aid in diagnosis in cases in which the clinical signs were either absent or atypical. Abdominal pain, he was aware, often led to the mistaken diagnosis of appendicitis. He referred to one case in which a prominent surgeon was called in to operate on the gall-bladder and in which autopsy revealed a bilateral involvement of the lung. It was fair to suppose that while the presence of tuberculous areas in some individuals might not have predisposed to pneumonia those areas provided a favorable culture medium for the pneumococcus and other germs in developing pneumonia. Personally he failed to see how it would be possible to abort a frank pneumonia by any form of nasal treatment.

Dr. H. A. HARE, in closing, said that while recognizing the possibility of the ultimate value of serum therapy in pneumonia he felt that there were reasons in opposition to this solution of the problam; for example, in a large number of cases when the physician was called there was already blood-tinged sputum, or exudate in the air vesicles. The process was in one sense complete. One might as well run for the cook stove, after water had frozen and burst the pipe, with the idea of melting the ice—the damage was done. Furthermore, in pneumonia the time of primary infection was not known. In typhoid fever when a man came for treatment he had been inoculated twelve to fourteen days, while in pneumonia the time was not known, although there were certain reasons for believing that inoculation had been within forty-eight hours. The presence of renal disease in a patient with pneumonia was of grave import in prognosis. Failure of treatment in such complication should not cast doubt upon remedies useful in the ordinary case. The same was true in heart conditions. Alcohol was of value in pneumonia patients since it dilated the peripheral capillaries, giving energy to the body and equalizing the circulation.

Report of the Pneumonia Commission.—Dr. DAVID RIESMAN, Chairman of the Pneumonia Commission, explained the appointment of the Commission as an outgrowth of a desire to find ways and means of lessening the incidence of, and the death rate from, pneumonia; and to study the cause, mode of spread, prevention, and treatment of the acute catarrhal affections prevailing in Philadelphia during the present winter. A similar work undertaken in New York City in 1904 had not, he said, been carried for enough to be of material value in lessening the death rate of pneumonia. Of all acute diseases prevalent in this climate pneumonia was the most serious and most fatal and the one responsible for the largest number of deaths. While the death rate from typhoid fever in Philadelphia had steadily fallen from 1,063 in 1906 to 111 in 1915, the pneumonia death rate had been practically unchanged and in some years materially increased. In 1914 there were reported in Philadelphia 1,436 cases of pneumonia; in 1915, 2,744. In December last 881 cases had been reported, the largest number in any one month. The number of cases reported, however, did not indicate the total number of cases, as, apart from the fact that many physicians did not report their cases, some of the complications of pneumonia were reported as the principal disease, the pneumonia, in reality responsible, being ignored. This was true of some cases of meningitis, empyema, and middle-ear disease. The present outbreak, it was said, had shown that pneumonia as an epidemic disease was as yet uncontrollable. While it had been held for years that the germ of pneumonia was present in the mouth of many healthy persons, it seemed that this was not the case; the germ actually found was quite harmless, while that causing pneumonia was virulent. This discovery had led to the conclusion that pneumonia did not always develop from within, but was conveyed to the patient in some way from a previous case. Another undertaking of the Commission was an investigation of the recent "grippe" epidemic. Circulars were to be sent out to industrial establishments, schools, police and fire departments, reformatories, etc., to determine the frequency of the disease and perhaps its mode of spread. Further light was also to be sought upon the mooted question, whether grippe predisposed to pneumonia. The Commission had divided itself into a committee on laboratory work and one upon clinical investigation, and the plans of the respective committees were completed. That which was needed for execution of the work was an adequate appropriation by the city. Such investigation was said to be of great importance to the city, but in the opinion of Director of Health Krusen it would assume an importance of national scope.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held February 28, 1916.

THE PRESIDENT, DR. FREDERIC E. SONDERN, IN THE CHAIR.

Report on Mills Bill.—Dr. SAMUEL J. KOPETZKY, chairman of the committee on legislation, presented this report. He stated that the committee on legislation had investigated the bill introduced into the Legislature at Albany which provided for the establishment of a system of insurance to provide benefits for employees in cases of death, sickness, and accident not covered by the workingmen's compensation act. This measure gave medical service, nursing, drugs, appliances, and funeral expenses to all persons employed in the State at manual labor and earning less than $100 per month. The committee considered this bill untimely because the workmen's compensation law was still in the experimental stage. Particularly was this true of questions affecting the medical profession. If doctors took work by a system of bidding the result would be poor medical service, and this would counteract any tendency toward reducing the amount of sickness in the State. Under this bill the State's interest became one of supervision and control solely, and for this the State was asked to pay one-fifth of the cost of maintenance. This was unjust to taxpayers. The only way to reduce sickness to a minimum was to introduce a system of State medicine and to ask the State to employ physicians and surgeons and to pay them a just wage, exactly as the State paid for other services rendered its citizens. The medical profession was not represented in the directory of health or trade associations, the insurance council, or the Insurance Commission. This was the basis for the opposition on the part of the committee on legislation.

The society voted in opposition to the bill in spite of a strong plea from Dr. S. S. Goldwater asking that action on the bill be deferred until the society's suggestions be submitted to Senator Mills.

Puerperal Gangrene of the Extremities.—Dr. ARTHUR STEIN read this paper, in which he said that the importance of puerperal gangrene as a menace to child-bearing women was plainly illustrated by the reports of seventy-five authentic cases in the literature, including four cases of gangrene after gynecological operations. The occurrence of two instructive cases in his own experience had led him to make a careful study of peripheral gangrene and of the literature on the subject. The first patient, a young woman of twenty years, with gangrene of the right leg following abortion, recovered after amputation below the knee. The second patient died of exhaustion with dry gangrene of both feet and lower legs after labor at term. The histological examination in the first case gave the diagnosis of venous thrombosis of the peroneal artery, necrosis of the skin, and superficial fascia, necrosis of the muscle, and periostitis of the fibula. This case was of interest because in looking over the records it was only the fourth case of gangrene setting in after abortion, which had been reported. The second case occurred after forceps delivery at term. In this case there was sloughing of the perineal sutures and dry gangrene of both feet and lower legs. There was no operation. The patient died, and no autopsy was performed. Since no autopsy could be obtained, it was only possible to guess at the real cause of this symmetrical gangrene, though the following explanation had suggested itself to the author: Thrombosis starting from the uterus extended into the uterine artery and from there into the internal iliac and common iliac artery up to the bifurcation of the aorta where it also occluded the other common iliac artery and by doing so caused the symmetrical gangrene. This was not the case with the first patient in whom the onset of the gangrene was rather slow and the gangrene itself of the moist variety. This immediately suggested an occlusion of the venous system in the affected leg with the arterial supply still working. It would be wrong to

assume that the obstruction of such a small vessel as the peroneal artery could be the only cause of the gangrene of the entire foot and lower leg, and it seemed that in this instance there was arteriovenous occlusion of the affected area, the venous obstruction being the primary affection. Dr. Stein, in reviewing some of the points suggested by the literature on puerperal gangrene, called attention to the investigations of Buerger, who studied the vascular lesions leading to presenile spontaneous gangrene and referred to thromboangeitis obliterans as a specific disease which must not be confused with the conditions leading to puerperal gangrene of the extremities. He said there was no reason for assuming that the specific type of infectious organism which he considered responsible for thromboangeitis obliterans was identical with the pathological agent of puerperal gangrene, a condition in all probability due to a mixed infection. In discussing the etiology of the condition, he said that Klein had found that there was one thrombosis in 500 births and one embolism in 9,000 births; Jaschke maintained that there was one thrombosis in 400 births and one embolism in 9,000 births. A very important cause of thrombi was the considerable loss of blood, whether due to parturition, operations, or other reasons. There might also be an abnormal constitution of the blood favoring the onset of thrombosis, described under the name of thrombophilia by Mendel. Puerperal peripheral gangrene of venous origin was very exceptional, the arterial origin being by far the most common and being probably always due to infection. Although the reason still escaped us as to why in certain cases the septic or toxic process became localized in the internal wall of an artery and in other cases in the venous wall, or in both, the most common cause of puerperal peripheral gangrene was known to be a septic or toxic endarteritis, and embolism from diseased heart valves usually occurred in cases of grave puerperal pyemia. According to the fundamental teachings on thrombosis, coagulation of the blood resulted even in the presence of sufficient circulation whenever the endothelium of the blood vessels was damaged in its nutrition and thereby in its physiological function. Besides septic infection, other causes, such as weakened heart action, probably played only the part of the last determining factors. Fraenkel stated that postoperative thromboembolism was directly traceable to septic infection having its entrance avenue at the operative wound, and the same was undoubtedly true for more distant puerperal thrombi which were likewise referable to a focus of infection. Arterial infection was either the result of a preliminary change of the vascular wall or of a change in the composition of the blood, or of a combination of both these factors. Changes in the blood itself usually affected the small and medium-sized arteries exclusively; whereas, very large vessels might be blocked in consequence of lesions of their walls through microbes or their toxins. The phenomena of incipient gangrene were identical with those of mechanical obstruction of the blood vessels and naturally varied according to the mode of origin and the path of the infection in a given case. Pain was very pronounced. Infection being usually the etiological factor, the ordinary symptoms of puerperal fever were apt to precede the signs of tissue necrosis. Septic puerperal endometritis was present in the majority of the cases. A sudden onset usually pointed to embolism in the arterial system (dry gangrene), while on the other hand the gangrene might develop very insidiously in the case of a small embolus which at first did not entirely block the circulation. In a general practical way it might be said that the early appearance of gangrene in the first few days of the puerperium pointed to an arterial origin. The prognosis of puerperal peripheral gangrene was governed in the first place by the timely performance of amputation, which was not always practical because of the bad general condition, the rapid progress of the gangrene, or because the seat of the obstruction was located high up in the aorta. Puerperal peripheral gangrene had accordingly a very bad prognosis as one-half to two-thirds of the patients died without its being possible at the present state of their knowledge to prevent or essentially improve such an unfavorable outcome. Nevertheless, the mortality had been lessened by one-half since the institution of modern methods of treatment. The treatment of beginning puerperal peripheral gangrene consisted purely of conservative measures, such as applied simply to the prevention of thrombosis and embolism by means of elevation of the extremity, cardiac stimulants, judicious transfusion, and similar measures. The appearance of the line of demarcation was the signal for surgical interference. The manifold instructive features of these cases were best brought out by a comparative study of the material in the general literature, and in order to offer this, Dr. Stein had prepared a number of tables showing at a glance which was the affected extremity and whether the gangrene was of arterial, venous, or other origin. The entire number of observations was 75, including 63 cases of peripheral gangrene following labor, with one personal observation, four cases after abortion with a personal observation, four cases occurring in the late course of pregnancy, and four cases after gynecological operations which had been added for reasons of completeness. The majority of the cases, 53 in number, concerned peripheral gangrene of the lower extremities. The left leg or foot alone was affected 16 times, the right leg or foot 15 times, both lower extremities 15 times. In 3 of the cases the affected side was not specified. In one case (Begg's) both hands, both feet, the tip of the nose, and portions of the ears were gangrenous. In Rouse's first case both legs, five fingers, and the right ear were affected. MacFarlane's case had gangrene of the right leg and right arm, and Lever's patient had gangrene of the left leg and left arm. Arterial obstruction through embolism or thrombosis due to endarteritic change was especially noted as the cause of gangrene in 28 cases. Disease of the heart, alone or in combination with arterial obstruction, was noted in 13 cases, and persistent foramen ovale in three cases. Obstruction of both arteries and veins was present in 12 cases. Venous obliteration alone was apparently responsible in nine cases. Although the cooperation of unfavorable circumstances which led to peripheral gangrene could hardly be foreseen and prevented, the safety of the puerperal patient would be decidedly enhanced if the possibility of such a formidable complication was kept in mind. A thorough knowledge of the predisposing causes and watchful care at the bedside were the only means to check a further swelling of the list of peripheral gangrene due to the puerperal state.

The Operative Treatment of Pyloric Obstruction in Infants, with Review of Seventy-seven Cases.—Dr. WILLIAM A. DOWNES made this report, in which he stated that 47 cases belonged to a recent series in which he had performed the Ramstedt operation. Thirty cases were in the earlier series, in which a gastroenterostomy was performed. The ages of the children varied from fifteen days to four months. With regard to the choice of the operation, it had been their experience that the Ramstedt operation allowed the stomach to empty itself in a more physiological manner, while the performance of a gastroenterostomy was likely to produce too rapid emptying of the stomach and caused intestinal disturbances. This had been observed in 50 per cent. of the cases in which the latter procedure was employed. There were certain cases which gave the classical symptoms of projectile vomiting, steady wasting, constipation, excessive stomach peristalsis, in addition to a palpable nodular tumor in the pyloric region, and these were the cases that must be regarded as cases of true pyloric stenosis. On the other hand, cases were reported without any palpable tumor but otherwise having all the usual symptoms in varying degrees of severity. The suggestion was offered that this group should be treated medically until they no longer responded, as evidenced by stationary or falling weight. These cases might be subjected to a laparotomy with its high degree of hazard. If a hitherto undiscovered tumor was found at operation, the infant might be able to stand a considerable degree of shock incident to the performance of a posterior gastrojejunostomy. If no tumor was found, little was gained and much was lost by subjecting an impoverished infant to the loss of blood and further depletion of its natural resistance. If, therefore, by the use of modern methods diagnostic means could be made so complete that one could with any degree of positiveness determine whether or not a given case should be operated upon, it would be an advance worth while. Whether the stomach in early infancy was simply a dilated pouch for the accumulation of food which was quickly acted upon by the gastric juice and immediately allowed to pass out through the pyloric opening, or whether it performed its share in the preparation of food for the more complex processes of digestion in the duodenum, was a question for future study. But Dr. Le Wald had shown by means of radiographs and the bismuth meal the degree of obstruction, and this had been of considerable help in indicating the advisability of operation. The question as to whether the pylorus would or would not admit a probe

or catheter at operation or necropsy was of little consequence when weighed against the clinical evidence of complete obstruction. There was usually sufficient time between the onset of symptoms and the appearance of the signs of complete obstruction for careful observation and the carrying out of any medical measures likely to prove of benefit. The fear, however, that the condition might have existed longer than had been suspected, and that the vitality of the baby was not so good as appearances would lead them to believe, made him feel that operation was indicated in every case of hypertrophic stenosis as soon as the diagnosis was made. Should depression or early evidence of shock be present, immediate operation was demanded. The babies coming to operation in good condition suffered little or no shock, their convalescence was straightforward, and they were at once restored to normal health. (See also MEDICAL RECORD, June 13, 1914, Vol. 85, page 1095.)

Therapeutic Hints.

Chronic Cough.—

℞ Terpini hydratis, ʒi.
Alcoholis, ʒi.
Syrupi pruni virginianæ, ʒiij.

M. Sig.: Teaspoonful three or four times a day.

Nervous Cough.—

℞ Codeinæ, gr. v.
Acidi hydrocyanici diluti, ʒi.
Elixiris aurantii, q.s. ad ʒiv.

M. Sig.: Teaspoonful four or five times a day.

Quinsy.—Cleanse the nose and mouth with a preparation of powdered borax, 68 grains; essence of peppermint, 20 minims; warm water, one pint, applied with absorbent cotton to the vestibule of the nose morning and evening. Apply daily resorcin, chemically pure, and distilled water, of each by weight, 2 drams, in the same manner to the affected parts. Care must be taken that no excess of this solution touches neighboring parts. Follow by guaiacol, 2 ounces; oil of peppermint and olive oil, of each one ounce. Apply either with cotton swab or camel's-hair brush to throat and inflamed gums twice daily. This last prescription stops pain. Suprarenal extract may be used instead of the guaiacol. The tincture of chloride of iron in glycerin and water, of each three ounces, should be given internally. If constipation exists, treatment with solution of citrate of magnesia should be carried out. When the abscess forms, open it promptly and treat with care to avoid adhesions.—Faulkner, "Tonsils and Adenoids."

Chronic Articular Rheumatism and Rheumatoid Arthritis.—Beverley Robinson considers that in the local treatment of these conditions nothing equals daily massage combined with active and passive movements. When this is not always obtainable and when local medication is desired, the compound tincture of iodine and the iodine ointment are more often preferable to the simple tincture of iodine. For internal use he prefers the glycerophosphates or hypophosphites of lime and soda, and Blaud's pill mass in powder form. Cod-liver oil in combination with malt extract or the hypophosphites is an immense aid to nutrition. No amount of good butter or cream will supply its deficiency.—*Clinical Medicine.*

Ringworm of the Hands and Feet.—J. E. Lane begins the treatment of this condition by removing the superficial layers of the skin by soaking and then scrubbing with a moistened cake of pumice stone or sand soap. Sabouraud's treatment is next applied, if necessary, a 1 per cent. solution of iodine in 60 per cent. alcohol. If this be unsuccessful, a 1 per cent. chrysarobin ointment is used. The treatment is discontinued for a while a week after an apparent cure has been obtained, and is then resumed for a few days in order to destroy any fungi that may have escaped.—*Boston Medical and Surgical Journal.*

Gargle for Fetid Breath.—

℞ Salol.
Salicylic acid, āā 0.2.
Saccharin, 0.5.
Vanilline, 0.1.
Alcohol (60 per cent.) 100.0.

M. Sig.: A small teaspoonful in a glass of hot water five or six times a day.—*Journal des Sciences Médicales de Bordeaux.*

Medical Treatment for Adenoids.—Falkner uses the resorcin treatment in all cases where operation is contraindicated. Chemically pure resorcin crystals and pure water, 100 per cent. of each by weight; another solution half that strength for infants. This is applied through the mouth, behind the palate, and up against the adenoid enlargement by means of a wad of absorbent cotton dipped in the solution and held in the grasp of properly curved forceps. The parts touched become immediately covered by a white coating. Applications are made once daily for ten or twelve treatments.—"Tonsils and Adenoids, Treatment and Cure."

Facial Neuralgia.—

℞ Menthol, 5.0.
Sulphuric ether,
Spirit of lavender, āā 50.0.

M. Sig.: Rub gently over affected area.

Ammonia as an Enema.—As a relief to the sequelæ of an abdominal operation, such as postoperative ileus and intestinal paresis, or in intestinal conditions in children, T. A. Black offers the following prescription, one dram of stronger solution of ammonia in one pint of water, administered as an enema; its effect is greatly enhanced by a hypodermic of pituitrin extract, 1 c.c. half an hour previously. The solution must not be used any stronger than prescribed, or too often, as injury to the rectal mucous membrane is liable to occur.—*The Lancet.*

Prophylaxis in Acute Abdominal Pain.—Robert P. Bay insists that acute abdominal pain be considered as serious until proved otherwise. Cathartics are contraindicated until there is an assurance that no inflammatory process exists. Small enemas are indicated, and peristalsis may be quieted by heat or ice; nothing should be given by mouth, and patient's head should be elevated. If immediate relief is necessary, Murphy's proctocylsis and a small dose of morphine (one-twelfth of a grain) may localize the pain. More good can be accomplished by lessening the peristalsis than harm by lessening the pain.—*Maryland Medical Journal.*

Brilliant-Green as an Antiseptic.—Archibald Leitch suggests brilliant-green solution in the strength of 1 to 1,000 for the treatment of all open wounds. Ordinary tap water may be used, but gives a precipitate, which can be avoided by the use of distilled water. Decinormal salt solution is perhaps the best. The wound is cleaned as in all surgical dressings and a small quantity of the brilliant-green solution, about an ounce, is applied with a syringe. The wound is lightly packed with gauze swabs dipped in the solution and covered to prevent spreading of the dye. Ordinary wounds are to be dressed once a day and septic wounds twice daily for the first two days, then once daily.—*British Medical Journal.*

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NOTES ON AFFECTIVE PHYSIOLOGY.*

BY GEORGE VAN NESS DEARBORN, PH.D.

CAMBRIDGE, MASS.

(Director of the Sargent Normal School for Physical Education, Cambridge, and the Forsyth Dental Infirmary for Children, Boston.)

* * * *

I VENTURE to suggest the probability that *the physical or energy-aspect of feeling is numerous sets of kinesthetic neurokinetic strains or impulses relating all layers of the great cortex to its effective environment (whether the latter be outside the body or within it), the conscious inhibitory phase of the kinesthesia representing originally the feelings unpleasant in tone, and its subconscious actuating phase the pleasant emotion.*

It is to be explicitly understood that "kinesthetic" is here used in its wide sense to include among other things whatever afferent guiding information comes up the cord from the vegetative organs (from smooth muscle and possibly from the glands); and it is certainly superfluous to remind you that most recent modern discussions of emotion accept its motor "basis,"—in short, the James-Lange theory of the emotions,—this therefore will be pre-supposed. My sanction for my thesis is that careful consideration reveals coincidences and correspondences which make it worthy at least of annotation. It is an argument for mechanism no more than for animism. It tends to their arbitration!

Every research report and clinical study known to the writer tends to the certitude of the supposition that the great cortex contains, among many other things related to this very complex nature of ours, numerous functional sets of neurones which serve *symbolically* to represent in condensed form the widespread afferent influences from the abdomen and thorax and from the other elements (such as the blood-vessels (?) possibly) of the vegetative mechanism. In an homologous way, the cortex represents symbolically the influences (circuits) made from reflex groups of cross-striated muscles in the spinal grey-matter, these, the proper kinesthetic influences, being of two phases, actuating and inhibitory. These lower integrations up and down the spino-autonomic nerve-masses represent the kinesthetic "skeleton," as Ribot terms it, of every conscious state; they are subconscious but are always sublimating into consciousness more or less, but symbolically, through the cortical integrations and associations above in the cortex.

III. Actuation.—These neurokinetic strains or influences (nervous impulses) pushing ever upward from the autonomic and the spinal grey into the brain are kinesthetic *resultants* of numberless forces coming from the entire body and ultimately from the environment. They represent psychologically, it is plain enough, the impulsive aspect of behavior, the impulse to activity, the biological egotism, animal aggressiveness, vegetative initiative, or whatever other term may be applied to it that is descriptive as well as denotative. They represent, in short, *actuation*, and most often they certainly stand for whatever is of pleasant tone to the affective aspect of the mind experiencing them so long as that mind is naïve and unsophisticated.

The "numberless forces coming from the entire body and ultimately from the environment" which fuse and interact somehow to produce these actuating resultants, it is not time yet to be able to describe in detail, although facts accumulate even here. For example, two general classes of energies are to be discriminated. There is, first, a group of afferent strains which represent the movement or *motion* to which we now reduce all protoplasm as we do all other matter. Living matter seems to be "alive" and not dead chiefly because its molecular and electronic movements, and therefore its molar movements, are greatly more complex than those of matter we conceive as non-living. I have already in sundry places set forth this matter, even if feebly.[13, 16, 21] In my humble opinion much practical benefit would soon grow out of a general awareness of this basal truth,—that the inherent nature of protoplasm itself as matter furnishes inevitably the impulse to activity which underlies all feeling and emotion, or if you prefer it so, is concomitant thereto. It is this first group of afferent strains of course over which the autonomic system rules, doubtless with multitudes of more properly kinesthetic impressions from the voluntary mechanism fusing with them in the cord.

The second large group of ingoing actuating impulses more literally represent the environment of the total individual and to a degree transmit its energy kinetic, thermic, photic, chemic, magnetic, or whatnot, but always transformed, into the spinal grey. These impulses pass inward to the posterior and lateral white and grey tracts, fuse infinitely, join the foregoing group from the more strictly vegetative parts of the organism, and altogether help largely in determining the resultants which pass upward to the cortex cerebri, as will be somewhat more fully detailed by and by.

* * * *

Obviously the motivations of the feelings spring out of these kinesthetic strains or tendencies to action representing either symbolically or directly (as above discriminated) the animal's biological reactions to its ever-changing environment, without or within. The innervations arising thence—that is,

*Read, q. s., before the American Psychological Association at Philadelphia, December 29, 1914.

*Because of lack of space it has been necessary to condense this article as it appears here, the omissions being indicated by the stars; the complete article will be published in the author's reprints.

the behavior—would be actuations and not often inhibitions, and would represent to the world without, as well as to the personality within, the "unimpeded" and "undeflected" satisfactions of some kind, some "original tendency" to biologic furtherance,—in short, that universal tendency of biologic egotism by whatever other famous phrase we may denote it. As I have tried to show elsewhere,[18, 21] the impulse to activity has in it and in close relation to it almost a tainted wealth of theoretic and practical applications in psychophysiology and in educational practice. At this time we shall leave it, only summarizing our findings up to date, one side of our shield of proposition, that *in the naïve and wholly normal individual the inherent impulse to movement in space and in time is represented neurally by the actuating phase of kinesthesia pleasant in tone whenever it rises out of the subconscious.*

* * * *

IV. Inhibition.—It is, however, the other (inhibitory) phase of this reciprocating process of general affective innervation to which I would more especially call attention, for it has been far less specified than the actuating other just suggested. Too little emphasis certainly has been laid upon the twofold nature of human personality, upon the complete *duality* of man's nature, especially to its physiologic and psychologic foundations. Poets and philosophers have seen and beautified its moral aspects, and have shown in terms that cannot be forgotten that the sanction of our very conception and incarnation and birth and living lies all but wholly in the logical necessity of developing individual personalities through temptation, struggle, "denial of the will-to-life." Whether we see it every day in the unselfish self-denial of the dear women in our own households or read in leisure hours of its esoteric system in the wilds of ancient Thibet, we are continually made aware that it is one of the dominants of our actual world.

And when we turn to the anthropologic aspects of this same matter we find our fundamental just the same and find it closer to physiology and neurology. The phylenic "series" shows at first a preponderance of biologic egotism, of racial impulse, of pleasant activity, expansion, push. There is excess of movement over control, the utter mechanism of the plant, the tactic processes of the protozoa, the simple behavior of the early metazoa, play, the noise and irresponsibility of childhood, the dance, boisterousness, freedom of every kind, the grand flourish, license, extension of personal and family and national power, "might makes right," "to the victor belong the spoils," force, great guns, invasion, pleasant hopes of conquest, freedom to progress even in the sun regardless of all but one's self.

But the secret of the sanction of our incarnation lies not here! Rather does it lie in a process which uses all this as Emerson says, "as hands and feet" by which it may accomplish its great world-purpose each in his own individual way. I mention such relations in this discussion of physiology (which ordinarily tells none too much of God and personality), only to show how important and basal and deep and universal are the ramifications of world-processes which at heart are in practice muscular and nervous and even epithelial. And it is worth while to see it so.

Man, then, generically and individually becomes civilized, even if slowly, grows up, attains the full measure of a being who "dares do all that doth become a man," even to attempted conquest over the vegetative and biologic machinery which gives him his *energy*. He restrains his impulsive machinery, serves as governor to his flywheel, so to say, often so massive and with such dreadful inertia of motion! He learns to inhibit especially his emotions and thereby, more than in any other way, qualifies for a citizen of our little world against whom that world will not rise in wrath. It is of course now our hunt to trace out some few details at least, or relative details, of the nerve-paths and nerve-knots of that inhibition, especially in relation to the algodonic tone of the emotions and the feelings.

It has already become reasonably certain that freedom in itself is pleasant, and that restraint biologically speaking—that is, naturally, in naïve individuals—is inherently disagreeable, whether from without or from within. I would emphasize the provisional clause in this part of my thesis, "biologically speaking—that is, naturally, in the naïve individual," for we shall suggest below that it loses this unpleasantness as the person becomes a psychologic personality. As the wise "George Eliot" says in "Felix Holt," "There is a sort of subjection which is the peculiar heritage of largeness and of love; and strength is often only another name for willing bondage to irremediable woes." We all know that freedom as such is pleasant, and a seven-foot shelf of books, or one even longer, might be readily written, given time, to extol freedom's pleasures in every possible realm of human experience. It has, I think, not been often effectively suggested, on the other hand, that in the unsophisticated animal, dog, or child, or savage, inhibition is essentially and inherently unpleasant (until, by submersion—see below—its disagreeableness has been mostly lost).

In the *Journal für Psychologie und Neurologie* for January, 1913, experiments by the present writer were reported which suggested, if they did not prove indeed, that the conscious phase of our movement-sensations or kinesthesia has a distinctly inhibitory influence over cross-striated muscular action. A paragraph or two from this report may be quoted:

A. Of the results of this research, perhaps the most interesting for the physiology of kinesthesia is the fact that reinforcement of the conscious movement-sensations by deliberate attention to them tends to shorten the movements and to somewhat lessen the angles between them. In other words, in visualizers, intensification of the conscious kinesthesia inhibits the related voluntary movements. It is difficult to avoid the conclusion, such being the case, that *the function of the conscious movement-sensations is the inhibition, the deliberate active restraint, of tendencies to action.* Attention to matters other than the resident kinesthesia of the active arm, as was demonstrated by trial, tends to stop the performance altogether or to make it irregular, uncertain, and wabbly. Attention to the resident kinesthesia, on the other hand, tends simply to make the movements less, while they continue deliberately to the end without hesitation,—but minimized. Considering that the movements studied are free-arm movements from the shoulder-joint, tending therefore to exaggeration far beyond their true size, this result becomes all the more striking. Almost no records, per contra, showed enlargement under these circumstances, also a significant fact where the voluntary conditions are so complicated and uncertain. Fifty-five per cent. of the reactions showed this inhibitory effect and just about half of the subjects made reactions consistently that

were of this type. May we not conclude that the more or less conscious resident kinesthesia, perhaps distinct from other kinesthetic coordinations, has special inhibitory function, as well as the passive reception of jars, vibrations, passive movements, and postures?

B. The fact of the prompt and usually accurate *visualization* of the movement-series received into the person's central nervous system solely through the kinesthetic receptors of the arm, is an interesting product of this experimental work. Often the subject reported a clear visual image of the norm after receiving it (kinesthetically) only once, and often he proved its existence and its accuracy by drawing it (on the basis of a visual motor idea). The paths of these kinesthetic impulses and their production of a visual image constitute a problem of especial interest for the physiology of efficiency; and they would explain the conception of space in the blind. This process of visualizing varied much in different subjects. It was best and promptest in visualizers long trained in delicate motor adjustments. It was least conspicuous in the three subjects (two young women with normal vision and a youth congenitally blind) whom the psychologists would class as motiles. (See below.)

In any case, this prompt and usually involuntary, translation of a complex and purely kinesthetic impression into a visual image is sufficiently striking in itself, however familiar a process, and leads inevitably to a query, as yet unanswered, Why? Why cannot and does not the man of average motor skill use his conscious kinesthetic impulses in the guidance of a movement, especially a movement about which is known nothing else? Perhaps one reason that he does not do this lies in the inherent inhibitory action of the conscious kinesthesia—and the other phase of kinesthesia his imagination knows nothing of. But aside from this in part, the *opposition* between the resident sensations of movement (inhibitory and more or less conscious) and the "visual" and other actuating influences, is marked, and the fact may prove suggestive. Even when reinforced by conscious effort, the resident kinesthesia and its centers (in the great cortex?) had usually no conscious memory of the norm as a whole, had nothing in fact usable as a motor idea, and the subject (unless a motile) thought himself wholly dependent for an efficient performance on a second-hand, mediate, visual image, product of the immediate impressions none the less which he supposed himself unable to follow as a guide. * * * The conclusion is inevitable from these circumstances that there must be kinesthetic nerve-impressions in closest relation with the visual neurograms proper, yet obviously unconscious, that do furnish the data necessary for a voluntary movement, and that actually do coordinate the muscles active in an action. This phase of kinesthesia, actuating, determinant of the force and speed of a movement perhaps, but subconscious or even unconscious, represents, it seems, the innate impulse to activity, the instincts, the emotional syndromes, the reflexes—the correlation of all the forces behind a voluntary action. This phase of the movement-"sensations," however, do not represent the individual personality of a human being until complemented and held in leash, inhibited, by the conscious resident sensations. We cannot escape terming these actuations, coordinated perhaps in the posterior grey cord, kinesthetic, for their nature and use are inconceivable apart from the joints, muscles, tendons, bones, and skin, the chief locations of the kinesthetic receptors. The opposition between these two phases of motor control, actuating and inhibitory (the former including vision and audition), is eminently natural for most people, then; but it is an opposition that is in reality an alliance and capable always (skill) of fusion for efficiency.

The inhibitory factor in the glandular and muscular activities of the vegetative mechanism is already to some extent commonly appreciated, there being in this all-important domain of the total economy an elaborate apparatus, partly kolionic and partly autonomic, for the active restraint of vegetative activities or tendencies thereto. Barker has concisely set this matter forth,[2] and perhaps better than another; it has already become the basis of important developments in therapeusis. (See below.) For us at present these inhibitory functions have especial interest in the theory of feeling and emotion as explained by Lange, while James' part of the "theory" involves more directly the afferent neurokinesis commonly thought of as kinesthesia proper, and concerned directly in the simple research referred to above.

It seems to suffice for our present concern in affective physiology to point out that the inhibition of impulsive tendencies (mostly pleasant on well-accepted principles) is by their very nature usually an unpleasant process. Even if unaware of the fact from personal experience, the reader cannot fail to realize that sometimes the restraint of our impulses, of our biologic, vegetative instincts in particular of course, rises into the heroic, involving as it does a maximum of struggle against unpleasant lacks of action along ancient hereditary paths. To restrain one's fatigue, one's wrath, one's hunger, or one's lust is oftentimes, to many men and women, their experienced maximum of disagreeableness. These are gross examples which the check to the onrush of biologic satisfactions, teleologic intentions, sufficiently "explains" to the average student of neurological psychology. It should, however, be noted as we pass them that in this contest between an impulsive process and a tendency to its restraint obtains the precise relationship to which early psychological biologists (*e.g.* Romanes) ascribed the origin of consciousness in the evolving phylenic order. McCabe's notion[31] is far less satisfying: he actually refuses to admit the consciousness of animals less complex than birds, a truly Cartesian sophistry; but "the worse is not the better reason," after all.

For our present purpose it is an important consideration that in the personal, as well as in the social consciousness and memory, unpleasant experiences actually are more conscious, more vividly real, and much more memorable than pleasant experiences. And this is true as a well-realized fact wholly independent of any theory of feeling or of neurology. It is the blizzards, not the periods of delightful weather, which are remembered; a moment or an hour of agony agitates the memory long after ecstacies have gone, almost past recall. This is not due to some inherent pessimism in the human mind, we may be sure, for the majority of folk are practical optimists. It in part is due, say I, to the basal physiologic condition of innervation, namely that the conscious kinesthesia underlying mentally the movements concerned is more closely related to unpleasantness than is the actuating movement-neurility.

Another reason doubtless arises in the fact that the grand mean balance of human experience is

pleasant rather than unpleasant; on this basis alone would a human people with power of initiative to suicide remain in the long run alive, for "Lo, you are free to end it when you will!" Here, then, is a background of moderate pleasantness and against this the lurid experience of pain or of the disagreeable in any mode stands out with far more distinctness than would an experience toned like the background. As we pass, it is worth noting that almost all the behavior of the average adult is physiologically impulsive and reflex and semi-automatic, what we may best denote perhaps as habitual voluntary action. As thus impulsive it is pleasant because relatively free. As thus voluntary and inhibitory only to a slight extent, strictly voluntary[20] only at extremely rare intervals and in many persons never, after childhood, it has little of the difficult unpleasantness which is related to the kinesthetic foundations of restraint. To the galley slave, "Jean Valjean," life for just the opposite reason was unpleasant and revengeful, inhibitory, fearfully voluntary, a memory to embitter eternity. We return then to our scenario with widespread evidence that free action is by nature pleasant and inhibition, characteristic of voluntary movement, whether devised from within or forced from without, difficult, unpleasant, and hard.

There is a ground more precise and somatic even than this for proving conclusively that by its inherent nature restraint is hard and therefore (at first! and physiologically) disagreeable in so far as a voluntary, that is, new, process. Undoubtedly there is a far more elaborate system of reflex inhibitions[16, 19] than has been as yet described in detail, and many of these automatic restraints may be importantly involved in the innervations of feeling, but these are too little known at present to be discussed at any descriptive length. We must urge, however, on the principle of the usual physiology of organism in general, that these afferent inhibitory paths are probably numerous and important, especially, it may well be, in early life. We are as yet only at the threshold of our knowledge of inhibition as a whole half of animal life; and its relationship especially to the ever-rising *individuality* in disparate units of protoplasm (as opposed to its vegetable aspects) is a field of philosophic biology scarcely touched, yet a wide and fertile field. From common physiologic principles, I repeat, on grounds most general and well known, it is probable that there is an elaborate system of restraint-paths which form part, the first part, of the neural circuits[20] having to do with bodily coordination. The last five years of physiology have emphasized the kolionic (chemic) portion of these inhibitory influences but always in relation, so it seems, to neurility one way or another. "It must be," it is likely that there are, numerous inward inhibitory pathways which control the actual empirical movements of the body, regardless of the histologic variety of contractile tissue producing them. The certain experiments already referred to[14] show from the human actual psychologic side that they do exist.

We are especially concerned now, therefore, with inhibitions that are voluntary until by habituation they have become more or less mechanical. As example of one of these basal voluntary inhibitions closely related to the emotional tone-balance consider the checking of muscular movements when listening to real music. By real music is meant music with a wellmarked rhythmic beat. If one attend many orchestral concerts, even where the music performed is of the very "highest class" and the audience the most "cultured" group of society, it cannot fail to be noted that the spontaneous, that is real, enjoyment is greatest from the music with strongly marked rhythm, and least, with a forced fashionable applause if any, at the artificial concoctions which ramble instead of march. At a recent concert, for example Beethoven's symphony in F major (Eighth) was in contrast, after an intermission, with Stravinsky's impressionistic and unrhythmic "Feuerwerk," vastly to the hurt of the latter, bad as it is. Some of the modern music forgets or ignores this neuromuscular basis of musical emotion and offers concatenations of harmony when the truly appreciative listener craves only what his inevitable organism demands to satisfy it—sympathetic and synchronous activity. Thus music or that which pretends to be music now and then strives to express ideas when its sole language properly is feeling or feeling with a tinge of will.

True music then, we are sure, has a well defined rhythmic beat and is met in the naïve and natural individual at whatever age by voluntary muscular movements of the feet, head, or hands; within oftentimes are corresponding but ill-defined contractions of the vegetative organism. Now to inhibit these (unfashionable because disturbing) movements is distinctly an unpleasant effort and takes away from the musical enjoyment and continues to do so in a measureable degree at least long after the inhibition-habit has been thoroughly acquired. One longs subconsciously, so to say, that he might hear such music when he were free to meet it in the natural way. Here, of course, is the basal psychology of the dance, and likewise to watch dancing while standing or sitting still is an unpleasant experience and that despite the joy from the well-marked music. In all this, it seems plain, we have the somatic (neuromuscular) prototype of the pleasant unimpeded impulse and of the unpleasant experience of inhibiting this impulse both being essentially kinesthetic.

This vegetative impulse furnishes the ways and means, the thrust and push, the substantial and inherently enjoyable activity even to abandonment which makes life interesting. On the other hand, the restraint of all this to suit the needs of a social environment, requires strife and weariness whose only reward is itself. There is here, however, the half of the personality, in fact that part of the total human behavior which is commonly deemed (but wrongly, we may see) the very essence of humanity, of civilization, culture, delicacy, or whatever other term marks off for us our proud humanness from brutishness.

As homologous hemi-thesis, then, let us say that *in the naïve and wholly normal individual the human restraint of impulsive movement in emotion is represented neurally by the unpleasantly conscious inhibitory phase of kinesthesia.* Sometimes this dysphoria has sunk out of consciousness as an explicit disagreeableness and we are in doubt whether the feeling be a pleasant or an unpleasant syndrome, but ordinarily there is obvious relationship between the degree of bodily inhibition and the dysphoria of the condition. Terror, for example, largely loses its painfulness when we combat or when we flee, and joy which is bodily restrained lacks its essential delight, in the naïve and normal, at least.

In the broad and modern sense of the term kinesthesia, these nerve-impulses and their like concerned in integrating the infinite bodily movements and inhibitions of which these are but examples, are kinesthetic, for they are afferent influences concerned with movement. But, regardless of terms, these and similar facts show in a new way, later than Sherrington's important "reciprocal innervation of functional muscular antagonists" (famous in form as in matter, but not so hard as it sounds), that pervading every aspect of the nervous system's work is this fundamental opposition of actuation and inhibition.

Nothing can be more important to a real understanding of the nature of human personality and human behavior as human than this duality, and I recur to it for the sake of emphasis. The human being is human essentially in direct ratio to his own habitual active inhibition. Obviously some are too human, too cultural, too civilized so as to suggest art and artificiality, prudery, prigery, snobbishness, etc. This danger of excess, however (universal in all things good or bad) in no wise militates against the truth of the basal proposition that *organic evolution is at heart an ever complexifying process of control.* And control comes hard and because it comes hardly it comes slowly.

Beneath all this gradual age-long suppression of the impulsive beast is man's affective nature, for his emotions and feelings forever furnish the most part of his motive force, and we may see in his emotions and even in the physiologic conscious kinesthesia in part beneath, in turn, these emotions, the necessary physiologic and anatomic basis of this whole important life-duality. In directer phrase, the whole body is integrated and given meaning by an inhibitory mechanism as yet by no means understood in detail and the action of this restraining phase represents fundamentally novelty, therefore difficulty and therefore in turn unpleasantness. Just as in voluntary action[20] truly voluntary movements are new and difficult, so in emotion and in feeling, but less obviously. Every affective restraint or inhibition represents an unpleasant checking of a pleasant impulse, a narrowing of the biologic egotism, a more or less difficult adaptation to an environmental attitude, which adaptation is relatively new. The conscious and inhibitory phase of kinesthesia typifies this conscious disagreeableness in emotion as in truly voluntary action.

But lest I be accused of stating something not appreciably true in the immediate experience of my readers ("my conscious kinesthetic impressions do *not* feel, that is are not at this moment, unpleasant"), I am compelled once more to point out that none of my readers are any longer naïve in the psychologic sense, and that they cannot therefore judge by immediate experience whether in the child the inhibitory kinesthesia is unpleasant or not; that so far as voluntary movements are concerned they seldom make one that is physiologically in strictness voluntary, that is, new; and that so far as emotional inhibitions are concerned, in many cases the original disagreeableness of restraint has lost much of its sting by familiarity and habituation, while, on the other hand, certain kinds of emotional inhibition obviously may be unpleasant far beyond the unpleasantness of pain itself.

On the contrary there are two things (they appear to be but examples of many) which suggest that, to the young child, restraint, inhibition, personal control, whether in voluntary movement or in the feelings, is eminently unpleasant: First, the extreme infrequency of such acts of will, in itself prima facie evidence that they are disagreeable experiences, since agreeable acts tend to be learned early and to be frequently repeated. Second, direct observation (see, for example, "Moto-Sensory Development,"[19] p. 89, Day 211) shows a long latent period (ten seconds or so) for such difficult voluntary movements, resolved at length by a quick and frequently clonic motion, the whole suggesting difficulty physiologic and hesitation and unpleasantness psychologic.

Barrett of the lamented Louvain University, in his too little known "Motive Force and Motivation Tracks,"[3] careful and extended research along novel lines, speaks as follows regarding the hesitation to drink a disagreeable liquid, a summary of the subjective experiences of many: "The fact that some hesitations cause a great lengthening of the reaction time while others do not affect it, suggested to us that there might be, so to speak, a purely psychical species of hesitation, and also a semi-physiological species. This supposition was strengthened by the fact that in some very quick reactions, wherein were painful hesitations, the subjects spoke of mental suspense and 'purely mental hesitation.' On the other hand, the semi-physiologic hesitations seemed to be accompanied by feelings of fatigue, disgust, and physical oscillations of the hand or the eye." Again, on page 175. "In general, then, hesitations occur much more frequently in disagreeable choices, and seem in a certain sense to be conditioned by them, just as they, in a certain sense seem to condition inconsistencies. Indeed the unpleasant experience of choosing between two disagreeable substances tended to inhibit volitional functioning, and, to justify the theory formulated by Mr. Stout: 'In principle it seems a safe generalization that agreeable experience is favorable, and disagreeable experience is unfavorable to the effective discharge of mental functions.'" Stout's belated opinion here is of course that common to most psychologists who have thought about the bodily concomitants of feeling, but, so far as the present writer knows, it has not been commonly recognized that perhaps through experimental studies like that of Barrett we shall find the easiest road to knowledge of the psychology of inhibition and of abulia; nor that an elementary principle underlying the will's action certainly underlies also the innervation of feeling, since "will" and "feeling" are but quality-aspects of a process completely common to them both.

I believe that Harvey's recent exposition[25] of the origin of feeling has in it much material for thought by those who are satisfied with the wondrous magical powers of the "synapse," and certainly just now there are many who are more or less content to let this word synapse represent a whole science. Feeling, says Harvey, is perhaps "the concomitant of the resistance which a nervous impulse encounters in passing through a nervous arc." This obviously is a particularization of Romanes' explanation of consciousness, and represents a basal fact, but the author somewhat exceeds the sanction of common experience when he says (p. 94) that " in general the [algodonic] tone of the feeling depends upon its intensity. This is a matter of direct observation, and corroborates our theory of the resistance being the concomitant of feeling. A few possible exceptions to the general law will be noticed later." Moderate feelings, weak

emotions, are however certainly not all pleasant (worry is a notable example), nor are all strong feelings disagreeable, as such a dictum requires. But, on the other hand, there certainly is a correlation between the novel inhibitory or hesitational difficulty of an innervation and its unpleasantness. The ancient wisdom that one in time becomes accustomed to anything is but common recognition that emotions tend to lose their original unpleasantness by use, by habituation on the universal principle, whereas novel environmental situations producing strong emotional reaction have with them usually an admixture of unpleasantness. This, physiologically, I take it, is a restraint, a hesitation toward the unfamiliar, an example of the inherent unpleasantness of uncertainty.

V. Integration.—Possibly the above considerations are already enough to suggest to an unprejudiced mind that there is some kind of a direct relationship between doubt, hesitation, restraint, and inhibition proper and the unpleasantness of feelings. This concomitance seems based in the dual structure of the nervous system itself, and it is perfectly possible but not yet to be actually proved in a corresponding duality in the mechanism of muscle, both voluntary and vegetative. Discoveries in physiology continually are making clearer and clearer that this duality of action, this eternal balance of actuation proper and of active restraint, is the fundamental law, if there be one, of the animal economy; and that it is complex and complete in ratio to any animal's generic (and perhaps personal) status of evolution. Plants, on the other hand, it is worth noting for the sake of logical completeness, wholly lack any semblance of the inhibitory phase—a dim actuation-contentment would be their consciousness if they might be said to have any at all, a growth of satisfied beauty, "its own excuse for being." Personality, on the other side, and particularly the only personality of which we as humans can be sure, namely human personality, has its essence in an habituating system of restraints, at first unpleasant, but which gradually lose their consciously unpleasant tone, while retaining for the most part their inhibitory physiologic nature.

That these inhibitory innervations, representing unpleasant restraints of pleasant impulsive tendencies, are directly based in the conscious inhibitory phase of the kinesthesia broadly taken, is a probability too obvious to require elaboration. Unless the experimental observations referred to above[14, 15] are false the conscious kinesthesia is inhibitory in its influence on voluntary movements, and no one probably has reasons to suggest why it should not be on emotional reactions also, while we are fully certain that the vegetative reactions have well-defined inhibitory influences. It remains, then, to integrate a few of the recent advances in physiology and in the relations of mind and body; we shall then see that the central mechanism involved meets every conspicuous requirement of our hypothesis as to the innervation of the feelings in the great cortex, especially by the two layers of the cortex, which are respectively the first and the last to develop and to be completed.

If we may venture to make arbitrarily concise our present notion of the primary innervations concomitant to feeling and emotion, we may divide them into two classes: One set of innervations is chemoautonomic in origin and represents the chemical (hormonic) control of the smooth muscle of the body (present *everywhere* save in the bones, the nervous system, the gland-acini, some sense organs, the connective tissues, and the voluntary musculature) through the intimate relationship between the autonomic neurility and the hormones at the myoneural junctions, and by no means wholly motor or efferent. The other set of primary innervations flooding the spinal grey is purely kinetic in origin and represents the movement universal in the parts actuated by voluntary muscle, half the body's mass. This is the kinesthesia in the narrow sense, and seems to be in two reciprocal phases, actuating and inhibitory, perhaps corresponding in this duality with the nerves now known to control the muscular synergy.

These two sets of autonomic and spinal circuits act on and in the spinal grey and somehow (just how is a mystery profound at present) prepare for the use of the integrating mechanism above in the brain, the great organ of wide adaptation and control; summaries or epitomes or synopses or *symbols* of some sort or of some other denotation which the present writer has commonly called *resultants*, a term borrowed from mechanics and the correlation of forces. These resultants, representing adaptive bodily movements and never separate muscles or muscle synergies even, it appears, pass upward by paths repeatedly considered into the optic thalamus, in part directly through the brain stem and in part by way of the equilibrating and integrating cerebellum. The thalamus distributes what it receives, how much or how little altered we as yet do not know, to the entire cortex cerebri.

If reference to another previous article[13] be not taboo, it may be stated that in 1907 an article in the *Journal of Nervous and Mental Diseases* set forth at considerable expense of the two commonest kinds of ink that the muscles and all the other active forms of body protoplasm represented through their inherent protoplasmic motion the mental aspect of the animal, the Rolandic area and the remainder of the cortex, save as coordinators, being inadequate rationally to achieve that great end. I have in no important sense modified that opinion, but recent little discoveries and devices of understanding have tended distinctly to emphasize the principle of resultants, which flow upward from both the autonomic and the spinal greys. Thus it has become clear that the cortex and its preliminary ganglia as way stations are by no means dependent from moment to moment on the stream of afferent influences coming singly directly from the moving somatic units in the relative environment. By one of the functions peculiar to a nervous system, as yet wholly unexplained, a group of neurones, large or small, has the power of subsuming by a process of symbolism the control of functional regions and mechanisms not immediately in intimate connection with it. Facts of neurology, of pathology, and of surgery too numerous to be mentioned positively demonstrate the activity, the great degree, and the relative perfection of this wonderful power of vicarious control, of subsumption we may call it, in the nerve centers. The phenomena of ambidexterity, the useful if trite "American crowbar case," the surprising facts developed by the surgery of the cranial nerves for the relief of intolerable neuralgia, are instances familiar to all.

Applied to normal development and neurologic symbolism or subsumption, these facts are far more easily understood, for, as Ramon y Cajal and others have shown, neuronal growth, the actual development of dendrites, collaterals, teleodendrites, and

"synapses" proceeds directly under the influence of stimuli coming in functionally from already developed and acting parts. Thus it is, somehow, that a little knot of neurones, whose cells at least are in the spinal grey, can stand for, integrate, coordinate, symbolize a greatly complex apparatus of nerves and muscles in many far-separated parts of the body; and thus it is that one of the prevertebral ganglia of the autonomic, for example, subsumes the control of a whole functional system of glandular activities, such, for instance, as the actuation of the indispensable adrenals. Thus it is, too, by a process more elaborate but wholly similar it is likely, that a knot of neurones in the brain subsumes and integrates a complex set of processes each in itself complex and intricate.

But still more than this and much more germane to our present purpose: these higher centers seemingly become after a time, when adequately developed, independent of their proper immediate influences from below and able to associate with each other in their turn for their ultimate purpose of representing in a sense and realizing the stream of mind. This last complexity, indeed these two last complexities, are, at length, true symbolisms, for nothing immediate from smooth muscles and glands and cross-striated muscles, synovial membranes, bones, tendons, etc., nothing at all in short from the universally moving tissue-protoplasm, may be contained in their afferent nerve supplies. Just how this process of concentration or symbolizing obtains its basis in the grey matter no one knows, but indications newly derived suggest that neurokinetic stresses or strains, active neurokinesis, in short, rather than any imaginable kind of mechanical traces or vestigia in the neuroplasm (which is at least 80 per cent. water) are its immediate "physical basis," or energy-concomitant.

Fourteen years ago and more Sherrington published[16] a research-based opinion that "the reverberation from the trunk, limbs, and viscera counts for relatively little, even in the primitive emotions of the dog, as compared with the cerebral reverberation to which is adjunct the psychical component of emotional reaction," and recently Cannon,[9] in a timely article, like the rest of us, has agreed with him. No one whom I, for one, know of lays stress either on the necessity of an immediate flow of neurility from the environment for the action of the vast intricacies of cortical nerve knots; or on the permanence of the symbolism exhibited by these complicated nerve knots. They represent the body "even in the primitive emotions of the dog, and represent it adequately because of the perfection of their symbolic structure and function, but they perhaps would not represent the body for any purpose, volitional, cognitional, or affective, for a long period after the body had been severed from them. Even if these cerebral centers did continue to represent more or less adequately feeling and emotion involving normally the active somatic parts it would not cast out of our psychophysiology as a nonentity the human body or its inherent necessity in the evolution and actuation and apotheosis of the human personality. It would mean, rather, that there is some mechanism in the head, beyond the cutting-off place, transcendentally more efficient than the mere neurologist can explain, in that it not only symbolizes all the somatic intricacies of motion in tridimensional space but also the subtle meanings and intentions and motivations of the soul itself.

On the other hand, things neurologic åre too complex and too interinvolved at present to make it quite fair to venture to compare directly normal and abnormal conditions, to presume, in short, that, because the "cerebral reverberation" continued to "reverberate," à la Sherrington, Cannon, et al., after the cat's brain was neurally separated from the cat's body, that the puissant movements, molecular and molar, of that cat's body have in the normal cat little to do with the emotion. To be sure, such an attitude is implied and not made explicit by these new physiologic animists. For our present argument it obviously is quite essential, however, that we call to mind that continually and permanently the real, that is the normal, frisky, happy cat, has an intricate *flood* of kinesthetic neurokinesis pouring into his spinal grey and upward into the cortex continually, invariably, and inevitably.

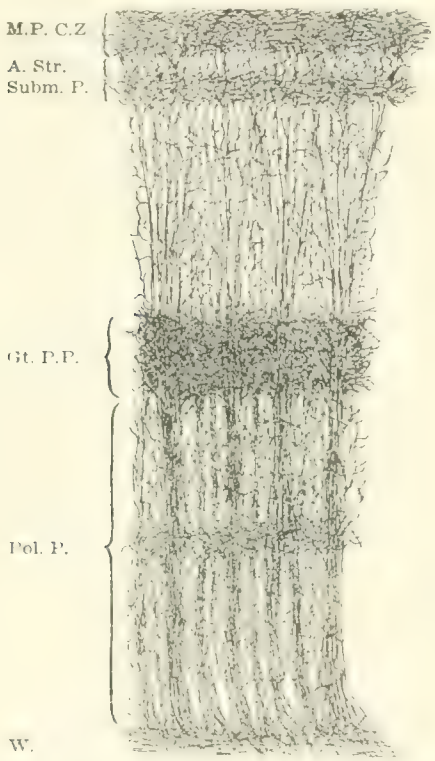
Philosophically, of course, this kinesthetic flood actually represents the sanction of the conception and birth of the individual, for only through the body and its attitudes toward its environment does the personality aspire (Paracelsus), and finally, more or less, attain its unique and worthy individuality. And the mechanists can not escape this point of view; nor the animists.

As elsewhere[18] I have set forth, however feebly, this wholly adequate mechanism of always living matter, the world-evolution's magnus opus, is the human cortex cerebri. One might, if one could, wax eloquent over its prodigious complexity, its intricacy of neuronal pathway, its billions of perplexing neurones, but what would be the use after all? This would require counting and other difficult histological research which no competent one at present seems bent on performing, although, like the question of personal immortality for example, it is perhaps one of the questions of quite maximal human interest. The histologists, however, are most of them anatomists only, "nor look before nor after," and do not heed the call of the mind. In this indifference lies one's sanction in part for using at will the data which actually are at hand for the furtherance of psychology as a science of behavior.

In recent years at least we owe to William McDougall the restatement[32] of an old notion that the brain is a reservoir of energy derived in part from the active organism and in part from the environment. I firmly believe that this, so far as the cortex is concerned, is not a metaphor or a simile but in great probability a scientific fact. Somehow it sounds right, and from the most recent notions as to the nature of the memory "traces," the "vestigia" of experiences, habit pathways, etc., it looks right also. Moreover, the potential connections of the cortex with everything else on earth in one way or another, both inside and outside our bodies, make it seem right altogether. Here are the muscles and the glands and the vegetative contractile net and the whole energetic environment more or less symbolized and integrated and represented for mental concomitance. Just as the autonomic ganglia of three classes represent a reservoir of energy, of neurokinesis, for nervous use in the vegetative mechanism all over the body; and just as the spinal grey and the numerous cells in the white tracts of the cord represent a reservoir of energy for actuating the voluntary musculature and, through the autonomic system, the vegetative musculature in part; and just as the bulbar centers and the cerebellum represent a reservoir of energy for another and more complex set of functions, so the trifold great cortex is a reservoir of neurokinesis for truly

voluntary (that is inhibitory) movement proper and for all integrations which involve (because of their extreme complexity) the lower circuits of bulb and cerebellum, of spinal grey, and of the autonomic. It is not possible to understand the innervation of behavior in any way far different from this on this threshold of 1915, Parmelee[39] to the contrary notwithstanding. The lower and shorter and more vegetative circuits of neurility each affects upward all those above it; but the control, the restraint, the inhibition is in the opposite direction, namely from above downward. Actuation, then, is integrated and coordinated primarily close to the mechanism which furnishes all the energy, in the abdomen and secondarily further up; while, on the other hand, control lies in the more human sphere, far as possible from the animal belly, in the neopallium.

Bolton's important researches[6, 7] on the cortical layers in man give explication to what before was more of a vague mystery. The accompanying illus-



Section of human cerebral cortex, to suggest especially the immense complexity of the neuronal relations (methods of Weigert and Golgi): *C.Z.*, clear zone having no nerve fibers; *M.P.*, Exner's plexus in the molecular layer; *A.Str.*, ambiguous cell stratum; *Subm.P.*, submolecular plexus; *Gt.P.P.*, great pyramidal plexus; *Pol.P.*, polymorphic plexus; *W.*, white matter. (Andriezen.)

tration amply suggests the cortex's adequacy in the abstract; let us mention a few of Bolton's familiar notions for some particulars.

The "inner cell-lamina (polymorphic flexus) develops first and has attained three-fourths of its adult depth at the sixth fetal month; it is of constant thickness, is well developed in the least intelligent mammalia, and is little different from usual in the more ordinary grades of amentia. This layer of the cortex contains cells of several different forms, Golgi cells, multipolar cells, and the mysterious cells of Martinotti whose neurites, perhaps it is important to note, conduct toward the middle or granular layer, or outward and not inward. This is what is nowadays properly called the archipallium and sometimes the "paleoencephalon." With little present doubt, it represents the ultimate integrations of the *impulsive* aspects of the individual in his relations to his ever-changing environment—instinctive, "original," emotional.

The inner fiber layer consists in part of medullated neurites horizontal in position with the large triangular cells of Meynert or of Betz (in the Rolandic area) scattered through it. It is otherwise termed the great pyramidal plexus with Baillarger's inner band. This lamina develops at about the sixth fetal month.

The middle cell-layer or "granular" lamina consists largely of small pyramidal cells (with round nuclei) but with many multipolar cells, some small and some large. It is called a sensory or afferent coordinator. It is about half finished in its gross structure about the sixth month intrauterine.

The outer cell-lamina and the outer fiber-lamina ("Exner's plexus") show themselves in a way to be somewhat fundamentally different in functional respects from the layers beneath them. The latter, the "molecular layer," consists of the medullated neurites of multipolar "cells of Cajal" running parallel to the pia mater, many dendrites of cells below, together with scattered neuroglia cells; it appears to develop very early.

The outer cell-lamina, including "Baillarger's outer band," and otherwise called the submolecular plexus, consists of large, medium, and small pyramidal nerve cells, the largest being innermost and the smallest outermost, their neurites extending gradually inward to the inner fiber layer, while their dendrites arise in the plexus of Exner without. This layer develops slowly after birth until in adults of average intelligence it is thicker than the entire remainder of the cortex. It is the last layer of the cortex to develop and the first to degenerate in involution whether from old age or from disease, especially terminal dementia. In the various degrees of amentia (feeblemindedness) its depth as well as its complexity seem to be in direct ratio to intelligence, and this is true also in the phylenic scale.

All this, of course, is more or less familiar information summarized here only for the reader's convenience of recall. The functional opposition and developmental contrast between the inner cell lamina and the outer cannot fail to be obvious. Indeed the latest of the world's text books of physiology, that of Bainbridge and Menzies'[1] notes the matter thus: "A convenient modification of this description is to speak of the layers in their relation to the middle cell lamina or layer of granules. This arrangement gives (1) a supragranular layer, consisting of a fiber lamina and a cell lamina; (2) the granule layer itself, and (3) an infragranular layer, consisting of a fiber lamina and a cell lamina." According to Bolton[6] the granular middle layer receives the afferent impulses and associates them with the laminæ below and above. Our illustration shows the intricacy of the give-and-take to and fro of each of these cortical layers with the others, commensurate with every psychophysical fact of living with every emotion.

Now, putting together the data set forth above and these facts about the cortex from the histologists, "what," in the slang of a day not long passed, "is the answer?" Perfectly aware, as I am, how many guesses have been made, how many are called and how few are chosen, still it remains an irresistible personal conclusion to our premises (the major set forth at length above and the minor later, from the histologists and embryologists)

that *here are ample integrative plexuses for the two-phased phenomena of feeling, respectively impulse and its restraint, represented afferently respectively by the subconscious actuating kinesthesia and by the potentially conscious kinesthesia which is inhibitory.*

Here, in the triple cortex (but not here alone, it is likely) is the adequate integrating mechanism for that particular *balance* with which especially feeling is concerned, a balance with several common characters. We certainly need not take valuable space to demonstrate how universal is this balance-principle in organic activity, but it is enough to call attention to the fact and its importance for the understanding of things. Every month, now-a-days, almost, some new example of the numerous physiologic balances is revealed or explained. It is the way life in organisms is carried on and made to fit continually the ever-changing environmental conditions—vasodilation and vasoconstriction; anabolism and catabolism; acidity and alkalinity; sympathetic and craniosacral; flexion and extension; toxin and antitoxin; thermogenesis and thermolysis; actuation and inhibition; and the rest, so that one is reminded of the wisdom of Emerson in a famous essay. Just in proportion as science works out this principle in the neurology of behavior will sundry roily matters of psychology clarify; and here is a "document in evidence" thereof.

It appears, then, that energy, kinesthesis, coming in part from the catabolizing and hence ever-moving body and in part from the ever-changing environment, floods into the great cortex, having been distributed thereto in some mode as yet undefined by the thalamus. By the ultimate and supreme marvel of experience, this neurokinesis, representing the bodily nexus between soul and its environment, is concomitant temporarily to the stream of mind and the dual intentions of the personality, vegetative and purposive, respectively. An aspect of this mental stream is feeling, and the actual feeling-experience of any moment is a balance between impulse and its restraint. The lower, archipallic, intricacies of the great cortex probably represent the impulses, and the upper, neopallic, layers the inhibitions by which alone these impulses are humanized. Here, I repeat, and, so far as known, here alone, is adequate mechanism for this two-fold symbolism of an almost infinitely complex body behaving in a manner almost infinitely complex toward an infinite environment.

Perhaps nowhere else so reasonably as in this two-fold layer of integrating and associating neurones is the psychophysiologic process of submergence so well possible. In the conditions we are considering (pleasant and unpleasant feelings, impulsive and restrained respectively) there seems indeed to be tendency to submergence both of the psychological aspect and of the physiological. The unpleasantness of the affective inhibition as well as its physiologic difficulty both lessen with use and perhaps with age without use. Applied to practical education of our behavior, we learn more or less completely to restrain our emotions and feelings, the process becomes more or less habitual, and the unpleasantness less in some instances and some emotions at least. This process in neural terms probably corresponds to the development of yet closer association between the archipallium and the neopallium, the two losing somewhat of their proper physiologic opposition—an artificial and, as it were, biologically speaking, an abnormal process, a sophistication of animal life. Thus we see, as was said at first, a double sort of submergence—figuratively, a submergence of unpleasantness in an habituated subconsciousness, and literally, a submergence of motor control from the neopallium into the deeper layers of the cortex, the archipallium.

When these submergences have taken place it is obvious that the emotion or feeling has lost its proper physiologic nature, and no one must expect to find any directer "principle" than we have tried to indicate of its somatic representation. As has been pointed out so often (*e.g.* "The Emotion of Joy" [15]) if we would see the feelings and emotions in their biologic purity, which alone is reducible to law, we must observe them in the brutes, in idiots or in imbeciles, in savages, or in such young children as are not yet sophisticated. We are compelled to urge this principle again and again because convinced that it is a fundamental matter in the neurology of affection. Habituation elsewhere is acknowledged preeminent, and no reason appears why it should be otherwise here.

This process of submergence has important theoretic value, but it likewise has far-reaching personal and social effects in human (perhaps in brute) behavior. It explains for one thing much of the *continuance* and the recurrence of asceticism, hermitism, denial in every extensive and continuous form among rational human beings with an average degree of impulse in their personalities. Without reference to the conditions among the Oriental religionists or in the monasteries of Europe centuries ago, we can see that the process was carried out among our own ancestors here in America:

"There exiles were formed in a whimsical mold,
And were awed by their priests like the Hebrews of old,
Disclaimed all pretense of jesting and laughter,
And sighed their lives through to be happy hereafter.

On a crown immaterial their hopes were intent,
They looked toward Zion wherever they went,
Did all things in hope of a future reward,
And worried mankind for the sake of the Lord."
—*Freneau, circa* 1750.

Physiologically, no one is going to believe that it is literally true that they "sighed their lives through" even "to be happy hereafter," any more than that they "worried mankind for the sake of the Lord." Their life-long sighing was certainly an extremely attenuated emotional state and didn't really prevent a fairly happy life full of novelty, of impulse and simple human joys, on which man's best contentment always rests. Their denial lost them some pleasure without a doubt (they certainly were not hedonists either theoretically or practically), but it quite failed, we may be sure, to inflict upon their long and busy lives that chronic unpleasantness denial in the abstract implies. In the children and adolescents the compelled inhibitions undoubtedly produced their physiological effects of unhappiness and discontent, but that habituation and submergence should have failed to greatly molify this into a pretense or even into a mildly euphonic feeling of satisfaction it is impossible to believe. The same conditions apply to all chronic forms of arceticism, celibacy, and even to those more domestic kinds of denial (far more common and so quite as important) seen so strong in many of our blessed womenkind. The principle is worth urging, for it constitutes what is an apparent exception, but is not a real one, to the theory of feeling. The process of submergence, we may be

sure, *does not alter materially the basal innervation of the emotions evolved in the developing nervous system.*

VII. Summary.—Every tentative suggestion of a neuroloic theory of behavior emits its own defiance, actually invites disproof, and so in a way furnishes its own necessary sanction as a contribution to the science of behavior.

For scientific technical purposes, the conceptual division of emotional behavior potentially into eighty or more feelings and emotions perhaps should be abandoned as only traditional, thus clearing the way for adequate study of the complex basal oppositions which biologically underlie all of these shades of feeling, the chief of which oppositions is that between (vegetative) impulse and (personal) control.

It is an adequate thesis (for proof or disproof) that the physical energy-aspect of feeling consists especially of numerous sets of kinesthetic neurokinetic impulses or strains which continually relate all layers of the great cortex to its ever-unique effective environment (whether outside the body or within it); the conscious inhibitory phase of the kinesthesia representing originally, in the infant, the feeling unpleasant in tone, and its subconscious actuating phase the pleasant emotion.

The actuation of movement, bodily and therethrough mental, in the normal, unfatigued, and naïve individual, is the primal and enduring delight of all his experience.

In such a personality the inherent impulse to movement in space and in time seems to be represented neurally by the actuating phase of kinesthesia pleasant in tone whenever it rises out of "the subconscious."

In such a personality, too, the human restraint of impulsive movement in emotion seems to be represented by the unpleasantly conscious inhibitory phase of kinesthesia.

Organic evolution at heart is an ever-complexifying process of control over impulse.

In the triple intricacies of the great cortex is the only adequate integrating mechanism for that particular physiolgic balance (here between pleasant actuation and unpleasant inhibition) which is concomitant on the usual symbolic plan to feeling.

As the child develops its personality properly human, a double kind of submergence seems to occur: figuratively, a submergence of unpleasantness in some cases into an habituated subconsciousness, and literally, perhaps, a submergence of neuronal motor control from the "neopallium" into the deeper layers of the cortex, the "archipallium." This universal process in no way invalidates the kinesthetic theory of feeling, since it leaves undisturbed the original primary influences on the autonomic and spinal greys as well as the secondary resultants therefrom into the cortex by way of the distributing thalamus.

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PHENOMENA RESULTANT UPON FATIGUE AND SHOCK OF THE CENTRAL NERVOUS SYSTEM OBSERVED AT THE FRONT IN FRANCE.*

By E. MURRAY AUER, M.D.,
PHILADELPHIA, PA.
(LATE OF THE 23RD GENERAL HOSPITAL, B.E.F., FRANCE.)

THE manifestations of disordered function of the central nervous system resultant upon fatigue and shock occurring in the present war are of uncommon interest, having as they do for their etiology a more or less common factor, *i.e.* "a mine explosion" producing its varying effects upon the number involved, and because of their great variety, illustrate strongly the matter of "the individual equation" in reaction and resistance to outside influences.

The functional nervous and mental disorders studied included those resulting from the general fatigue of duty and long marches, exposure, loss of sleep, terror, and "shock," which latter cases depended upon the activity along the firing line such as "mine explosions," charges, and shell explosions in the immediate vicinity of the individual without causing any apparent physical trauma.

The symptomatology occurring as a result of these traumatic influences included disordered activity of the psychic, special sense, sensory, and motor elements, invariably in combination with one phenomenon of disordered function accentuated.

As a result of severe shock were seen states of hyper- and hypo-mental activity; the former characterized by increased motor and psychical activity, one case in particular showing the motor activity, playfulness, grimacing, flight of ideas, distractibility and rhyming of an acute mania. In his ravings the Iron Cross, Red Cross Division, and commands played no little part. The latter cases were characterized by stupor of varying degrees of profundity. In the most profound stupors there was no response to stimulation. The pupils were usually dilated and mobile. There was a certain amount of rigidity of the limbs, which did not increase on movement. The deep reflexes were very active but there was no Babinski; in one case there was abortive ankle colonus. In the milder cases the patients responded to most simple commands but were markedly apathetic and indifferent to their surroundings. In none of the cases were there any urinary disturbances or difficulty in swallowing. These cases were usually the result of severe shelling, burial, or other severe psychical trauma; one case of mine occurred in a boy of 19, three days under heavy fire, who, after being threatened by his sergeant with court martial for sleeping on sentry, was for 10 days in a stuporous condition, as was similarly another who had witnessed his chum blown to pieces. On their recovery they were usually able to give an account of the psychical trauma productive of their condition. The duration of the stupor in the eight cases admitted to my ward ranged from 2 to 11 days, having existed from 1 to 3 days before their admission. Recovery was usually gradual, the cases having invariably been sent on before complete recovery. The terrified expression, crouching, starting, staring wildly when spoken to could not but impress one that the patient was still living through his terrifying experience. One man with profound stupor rose in his bed during the night, recited in a one-sided conversation his entire experience of a charge and burial and relapsed into his stuporous state. The following morning when questioned, he could not recall the incident. Recovery was usually marked by headaches, tremor, trench dreams, and in one case, mutism for three days, on the mornings of which days he was with little effort persuaded to speak, but the following morning he lapsed into his previous state.

Occurring after shock, as a result of which the patient may or may not have been rendered unconscious, were seen cases of marked tremor and shaking of which the following case is an excellent example: The patient was buried in a mine explosion at Hooge July 19, and on August 9, at Hill 60. Neither time was he unconscious, but he was badly freightened and his arms and legs shook. On July 19 a mine blew up the trench and he was partially buried and thought himself killed, but he struggled out of the debris and dashed on into the taken trenches, which were under heavy bombardment for eight hours. In the counter attack he was badly frightened, his eyes closed, his head and limbs shook and he had a superficial sharp shooting frontal headache. On August 9, at Hill 60, while building a parapet under heavy fire, a piece of parapet accidentally fell, striking him in the back and knocking him down. He was not rendered unconscious but the shaking and headache began again with greater severity. On examination he had a coarse irregular side-to-side movement of the head and a coarse, irregular tremor of both hands and legs. During an attempt to write the shaking of the head became worse and under observation all tremors were accentuated. He stated that his lower limbs felt dead at times; that he had hot and cold flashes, perspired easily, and had night frights. There was no contracture of the visual fields or organic neurological findings. He had superficial, sharp, shooting, frontal headache with boring pain in the back of the eyes. The tremors usually were confined to the arms, but also at times involved the lower limbs and more rarely the head. Tremor of the head was a side-to-side movement or a nodding of the head. Its duration varied from a few hours to several days or weeks after the injury, as in the case of one soldier who, bowled over by the impulse of a trench mortar and badly frightened, shook for a half hour; whereas three

*Read before the Philadelphia Neurological Society, March 24, 1916.

weeks later after a night fright, from which he awakened with his nerves all "drawn up," he had tremors for four days.

Disturbances of memory from simple forgetfulness to lapse of unconsciousness were not uncommon following exhaustion and fright. The amnesias occurring after psychical shock were of sudden onset and confined to a definite period. They were of varying duration from a few moments to a few days, as for example the soldier who at the beginning of a bombardment lost himself, ran from his machine gun up and down the trench, until a sharp order from his officer brought him to himself; another who stated that at Loos he was carried along in a charge but knew nothing of it, and who, at the beginning of a bombardment, dashed from his trench over six traverses and was brought to himself by falling and bumping his head; and lastly one soldier who, after a shell explosion, on coming to, found himself walking along a lane. A man, operated on for the removal of shrapnel from the knee, on recovering from the anesthetic, thought himself back in the trenches, talked excitedly of Germans and guns, became violent, moved his cupboard about, thinking it a machine gun and pointing it at his enemies. This state lasted three days, when, after a sleep of 12 hours, induced by veronal, he awakened rational. He had no knowledge of this period other than the incident of the machine gun. Another patient suffering from extreme nervousness following a scalp wound, was lying out of doors at the Base when a storm came up and at the first peal of thunder he dashed to the nearest tree, where he crouched, trembling. Shortly after he came to himself and returned to the ward. In the majority of cases, the amnesia was distinctly retrograde in type but in others following the shock of mine explosion it was retro-anterograde.

Exhibiting well the rôle of external affairs in precipitating mental conditions and the part they play in their symptomatology were two cases of dementia precox, unquestionably affected before the war. One in particular who, together with an attempt to explain the evolution of the European races along the ideas of ethereal wave lengths and the law of action and reaction, was, at the time I saw him, on his way to set Lord Kitchener "right" about the war; the other, who was possessed with many army experiences of a persecutory nature, showed the circumstantiality, irrelevance, looseness of thought connection, tendency to systematization of a paranoid type of dementia precox. One moron was returned because he persisted in shooting the men of his own side in the trenches ahead. He showed marked mental deficiency.

Inability to sleep was either partial or total. Many patients presenting symptoms of neurasthenia were unable to get to sleep until early hours of the morning for no apparent reason than because of the sound of their heart beating, or as stated, "I just cannot go to sleep." Others suffering from severe psychical trauma could not sleep for nights, but as the subjects were all young the greatest disturbance lay not so much in their inability to sleep as in the horrible trench dreams, night frights, and somnambulistic periods suffered by the majority of these cases. One became quite accustomed to seeing patients duck beneath their pillows, rise from their bed weeping and trembling or shouting loudly and at times, as in the cases mentioned, recounting some horrible experience. The night starts were very interesting, as some awakened with terror bathed in perspiration but recalled no dreams; others dreamed of being pursued by Germans with bayonets, of being called to attention and unable to find their clothes, of a suffocating feeling across the chest, of losing the trench in a fog and unable to get back, etc. One nightmare in particular was of interest. This soldier had a recurrence of a nightmare of his childhood, which was that of seeing a dark woman descending a stair toward him, carrying a dagger. She was the Medea of which there was a picture in his home. These patients awakened startled from their sleep by the slightest stimulation.

Occurring from the continual exertion of duty, or following some illness or psychical trauma, were many cases of neurasthenia differing not essentially in their symptomatology from those observed in general practice. Those of gradual onset related a developing fatigue, inability to concentrate, headache, poor appetite, inability to sleep, etc. Those occurring after trauma were more in the nature of severe pains in different parts of the body, insomnia, etc. Patients of this group were for the greater part mentally depressed, although in good physical condition. Headache was the symptom of most common occurrence. Those following trauma (shock) were most generally pains of sharp shooting character, throbbing or pounding, superficial in a few cases, though most commonly deep, through the frontal and parietal regions with heavy or sharp shooting pains in the back of the eyeball. The patient invariably awakened in the morning with this pain which improved as the day progressed, but generally became worse at night. In but few cases did these headaches prevent the patient from going to sleep. The headache occurred either immediately or within an average of 24 hours after the trauma. The pain later became of a dull, heavy pressure type, changing its location frequently to the crown or occipital portion of the head. In one case it had the character of a tight band over the temples and supraorbital ridge. Movement of the eyes increased the pain in the eyeballs and any excitement greatly increased the headaches.

Of the central or psychical pains, those along the spine were most frequent, occurring usually in the region of the neck but more commonly about the sacrum. The painful areas were of fairly definite outline and followed no nerve distribution. Not infrequently in the beginning they were of a sharp shooting nature up and down the spine, which later settled as a dull heavy pain over the sacral region. Associated with the many complaints of tachycardia and cardiac arrhythmia was occasionally found pain of a knife-sticking character over the heart or a painful beating which made the whole body move, throbbed in the ears, and kept the patients awake at night; without any organic changes one frequently heard of shooting pains after emotion that interrupted breathing or of a feeling of weight that interfered with breathing. Pain through the stomach and bowels of no demonstrable origin, was not uncommon. In many of these cases, excluding those following gas poisoning, the patient complained of sharp shooting pain in the pit of the stomach, belching of gas, and acid eructation, all worse under fire or emotion. In the bowels the pain was usually of a griping nature, or a dragging sensation and it was most frequently located at the cecum. On palpation of the abdomen of these patients their reaction was remarkably greater

than the amount of possible pain caused warranted. In one instance only was pain along the urinary tract observed and this was in the urethra, which was extremely hyperesthetic to the passing of a sound. In a few cases in which the pain in the hips might have been considered as sciatica, Lesague's sign was absent. These patients usually awakened in the morning weary and unrefreshed, so short of breath and weak that they could barely walk. They were fault-finding, irritable and excitable, emotional and depressed. One individual was so depressed he thought he was going to lose his reason, and at times left his rifle unloaded to prevent suicide. The element of fear or anxiety was relatively uncommon considering the wealth of fear-producing stimuli, but in the severe neuropathic cases one encountered a feeling of incompetence, of doing something wrong, and fear of being shot for doing something wrong, a premonition of some impending danger, that something might arise in which he would fail, a fear of going to sleep lest he should not awaken. After a mine explosion or heavy bombardment the dread of returning to the trenches and fear of being hit was overweighted and conquered by the fear of loss of confidence or ridicule of their fellowmen, but withal frequently at the sound of the first shell they would lose control of themselves and, seized by an uncontrollable impulse of self-preservation, would run and crouch trembling in the dirt. One patient, denying any fear of being hit under heavy shelling, was possessed with a barely controllable longing to get out of the din, and on sentry duty had the sensation of someone being about and would challenge or be seized with an impulse to run. These anxieties when centered in self caused distressing fear as to the possibility of the heart ceasing to beat, or the blocking of food in the stomach or bowels, etc.

Difficulty of passing urine in the presence of others was a common occurrence. Following psychical trauma involuntary movement of the bowels and bladder was noticed, and nocturnal enuresis often recurred. Retention of urine was met with in only two instances, for periods of 8 and 12 hours. An irritable weakness of the sexual apparatus as evinced by nocturnal emissions was seen in a very few cases, occurring in one instance whenever the individual, a strong robust butcher boy, went to sleep, day or night. On awakening he was fatigued, depressed, and very emotional. In only one instance was there nocturnal emissions associated with erotic dreams, and these last were not constant.

Vasomotor disturbances proved to be most distressing symptoms, and had a wide range, from the transitory hyperemia of the face to the continuous feeling of heat and profuse perspiration or even cold, as in one patient, who complained that he was always cold, even on the march when others perspired, and when excited he became chilled and his scrotum drew up tightly. Under the slightest excitement these phenomena became aggravated, even the briefest examination causing pronounced hyperemia, elevation of the peripheral temperature, and profuse perspiration in many instances, while a sudden command so intensified the condition as to make the individual weak and incapacitated. Often these vasomotor phenomena accompanied the night frights and trench dreams suffered by these patients, and they awakened trembling, flushed, and bathed in perspiration. Arterial pulsation could easily be seen, and in one individual complaining of a pronounced fluttering sensation in the abdomen, marked throbbing of the abdominal aorta was observed.

Abnormal sensations, dysesthesia of Dejerine or parasthesia of Oppenheim were felt; but by far the most characteristic occurrence in these cases was of the nature of numbness, pin and needle prick, cold and hot flashes, twitchings, creepings, a feeling of tightnesss, a rocking sensation on going to sleep, a dripping inside over the heart, a feeling when walking about as though someone had hold of him, whereupon he became nervous, perspired, and felt weak, while the blood seemed to leave his head, making him dizzy, or to leave his limbs, making him too weak to stand. These abnormal sensations were most generally confined to the limbs and not infrequently associated with pain.

Among the neuropaths suffering from functional attacks the etiology was of greatest similarity. These attacks followed some violent emotion resulting from either a physical or psychical trauma, and after their onset recurred under varied emotions such as fright, an unpleasant command, a distressing letter, a sentimental piece of music heard at the Y. M. C. A., or doing night sentry.

The attacks were generally diurnal, but not uncommonly upon awakening terrified from a night fright or trench dream the individual suffered an attack. Dysesthesia frequently occurred previous to the onset of an attack, but there was no definite aura or cry. The men were usually conscious during the attack and subject to command or suggestion. Only one patient stated that he slightly bruised himself in falling, and another on a few occasions passed his urine. Following the attack the patients did not sleep, but frequently showed tremor and shaking of the arms, had various pains, and not uncommonly heavy pressure headaches. Occurring with these attacks one frequently found amnesic periods as in one lad who, at the age of 17, for seven days knew nothing after falling down a flight of stairs, at 20 years of age had an amnesic period of five days following a nightmare, at 21 years a similar period of two days, and after a recent charge knew nothing for four days.

Loss of motor power was of gradual onset, as in severe neurasthenia, or of acute onset following shock, usually of the nature of burial by a mine explosion or of a shell explosion in the immediate vicinity of the patient without apparent physical injury. These patients may have been only temporarily stunned, or may have been unconscious, but the disturbance of motor power was invariably of immediate onset and was of the nature of a monoplegia, paraplegia, or hemiplegia. In the former cases the condition lay not so much in an inability to use the members, as in an extreme fatigue resulting from the effort, and was associated with general fatigue, headache, etc., which was usually more marked on awaking in the morning. Objective sensory disturbances were not observed, although subjective complaints were common. The hysterical paralyses did not differ from those seen in civil life in that they were either flaccid or spastic, with or without contracture; and objective sensory disturbance following no root distribution were present in varying degrees. The reflexes in these cases were prompt, but equal. The superficial reflexes were unchanged, and plantar stimulation caused plantar flexion or no response. None of the cases showed any disturbance of function

of sexual power, bladder, or bowel except in one individual who had a retention of urine for eight hours with no sexual or bowel trouble.

Impairment of vision resulted from prolonged fatigue or a sudden shock. The former cases were invariably of the nature of a photophobia in either one or both eyes, resulting from direct mechanical irritation producing conjunctivitis, *i.e.* blurring of vision from the smoke, dirt in the eyes while buried, etc. In the severe cases of nervous exhaustion was frequently met the statement that the eyes fatigued easily, that there was a blurring in the vision and a burning pain back of the eyes that caused blinking, black spots before the eyes, etc. Frequently it was seen that those complaining of inability to see did not do so because of constantly keeping the eyes closed because of photophobia, as interestingly shown in a case in which the photophobia had its onset following a night start four weeks after the patient had been buried in a mine explosion; and when visited the morning after the night start he said that he could not see, but when the eyelids were opened his vision was unimpaired except for marked lacrymation. Amaurosis followed severe shock, as the result of which the patient may have been merely stunned or rendered unconscious and was of extremely variable duration, some being brief, as in one individual who, every time he was reprimanded or frightened under fire, lost the vision of both eyes for fifteen or twenty minutes; and another who, when exposed to cold, suffered transitory blindness; while others passed the limit of three weeks at the base and were transferred to England with no improvement.

Auditory disturbances were of a hyper- or hyposensitive nature. Many of the neurasthenic cases complained of hyperacusis of an objective and subjective nature, the former, in which ordinary sounds, such as motorbus noises, bugle calls, shelling, etc., were greatly intensified; and the latter of the nature of a tinnitus, of the heart beat sounding in the ears, etc. In none of the cases of auditory disturbance was there any disturbance or sensation about the ears, nystagmus, or unsteadiness of gait. The watch tick was or was not heard in proportion to the degree of deafness. Rinne's test was positive, and in Weber's test, if the involvement was unilateral the vibrations were detected in the hearing ear. Deafness of a transitory nature was very common, due to shell explosion in close proximity to the individual, who through the violence of the explosion may have been hurled to the ground. It was very commonly associated with mutism, and in those cases in which it as associated the condition was of greater duration.

Hesitancy and loss of speech were seen in several cases following shock, with or without loss of consciousness. Stammering occurred in cases of general fatigue after prolonged exposure, or following night starts, as in one individual who, on the eighth night after burial in a mine explosion, awakened startled and for three weeks, in association with other neuropathic manifestations, stammered. In two cases where stammering had existed before enlistment, the condition was markedly aggravated. The early stages of mutism were accompanied by other manifestations of shock, and attempts at phonation were accompanied by twitching of the lips and facial muscles and lacrymation; in two cases of mutism was found pharyngeal anesthesia with abolition of the palatal reflex. In all the cases of deaf mutism the speech returned first and later the hearing in either one or both ears. The cases of partial loss of voice in which the patient spoke in a whisper were of the greatest persistency. In one case, seen at the Second London General Hospital, the condition had lasted for several months.

Excluding spasm of the orbicularis palpebrarum, so commonly associated with conjunctivitis, there was seen but one case presenting tic of the lower left face, which had its onset after the patient had been hurled to the ground by the force of shell explosion, productive of no apparent physical injury. Spasm or cramp of the muscles of both lower limbs was seen in one individual, a clerk in civil life, which apparently had its onset after a prolonged period of trench digging. There was in two cases of miners' nystagmus a decided aggravation in one and in the other a recurrence of the condition in these individuals who served as sappers in tunnel digging.

Inquiry into the early history of the cases studied met, without exception, in the discovery of earlier neurotic manifestations as noted. Impulsiveness, inclination for solitude, avoidance of strange company, reticence, sense of being observed, fear and timidity in conversation, easy excitability, palpitation, inclination to jump when on a height, a tendency to blush easily and being very uneasy under feminine observation; abnormal sensations, a fear of corners and entries, an uneasiness in crossing a bridge; self-consciousness, St. Vitus' dance, a feeling of hypnotic influence exerted over him by some people whom he cannot resist; fear of being crushed in a crowd, fear in the dark, and a sense of being followed, in response to which they would turn about, hasten their pace, or even break into a run; a sense of falling when going to sleep, talking in the sleep, night frights, nightmares, somnambulism, erotic dreams, nightly emissions, nocturnal enuresis, psychical stricture on passing urine in the presence of others, heart thumping in his ears, preventing him from going asleep, etc.

Physical examination of these cases showed nothing unusual other than stigmata of degeneration. In the neurological examination, anisocoria and hippus were the most constant eye findings; true, nystagmus was not observed, although nystagmoid movements were frequently seen; contracture of the visual field of either one or both eyes was relatively uncommon, occurring only in a few of the cases showing hysterical paralysis, in only one of which cases was there tubular vision. In all cases observed, including those of stupor, the eye reflexes responded to light and, when the patient could cooperate, in accommodation. Anesthesia of the conjunctiva was not found. Ophthalmic examinations made by Dr. Maghy were negative. Treatment of these cases, except for the immediate treatment of the symptoms, consisted in isolation, absolute rest, with corrective measures, and psychotherapy.

3319 Walnut Street

Swimming Pool Conjunctivitis. — Harry S. Gradle found an existing conjunctivitis among eighteen young adults, in the majority of whom the condition developed three days after swimming in a confined pool. Under ordinary conditions the disease lasts about three weeks. In no case was there an involvement of the cornea or irritation of the deeper structures of the eye. The condition was treated with 1 per cent. silver nitrate daily, and argyrol 10 per cent. three times a day or more.— *Illinois Medical Journal.*

ACETONURIA IN RELATION TO CONTAGIOUS DISEASES.

By STEPHEN H. BLODGETT, M.D.,

BOSTON, MASS.

For the past ten years I have given much time to investigating the various diseases and conditions in which pernicious vomiting accompanied by acetonuria (without glycosuria) is a marked symptom and to ascertaining whether these various diseases and conditions bear any relation to the condition I first described in 1906. I have in numerous papers reported the results of my investigations, which have proved that there is a common condition underlying the pernicious vomiting of pregnancy, cyclic vomiting in children, pernicious postoperative vomiting, and also some attacks of vomiting in adults. The fact that vomiting is frequently the first symptom complained of in the commonly so-called contagious diseases led me in the spring of 1915 to investigate the relation of this condition to acetonuria in these diseases. These investigations were carried on at the John C. Haynes Memorial Hospital (the contagious department of the Massachusetts Homeopathic Hospital). The series covered one hundred consecutive cases with the exception of a few cases occurring in infants. The work was conducted in the following manner: On admission to the hospital the history, as regards vomiting during the few previous days was recorded, also the conditions of the tonsils, in addition to the usual routine history. A sample of the urine in each case was sent daily to the hospital laboratory, and I was granted the privilege of making such tests as I wished.

One of the particular points I desired to clear up was how often the "sore spot" over the pancreas would be found in the cases of contagious diseases, accompanied by acetone in the urine. As an explanation regarding this "sore spot," I will quote from a former article of mine, "Acetonuria and Carbohydrate Starvation":* "Vomiting, as the most marked symptom, occurs frequently where there is acetone and often diacetic acid without sugar in the urine. These patients usually have, in the beginning of the disease, at any rate, a clear tongue, and the vomiting occurs irrespective of what food may have been ingested. In almost all cases there is a sore spot that can be found on deep pressure over the region of the pancreas. This spot can be distinguished from the abdominal muscular soreness that follows attacks of vomiting by the fact that it is only found on deep pressure, and is a spot, perhaps only two inches in diameter, over the pancreas, while the muscular soreness following vomiting is brought out by superficial pressure and is more or less general over the entire abdomen. In extreme cases patients will complain of pain in the left hypochondrium and tell you that it is deep in. This 'sore spot' is almost pathognomonic of this condition."

Returning to my subject, to prevent any suspicion of collusion or biased judgment, the investigations were made as follows: The history for each patient as regarded vomiting, the condition of the throat, and the temperature was placed on a history sheet by Dr. Clement, the house physician. In addition to this, a chart showing the condition of the throat of each patient at the time of admission was filled out and sent to the laboratory, and on this the results of the daily urinary examinations were placed. A specimen of urine from each patient was sent daily to the laboratory and the analysis made either by myself or by my assistant, or by both of us. The examination for the "sore spot" was made daily on each patient by Dr. Clement and recorded under each patient's name on a sheet of paper, which was kept in the doctor's possession. No one else was allowed to see it, and he never saw the results of the urinary analyses. Three months after the investigations were completed, the various records were "assembled." The history regarding vomiting, the daily conditions of the throat, the daily temperature, our daily laboratory reports regarding albumin and acetone, and Dr. Clement's daily record concerning the "sore spot" were placed on a single sheet (making a complete record of each case).

The results under these rigorous conditions were a surprise even to me and go to show that the "sore spot," to which for several years I have called attention in cases of acetonuria, is of considerable diagnostic value.

As the complete record of each case, if printed in full, would take an immense amount of space, I have, on the following chart, recorded as briefly as possible only the important items which seemed to have any bearing on the acetone. On the history chart of each case a daily drawing was made out, showing the condition of the tonsils until they became normal. Each specimen of urine was tested for albumin, but as the presence or absence of albumin proved not to bear any relation to the acetone, I have not included it on this chart. Our acetone test which we used was the Legal color test, and our gradation was as follows: Large amount, considerable, moderate, trace, slight trace, none. The color indicating the "large amount" was of such a deep red as to appear black; while the "slight trace" was an exceedingly pale amethyst color.

After the urine from any case had been free from acetone for three consecutive days, it was not examined for three days, then if free, not again for three days, and if still free, the case was recorded as finished so far as the acetone test was concerned.

I would add in passing that the acetone did not reappear in any case after having been absent for three consecutive days.

In the tabulated form above I give the results of my investigations of the series of one hundred cases which included: Scarlet fever, 54 cases; tonsillitis, 1; mumps, 1; erysipelas, 3; measles, 13; whooping-cough and measles, 1; diphtheria, 21; laryngeal diphtheria, 4; reports lost, 2; total, 100 cases.

Scarlet Fever.—Of the fifty-four cases of scarlet fever under consideration, ten cases should be omitted, as they had passed the acute stage, the disease not having been recognized until desquamation began when they were sent to the hospital. Of the remaining forty-four cases, there were twenty-nine with a record of vomiting immediately before or after admission; of these twenty-nine, twenty-seven had acetone in the urine and two cases (27 and 29) had none.

Of the cases having "no vomiting after admission" and one "vomiting not recorded," there were fifteen. Among these fifteen cases, thirteen patients had acetone in the urine and two (5 and 26) had none.

To summarize as regards the appearance of acetone in the urine and the "sore spot," leaving out the incomplete records: there were among the scarlet fever patients thirty-eight cases with acetone,

**New York Medical Journal*, August, 1915.

four without (5, 26, 27, 29). Of these thirty-eight cases with acetone, there were thirty-five that had the "sore spot," and one (44) that had general abdominal tenderness and fluid in the abdominal cavity, and two with no "sore spot." Of the four patients having no acetone, none had the "sore spot."

SCARLET FEVER.

Case	Tonsils	Vomiting	Acetone*	Temperature*	Sore Spot*
1	Large and red	Before	21–24	21–29+	21–23
2	Large and red	Before	22–24	22–29+	22–25
3	Large and infl.	Nausea	21–23	17–29+	19–22
4	Negative (sick at home 2 wks.)	None	None	21–22	None
5	Slightly increased	None	None	21–23	None
6	Large and very red	Before	19–21	19–26+	19–21 sl.
7	Slightly increased	None after admission	15–17	15–21+	14–16
8	Negative (sick at home 10 days)	None	None	3	None
9	Large	None after admission	27–29 (slight)	26–3	26–31
10	Large and infl.	None	26–28	26–6+	29–30
11	Large and infl.	None after admission	26–29	26–6+	26–28
12	Large and infl.	Present	25 tr. 26–28 None	25–6	25–29. General tenderness over abdomen, but more over pancreas
13	Large	Before	26–30	25–6+	26–29
14	Large	Before	19–1	19–8+	General tend. over abd. Died May 8
15	Large	Twice day before admission	3–7	3–7+	3–6
16	Large	None after admission	4–6	4 7+	4 7
17	Large	Present	28–1	28–6+	28–1
18	Large	None	30–3	30–5	30–3
19	Large	Twice after admission	30–1	30–6+	30
20	Large and infl.	None	21–26	21–8+	21–25 General tend. over abdomen
21	Slightly large (not very sick)	None after admission	12–15 tr.	12–15	None
22	Large and red	Day before admission	5–7	5–15+	5–8 marked
23	Negative (sick at home)	None	None	8–15+	None
24	Large and exudate	Day before admission	7–10	6–16+	7–11 Marked general over abdomen but not over pancreas.
25	Large, incr. cervical glands	Before	8–12	8–16+	8–10
26	Red and slightly incr.	None after admission	None	12–16+	None
27	Large and infl.	Twice since admission	None	12–17+	General tend., no pancreas. Died April 20.
28	Large and infl. cervical glands	Day before admission	5–8	5–16+	5–8
29	Slightly increased	Headache and nausea	None	10–16+	None
30	Sick at home 2 weeks	None	None	3	None
31	Sick at home	None	None	3	None
32	Very large and infl.	Day before admission, but not since	31–2	31–3	1–4
33	Large	Present first day	29–31	29–9+	Well marked
34	Large and infl.	None after admission	30–31	30–31	30–1 slightly tender
35	Very large	Day before admission	22–26	22–26+	General tenderness in abdome. Died March 28.
36	Large and infl.	None	19	19–23	18–22 very slight
37	Very large	Present	17–20	17–27+	17–20 marked
38	Otitis media following scarlet fever				None
39	Large and infl.	Present all day of 15th	18–21	18–25+	17–23
40	Negative (sick at home 10 days)		None	Normal	Desquamating
41	Sick at home 10 days	None	None	3	None
42	Somewhat enl.	Three days before admission	26–27	26–1+	Very slight
43	Enlarged	Day before admission	22–24	22–23	21–25 very marked
44	Slightly enlarged	Day before admission	26–27	26–6	General tend. over abd. fluid in pel.
45	Large	All day before admission	1–3	1–2	1–3 marked
46	Large and infl.	Before	30–6	30–7	Very marked
47	Large	None after admission	3–4	Normal	3–5 slight.
48	Large and infl.	No record	2–3	2–12+	2–6
49	Sl. enl. and infl.	None	2–4	2–5	None
50	Very large	Severe nausea	24–26	24–29	Light at examination
51	Two weeks at home	None	None	13–15	None
52	Very large and infl.	Nausea	16–17	16–21+	16–18 marked
53	Large and infl.	Before	12–13	12–21+	12–14
54	Slightly enlarged	1 week ago (now desquamating)	None	12	None

TONSILLITIS.

55	Very much infl.	None	1–3	1–3	1–4

MUMPS.

56	Sl. hypertrophied	None	10–13	10	10–11

ERYSIPELAS.

57	Negative	None	None	12–16+	12 very slight
58	Negative	None	None	Normal	None
59	Negative	None	None	Normal	None

MEASLES.

60	Negative	Before	23–26	21–26+	23–25
61	Swollen	Nausea, 2 days	None	6–26+	Very slight, if any
62	Very large and infl.	5 or 6 times in night	13–15.	13–22+	General tend. all over abdomen; no more over pancreas
63	Slightly enlarged	Nausea	13–17	13–21	13–14
64	Not very large	None	30–3	30–6+	1–2 slight
65	Enlarged	None	29 (trace 1 day)	29–3	None
66	Negative (sick at home 1 week)	None	None	4–6	Gen. tend. over abd.
67	Slightly swollen	Present	7–9	7–15+	8–10
68	Slightly infl.	Present 2 days previous	None	31, 1–9	Very slight 1 day
69	Negative	Before	26–28	26–31	26–27
70	Nearly normal	24– 2 days before	27–30	27–31	27–28
71	Not enlarged	Nausea	12	12–16	12–16
72	Negative	Present before admission	1–3	1–5	1–3

WHOOPING COUGH AND MEASLES.

73	Negative	Present	21–29	23–9+	23–28

DIPHTHERIA.

74	Both large, left covered with membrane	No record	24–26	23–26	23–25
75	Very large and covered with membrane	Before	15–16	15–21	14–17
76	One spot of membrane	None	None	21	None
77	Large	Before	16–17	16–21	17 very slight
78	Slightly enlarged	None	None	23–25	None
79	Hypertrophied and covered with membrane	Twice after admission	12–13	12–22	Gen. tend. over abdomen
80	Throat not very sore	None	29–1	29–6+	29–30 slight 2 days
81	Not very large; membrane on two sides	None	27–30	27–5	27–30
82	Marked involvement of both tonsils (but chiefly in right)	None	None	5–8+	None—died
83	Slightly enlarged, some membrane	None	None	8–15+	None
84	Large, membrane on both	Before	22–26	22–29	21–24
85	Membrane on both tonsils	None	21–22	21 4	21–23 very slight
86	Very large membrane on both tonsils	2nd day before	Noexam.	19	Died before could examine
87	Not very large, membrane on both	2 days before	None	18–19	None
88	Right swollen, left normal	Before	20, v. l. amt. 21, v. sl. tr.	20–28	None
89	Negative (sick at home 1 week)	Seven days ago	None	27	None
90	Sick with grippe for 2 weeks before this infection	None	24–26	24–27	24–26
91	Slight membrane on both tonsils (sick at home 1 week)	None	2	2–3	None
92	Large and covered with membrane	Nausea	12–15	12–15	None
93	Large, considerable membrane	1 week ago	31–3	31–12+	1–6 slight
94	Slightly enlarged, very little membrane	None	12–13	12–21+	None

LARYNGEAL DIPHTHERIA.

95	Normal	None	3–4	3–5	None
96	Nearly normal	Present 1 day before	6–10	6–10	Gen. tend. over abdomen. Died.
97	Nearly normal	Before	6–12	6–12	6–13
98	Negative	Before	None	17	None

*The figures under Acetone and Sore Spot indicate the days of the month between which acetone or the "sore spot" was present.

The figures under Temperature indicate the dates between which the temperature was abnormal except where a (+) is placed against the final date, it means that at that date even, the temperature had not become normal, but no further record, so far as this investigation is concerned, was kept.

Measles.—Thirteen cases—No. 66 should manifestly be left out, leaving twelve cases for consideration. Of these, ten had nausea or vomiting immediately before or after admission. Of these ten cases, eight had acetone in the urine, and two no acetone (cases 61 and 68). There were two cases

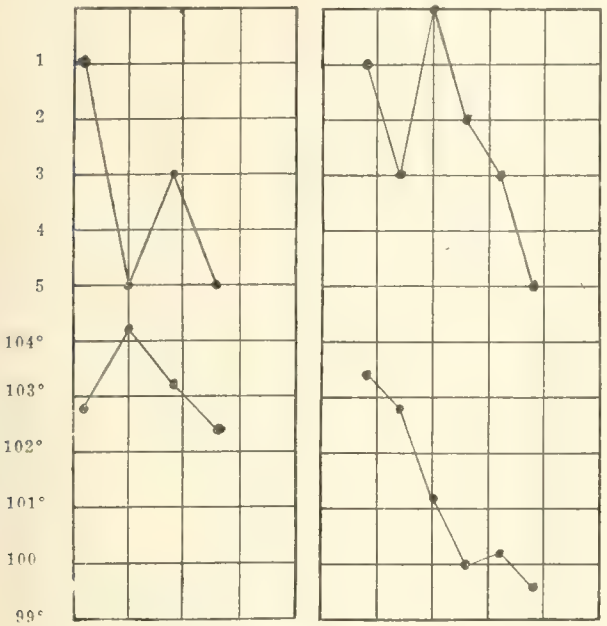

FIG. 1—Cases 10 and 13.

(64 and 65) with no vomiting recorded. Both of these showed acetone in the urine, one of these (65) showed a trace on one day only, however.

In the twelve cases of measles, to summarize as regards the appearance of acetone and the "sore spot": there were two (61 and 68) that had no acetone but did have a record of pancreatic tenderness; the record in one case was "very slight if any," in the other "very slight." One case (65) showed acetone but no pancreatic tenderness; the record says "trace of acetone on one day."

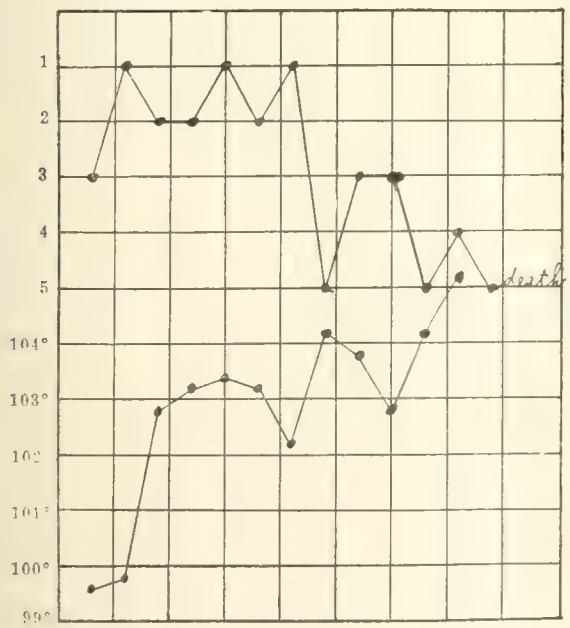

FIG. 2.—Case 14.

Diphtheria.—Twenty-one cases—Nos. 86, 89, 91 should plainly be left out. In case 86 the patient died soon after admission; this case showed no acetone in the single specimen of urine secured before death. Of the eighteen cases remaining for consideration, eight had vomiting before or after admission; of these, seven had acetone and one no acetone. There were ten cases with no record of vomiting. Of these, five had acetone and five no acetone.

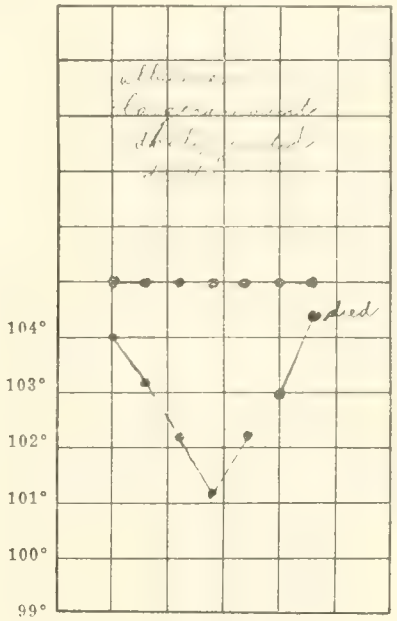

FIG. 3.—Case 27.

To summarize regarding acetone in the urine and the "sore spot" relation in these seventeen cases of diphtheria: twelve had acetone in the urine and five no acetone. In the five cases showing no acetone there was no "sore spot," and in two of the twelve cases showing acetone no "sore spot" was found.

Laryngeal Diphtheria.—Four cases—Three patients had vomiting before or after admission—one no vomiting. The patient that had no vomiting showed only a trace of acetone and no "sore spot." Of the three vomiting cases, two had acetone and

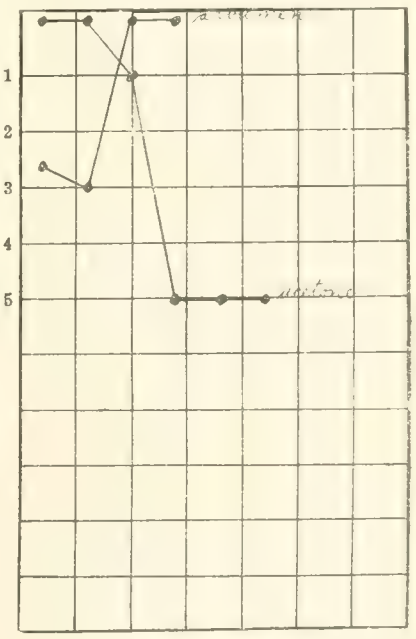

FIG. 4—Case [illegible]

one had no acetone. The one without acetone had no "sore spot." Of the two acetone cases, one patient had the "sore spot," and the other, general abdominal tenderness, and died.

As regards the relation of acetone and the "sore spot" in these four cases, three had acetone (one "a trace only"), and one no acetone.

Relation Between Acetone in the Urine and Vomiting.—Taking the entire list of one hundred cases, leaving out only those where the record was incomplete and those that, when admitted, were convalescent, there were eighty-one cases; out of these eighty-one cases, fifty-one had vomiting, and thirty no vomiting. Out of fifty-one vomiting cases, forty-five had acetone and six had no acetone. Out of the thirty no-vomiting cases, twenty-one had acetone and nine no acetone.

Relation Between Acetone in the Urine and the "Sore Spot."—Taking the entire list of one hundred cases, leaving out only those where the record was incomplete and those that when admitted were convalescent, there were seventy-five cases; out of these seventy-five cases there were sixty-one cases showing acetone. Fifty of these showed the "sore spot," seven had a record of general tenderness over the abdomen, and four no "sore spot." However, two of these cases showing no "sore spot" showed only a trace of acetone on one examination of the urine. There were fourteen cases showing no acetone; ten of these had no "sore spot," two "very slight," one "very slight if any," and one "general soreness, none over pancreas."

To show that the amount of acetone bore no relation to the temperature, I give on a small chart the temperature and acetone in cases 10 and 13. In one of these, it will be seen the acetone decreased while the temperature increased, and in the other the temperature decreased while the acetone increased. The acetone also had no connection with the severity of the case, as in case 14, the acetone decreased while the temperature increased until death occurred, and in case 27 there was no acetone at all, although the temperature remained high till death occurred. Perhaps case 55 will illustrate as well as any the fact that there was no relation between the amount of acetone each day and the amount of albumin.

I give in detailed form the record of case 1, which in its general characteristics was more or less similar to that of the other cases: Admitted April 21; tonsils large and fiery red, very much inflamed; vomited day before admission, not after admission.

Date	Temp.	Albumin	Acetone	Throat	Sore Spot
April 21	103.2	Trace	Considerable		Present
22	104°	None	Moderate		Present
23	104.8°	None	Moderate		Present
24	103.2°	None	Slight trace		
25	101°	Very slight trace	None		
26	100°	None	None	Negative	
27	99°	None	None		
28	98.8°	None	None		
29	98°	None	None		

I would say now, in closing, that the close relation between the "sore spot" and the appearance of acetone in the urine, as shown in this paper, is the same relation that I found where acetonuria is present in the urine with vomiting in the non-contagious diseases. Reports of my investigations of this relation in non-contagious diseases were published in 1911 and since, but in no other previous investigations have my tests been carried out, as regards the "sore spot," so rigorously as at the present time.

119 Boylston Street.

THE ACUTE SURGICAL ABDOMEN.*

By THOMAS F. LANCER, M.D.,

NEW YORK.

VISITING SURGEON, ST. LAURENCE HOSPITAL; ASSOCIATE SURGEON, UNION HOSPITAL.

THIS paper is based on a recent series of unselected acute abdominal cases operated on by me at St. Laurence Hospital, most of them desperately ill, such as one finds coming into an emergency service by ambulance. I shall endeavor to make a special plea for the early recognition and prompt operative procedure in this class of cases.

The responsibilities in a given case are often great, since the life of a patient may depend upon the prompt decision of the question, shall the abdomen be opened or not? The risk of exploration is slight, and in many cases where the precise nature and origin of the lesion are in doubt and the patient exhibits signs of a serious intraabdominal condition, one is justified in operating.

The good results following early operation in this class of cases, together with the dangers and the hopelessness of interference when the patient is exhausted by the absorption of toxins, or by general peritonitis with intestinal paralysis, should be recognized by all.

The following is a classification of this series of 30 acute abdominal lesions: Group A—In 19 cases, or 63.3 per cent. of the total, the appendix was the offender; 8 of these had had one or more previous attacks.

In 6 cases the inflammatory process had not extended beyond the walls of the appendix, that is, they were operated upon early. There was nothing unusual about these 6 cases except the following:

No. 3. A policeman, aged 30, slight attack one year ago. On admission, temperature 101°, pulse 100, white blood count 14,800, polymorphonuclear count 79 per cent. Catarrhal appendix removed. Primary union. On the tenth day he developed a pulmonary embolism in the lower lobe from which he made an uneventful recovery.

No. 10. A multipara aged 42, weighing 250 pounds, with a very fat abdominal wall, was admitted with a diagnosis of cholecystitis. Temperature 101°, pulse 92, white blood count 16,000, polymorphonuclear count 81 per cent. A right rectus incision with its midpoint opposite the umbilicus, showed the gall-bladder and ducts apparently normal. An erect turgid appendix was removed.

In 10 cases of appendicitis the damage had extended beyond its origin, causing a local peritonitis with limiting adhesions. Among these were:

No. 5. A young woman aged 22, three months pregnant. On admission, temperature 101°, pulse 120, total white blood count 29,000, and 88 per cent. polymorphonuclears. Black gangrenous appendix removed, no odor to pus. Drainage instituted. This proved to be a *Bacillus pyocyaneus* infection.

No. 11. Was a girl 17 years of age, with a gangrenous appendix who developed a severe post-operative "black vomiting" which cleared up after repeated gastric lavage.

In 3 cases diffuse peritonitis had resulted from delay in submitting to operative interference.

No. 7. Was a boy 8 years of age, ill for several days and had the usual castor oil treatment at home. On admission, temperature 103°, pulse 126, total white blood count 31,800, polymorphonuclear count 84 per cent. Ruptured appendix removed. Free pus all through peritoneal cavity.

No. 13. A boy 5 years of age. Four days ill. On admission, temperature 102°, pulse 130, total white blood count 80,000 and polymorphonuclears 90 per

*Read before the New York Celtic Medical Society, January 20, 1916.

cent. Pathological condition similar to that in case No. 7.

No. 19. A young woman 20 years of age, had a perforated appendix with free pus and marked congestion of the visceral peritoneum. On admission, temperature 103.2°, pulse 128, white blood count 16,600, differential count 85 per cent polymorphonuclears.

Out of these 19 cases of appendicitis, only six were seen early, that is, before the infection had gone beyond the appendix.

Group B—In 5 of the total cases the uterine adnexa were at fault.

No. 26. Was a married woman, nullipara, aged 26. On admission, temperature 101°, pulse 100, white blood count 56,200, polymorphonuclear count 86 per cent. No history of menstrual irregularity or sudden severe pain. Physical examination disclosed a tender mass in right side of pelvis. No evidence of appreciable hemorrhage. Right rectus celiotomy showed a ruptured extrauterine pregnancy with an inflamed appendix attached to the mass. Both were removed and wound sutured without drainage.

No. 28. Unmarried girl 20 years of age, was admitted with signs simulating ectopic pregnancy. Temperature 100.8°, pulse 104, white blood count 39,600 and 74 per cent polymorphonuclears. On opening the abdomen considerable blood was found and the right ovary was cystic and ruptured. This was removed, together with the appendix.

Nos. 29 and 30. Were cases of pelvic peritonitis complicating purulent salpingitis. Celiotomy with drainage was done. Both made uninterrupted recoveries.

No. 27. Was a case of pelvic peritonitis, right ovarian abscess and suppurative appendicitis in a young married woman 22 years of age. She gave a history of a septic abortion two weeks previously. On admission, temperature 101.4, pulse 130, white blood count 47,600 and 85 per cent polymorphonuclears. Gangrenous appendix and necrotic ovary removed, free pus removed by wet sponges. Oiled silk cigarette drains placed in right iliac fossa and one vaginal drain placed in the cul-de-sac. Patient was discharged cured in four weeks, after a stormy convalescence.

Group C—In 3 cases the biliary passages were the site of the lesion.

No. 21. A multipara 50 years of age, was admitted with a normal pulse and temperature, white blood count 13,000 and 85 per cent polymorphonuclears. She complained of vomiting, pain and tenderness in the upper right quadrant of the abdomen and had a well marked cholemia. I performed a choledochostomy through the upper right rectus, removing a single large stone from the supraduodenal portion of the common duct and drained the same.

No. 22. A multipara 53 years of age, was admitted with a temperature of 101°, pulse 90, white blood count 24,400 and a polymorphonuclear count of 81 per cent. She had a hysterectomy done ten years ago. Always constipated. Three days before admission, she was awakened during the night by a severe abdominal pain accompanied by a chill and vomiting. On admission, pain, tenderness and rigidity were localized in the right upper quadrant. Celiotomy disclosed an empyema of the gall bladder in which was found a single oval stone acting as a ball-valve to the opening of the cystic duct. A cholecystostomy was done for drainage on account of the associated cholangitis.

No. 23. Was a multipara 53 years of age, with empyema of the gall bladder and no stones, due to infection and pressure by a carcinoma at the head of the pancreas. A cholecystostomy was done.

Group D—The fourth group consists of 3 acute operative cases.

No. 16. A boy 7 years of age, knocked down by a wagon one week prior to admission. Apparently well in the interval. A diagnosis of general peritonitis, probably due to a perforated appendix, was made. His abdomen was uniformly tender and boardlike in rigidity. There was repeated vomiting. A right rectus incision showed a normal appendix but free peritoneal pus. A further search disclosed a mass to the left of the umbilicus which proved to be an abscess between the layers of the mesentery of the small intestine. The abscess had ruptured causing a diffuse peritonitis. The abscess cavity, pelvis and iliac fossæ were drained. The apendix was also removed.

No. 24. Subdiaphragmatic abscess of the left side, traumatic in origin. A widow 48 years of age, was struck on the left side of abdomen and thorax by an automobile. On admission, her pulse could not be counted at the wrist and her temperature was subnormal. She presented a clinical picture of profound shock. No blood in urine. Bowel movements that night were slightly blood-stained. White blood count 47,000 and 89 per cent polymorphonuclears. One week after admission she had well developed signs of fluid in the left pleural cavity. I resected the ninth rib in the mid-axillary line and found a large amount of sterile non-odorous blood-stained fluid. Temperature, pain and tenderness in the left side continued. White blood count reached 77,700 and polymorphonuclears 89 per cent. Aspiration showed chocolate colored fetid pus beneath the dome of the diaphragm on the left side. The original thoracotomy wound was enlarged and the tenth rib was resected adjoining the resection of the ninth rib. The pleural cavity had ceased draining and was walled off by adhesions. The diaphragm was exposed and opened and a large quantity of putrid pus was evacuated. Three large rubber tubes were introduced through the thoracic wound to the bottom of the cavity beneath the diaphragm and sutured in place.

No. 25. Was a case of diffuse peritonitis thirty hours after perforation of a duodenal ulcer. The patient a man 43 years of age, was seized by a sharp abdominal pain while cranking an automobile. A laparotomy with drainage cleared up his peritonitis and the patient was discharged from the hospital. He returned three months later with signs of malignant obstruction in the vicinity of the pylorus. Exploration disclosed an inoperable carcinoma as the cause of the obstruction. I performed an anterior gastroenterostomy, as the posterior route was found impracticable owing to the dense adhesions. The patient was discharged from the hospital three weeks later.

In following up these thirty cases there were two deaths subsequent to their discharge, No. 23 and No. 25 both being due to malignant disease.

Differential diagnosis—Fortunately most of the serious acute abdominal conditions demand laparotomy, so that the attending physician must especially bear in mind those lesions in which exploration of the abdomen would not only be unnecessary but harmful. These conditions are the following. (1) Referred pain in thoracic affections, especially in children. (2) Referred pain from spinal affections. (3) Visceral crises in tabes or in the erythema group. (4) Typhoid fever. (5) Acute gastroenteritis. (6) Acute dilatation of the stomach. (7) Pyelonephritis in childhood and during pregnancy. (8) Dietl's crises in floating kidney. (9) Inflammation of the abdominal portion of the vas deferens. (10) Angina sclerotica abdominis (Ortner's disease). The operating surgeon must eiliminate the presence of these lesions before opening the abdomen.

Practical Remarks.—The leucocyte count has proved valuable, especially in cases with little or no elevation of temperature, low pulse rate and slight abdominal signs, as in many of these cases the increased total count or preponderance of polymorphonuclear cells in the differential count has been the only evidence of the seriousness of the lesion.

Cases No. 13, No. 24 and No. 26 had unusually high leucocyte counts, each being over 50,000. The taking of the blood and making the total white cell and differential counts should not delay the operation, as it requires but 15 to 20 minutes to obtain the figures and is done while the patient is being shaved and prepared for the operating room.

Appendicitis is the most common abdominal affection in young people and the most fruitful source

of peritoneal infection. These cases often give a history of recent indiscretion in diet which may confuse the attending physician in the early hours of the attack. In children perforation of the appendix takes place earlier than in adults and diffuse peritonitis with little or no adhesions is common, but fortunately they do well if given a chance. Rectal examination is a valuable diagnostic aid in children.

The diagnosis is the most essential factor in appendicitis as the proper treatment can then be instituted which is operative, since it is a surgical disease from its very inception. The pulse becoming gradually more accelerated means a local extension of the inflammation or systemic absorption. All appendicitis patients are considered emergency cases and operated upon as soon as practicable, as a few hours may be of vital moment in some instances. When operated at the proper time you may avoid a delayed convalescence, extension of infection, adhesions and subsequent intestinal obstruction, or a suppurating wound which may be followed by hernia.

It is advisable in women always to gain an idea of the pelvic condition if possible when the abdomen is open and the diagnosis questionable.

The incision that my colleague Dr. Merrigan and I have used for a number of years, is through the right rectus sheath, displacing the whole rectus muscle with its intact nerve supply outward from the median line. Its value lies in the fact that through this incision or its extension, we can explore the pelvis or gall bladder region, and that in so doing we do not deprive any of the abdominal muscles of their nerve supply, thus obviating a possible subsequent hernia due to muscular paralysis.

In closing I would like to emphasize, that a patient who has (1) abdominal muscular rigidity, (2) pain and tenderness, (3) a blood picture that shows a high total white cell count and a high percentage of polymorphonuclear cells in the differential count, or either one, that these constitute the "essential triad" for demanding operative exploration of the abdomen. The only exception would be in a case where the surgeon was sure that these signs were due to an acute salpingo-oophoritis which should be treated conservatively at the beginning.

2340 University Avenue.

SARCOMA OF THE OVARY COMPLICATING THE PUERPERIUM.*

By GEORGE L. BRODHEAD, M.D.,

NEW YORK.

THE history of this case is of such unusual interest that we are reporting it to this section.

Mrs. F., primipara, age 18, negress, presented herself at the prenatal clinic of the Harlem Hospital on September 9, 1915. The history was negative, nothing abnormal was found in the abdominal examination, and on October 25, 1915, at term, the patient was delivered normally, of a living child, with moderate hemorrhage and no laceration. On the day following delivery, the condition was good, the temperature 100.2° F. On the second day following delivery the temperature was 101.4°, pulse 96, no complaint. On the third day following delivery the temperature rose to 102.5°, pulse 132, and the patient complained of pain and tenderness in the abdomen. The left side of the abdomen was soft and slightly tender, but there were marked tenderness and rigidity in the right inguinal and lumbar regions, and also in the epigastric and upper umbilical regions. The leucocytes were 17,000, the polynuclear count 88 per cent.—lymphocytes 12 per cent. On the fourth day the temperature rose to 103.2°, pulse 130; the tenderness and rigidity increased and vaginal examination showed some tenderness in the fornices. For the next seven days, until the day of operation, the temperature varied usually between 101° and 103°, and after the operation remained normal. Various diagnoses were made by the surgical staff, but finally on November 2, eight days after delivery, a mass could be palpated in the right lower quadrant; it was tender, elastic, and slightly movable, and a diagnosis of abdominal tumor was made. The blood count now showed leucocytes 21,000, polynuclear 74 per cent., and the urine showed a faint trace of albumin and a positive glucose reaction. The patient was transferred to the service of Dr. Haynes, who performed laparotomy, and found a sarcoma of the right ovary, measuring 15x8x6 cm., bluish in color, with greatly dilated veins. The patient made an uninterrupted recovery, and left the hospital in good condition.

The report of the pathologist, Dr. Gonzales, follows: Tissues: Specimen of ovarian tumor, size of a child's head, very soft in consistency, brownish red in color, smooth capsule, slightly lobulated, and showing fibrous bands. Cut section reddish granular in appearance with no surface markings. Microscopic section shows numerous spindle cells with fairly well stained nuclei and somewhat granular necrotic protoplasm, the tumor apparently outgrowing its blood supply. Vessels few and thrombosed. Cells are arranged around them in a radiating manner very like a perithelioma. Fibrous tissue very slight in amount. Diagnosis: Spindle-celled sarcoma.

The question naturally arises, "Should the other ovary, which was apparently normal, have been removed also?" Many operators believe that double ovariotomy should be performed, because of the danger of a similar lesion in the remaining ovary. In the early child-bearing period, however, when off-spring are greatly desired, we believe that the ovary which appears to be normal should be saved.

144 West Fifty-eighth Street.

*Presented at a meeting of the Obstetrical Section of the New York Academy of Medicine in January, 1916.

Medicolegal Notes.

Damages for Breach of Contract to Attend Accouchement.—In a suit against a physician for breach of contract it appeared that several weeks prior to Friday, the 14th day of September, 1912, the physician entered into a contract with the plaintiff's husband, for her benefit, to attend at her approaching accouchement, for a fee of $20. About 10 P.M. on that day the plaintiff was attacked by what she supposed to be labor pains. A messenger was sent to the defendant, who was then six miles away at the home of another patient, then also about to be delivered of a child. The defendant could not leave the patient, so the messenger tried, but in vain, to get another physician. The patient the defendant was attending was not then delivered of the child, and continued to require his attention until about 6 P.M. next day. The plaintiff's child was not born until the night of the following Thursday, she having then obtained the services of another physician. There was some testimony of physicians that the plaintiff must have been mistaken in thinking she was suffering from labor pains when her husband sent for the defendant; that her pains must have been "false" instead of real labor pains, but that if false the pains could have been relieved by a physician. The plaintiff testified that she had had a number of children, that she knew by experience what labor pains were, and that had the defendant attended her on the night or morning after he was sent for she would have been delivered of the child within two or three hours. She suffered pains at intervals from Friday night until Thursday night. The jury found for the plaintiff and gave $150 damages. Judgment for the plaintiff was affirmed on appeal, Stevens, J., dissenting on the ground that, admitting the contract and the breach thereof, the plaintiff had sustained only nominal damages, and the jury must have been influenced by the defendant's poverty, the ignoration of her rights by the defendant, according to the plaintiff's evidence, and the natural sympathy which everyone must feel for a woman in impending travail.—Hood versus Moffett, Mississippi Supreme Court, 69 So. 664.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE THERAPEUTICS OF CANCER.

THE renewed interest in cancer which followed the discovery that malignant growths can be transplanted from one animal to another, has extended from the domain of experimental pathology to that of therapeutics, and no sooner is a report issued from the laboratory than the procedure is tried at the bedside. It is right that this should be so, provided only inoperable cases are chosen, for in our efforts to control this dreadful scourge nothing must be left undone; the immediate and blind application of a method, however, is not right. The attitude of the therapeutist toward the laboratory should be as critical as he can make it, in order that he may be in a position to select the most reliable results for his clinical investigations; an experiment, said a great investigator once, is not necessarily scientific because it has been performed on a rabbit. But even more important than this critical attitude should be one of endeavor to discover exactly what it is that the laboratory is trying to bring about. For example, while it has been discovered that mice can be immunized with normal mouse tissues against the inoculation of tumors, it has been expressly stated by those best qualified to know, that such treatment has no effect upon transplanted tumors already established; now as these are under relatively unfavorable conditions compared with spontaneous neoplasms, being composed of the cells of an animal other than that in which they are proliferating, while the latter consist of cells of the animal itself, it is evident that transplantable growths should be much more easily cured than spontaneous; and yet even these inoculable neoplasms cannot be healed at present. Nevertheless, many attempts have been made to cure spontaneous tumors in man, in spite of this distinction, by the injection of normal human tissues, generally in the form of extracts, although the laboratory has definitely explained that living and intact cells are necessary for the production of immunity; but not only have normal tissues been tried; emulsions of living tumor cells have been introduced, which, in several instances, have led to the production of new tumors at the point of inoculation.

All this is not so much the fault of the clinician, perhaps, as it is his misfortune, for he is no better able to judge between conflicting laboratory reports than the experimental pathologist would be to choose between two rival therapeutic methods. On the other hand, pathologists do not differ so greatly in opinion as the contradictory nature of much of their writing would suggest; a great deal of the apparent disagreement is due to the fact that it was not realized in the first few years of cancer research that transplantable tumors vary remarkably in such characteristics as type of growth, susceptibility to immunity, etc., and that in some of them, even complete spontaneous disappearance is not an unusual occurrence in untreated animals. Fränkel and Fürer (*Wiener klin. Wochenschr.*, 1915, XXVIII, 1433, and 1916, XXIX, 63) have, therefore, performed a work of great value to both clinician and pathologist in reviewing some of these earlier conflicting findings in the light of our more recent knowledge. They have carefully investigated the question whether cell-free juices from the tumors of rats and mice have any immunizing or therapeutic action in these animals, and have found that they possess neither.

Their second paper is devoted to a discussion of the effect of foreign sera upon growing tumors, it having been assumed by various writers that the serum of a normal individual differs from that of the cancerous organism in the possession of some substance injurious to the cancer cell, or that it contains a ferment with the power of dissolving tumor cells. Fränkel and Fürer very wisely divorced themselves from all theory, and set themselves the task of finding out simply whether foreign serum would or would not influence the growth of transplantable neoplasms. Mice bearing carcinoma or sarcoma were inoculated intravenously one or more times with horse, goat, sheep, goose, rabbit, and guinea-pig serum, but in no case was the tumor definitely affected, although amounts of from one-fortieth to one-twentieth of the body weight were introduced. In a few of the animals the rate of proliferation was somewhat retarded; but a similar occurrence was noted in some of the untreated controls. The experiments have an important bearing upon the many attempts that have been made to influence new growths in the human subject by the injection of serum from adults or from infants, the procedure being based, in the latter instance, upon the false assumption that because infants do not have cancer, there must be some protective substance in their blood.

In conclusion, it is necessary to point out only that no authoritative cure of either transplantable or spontaneous neoplasms in animals has yet been published, even the selenium cure, from which so much was looked for in some quarters, having been proved a complete failure. In man, therefore, the surgeon still may, with more or less apparent justification, claim that the only hope of relief lies in early and complete surgical removal.

MEDICAL LIBRARIES FOR HOSPITALS.

A FEATURE of hospital work, which has hitherto received but cursory attention, is gradually coming into its own. The form of hospital library most familiar to us in the past is a room containing two or three bookcases of more or less obsolete pattern; these contain a few of the standard works on

practice and surgery—not the most recent imprints—a file of dusty hospital reports, several files of medical journals for the years 1880-1885, a medical dictionary about ten years old, and a general air of neglect. Those hospitals which made some effort to furnish reading, meaning fiction, for the patients, and they were usually hospitals where the sick were chronic in type, rather institutions than hospitals proper, added the old library stand-bys to their equipment. Marryat, Charles Reade, Cooper, Dickens, Thackeray and Scott, E. P. Roe, and Marie Correlli for the grown-ups, Louisa May Alcott, Henty, Alger, Oliver Optic, and the like if there were children, old copies of the 10 and 15-cent magazines, and various miscellaneous and well-worn volumes donated by individuals in impulsive moments. These heterogeneous collections of literature and what passed for it were under the nominal control sometimes of the resident physician, sometimes of the head nurse, sometimes of the pharmacist—in fact, of any official who was assumed to be able to spare enough time from his regular duties. Such a condition of affairs was of course hardly calculated to develop the true functions of a library, hence that institution often degenerated into a sort of a lounging room for internes by day and a trysting place for nurses by night.

Hospitals for the insane, however, have usually rather more effective libraries, it having long been recognized that their patients find diversion of a beneficial kind in books. Nearly all such libraries are in charge of a full-time librarian who sees that the books circulate and that the various classes of patients receive literature fairly appropriate to their capacities. It is from one of these, in fact, that a new order of things in hospital libraries is having its inception. Miss E. Kathleen Jones, librarian of the McLean Hospital at Waverly, Mass., has started a movement for interchange of ideas among hospital libraries, as a result of which the American Library Association has appointed a "Committee on Library Work in Hospitals and Charitable and Correctional Institutions." The work of this committee is to organize an "Institution Libraries League" for mutual help and it plans to publish monographs on subjects relating to this work from time to time.

In an article in *Modern Hospital* for October, 1915, Miss Jones calls attention to the usual haphazard way of running hospital libraries and also directs attention to the peculiar needs of libraries for insane hospitals. In the following issue of the same periodical Miss Meyers gives an interesting account of the history of medical libraries in hospitals in this country together with their present status. She says "the physicians and surgeons of the hospital staff need the literature of the day in all branches of medicine and surgery, and they need it while they are among patients." In the same periodical for December Miss Carey discusses the especial needs of libraries in State Hospitals. The education of the nurse in library work particularly as it relates to the means for interesting patients in reading and the appropriate distribution of literature to the mentally disordered, is described by Miss Jones in the *American Journal of Insanity* for October, 1915.

Let us hope that these almost synchronous efforts to interest the profession in this branch of hospital management will bear fruit in the establishment of adequate libraries where the physicians can look up the details of an obscure question with some hope of obtaining modern views on the subject and where the interne can interest himself profitably during his evenings and Sundays on duty.

ROCKY MOUNTAIN SPOTTED FEVER.

FOURTEEN years of investigation have revealed some of the facts bearing upon the nature of the virus of Rocky Mountain spotted fever. Man, rhesus monkey, and at least six varieties of small wild rodents found in the Rocky Mountain region are susceptible to infection, while the larger domestic animals are generally immune. The virus is transmitted to susceptible animals, including man, by the bite of infected woodticks, recovery being followed by complete immunity. No other biting arachnid or other insect has been found capable of transmitting the virus. The transmission is not mechanical, since a tick once infected remains so, the virus multiplies in the tick, and the female transmits the virus to her progeny.

In Public Health Reports, March 3, 1916, L. D. Fricks, surgeon U. S. Public Health Service, describes recent investigations of the virus by himself and Drs. A. M. Stimson and R. R. Spencer. It was thought that because of the close clinical resemblance between Rocky Mountain spotted fever and typhus fever, and because of the discovery by Plotz of the *Bacillus typhi exanthematici*, that it would be worth while to study closely the different anaerobic bacilli which have been encountered during the researches instituted by Fricks and his colleagues.

The organisms recovered from spotted fever guinea-pigs resemble very closely morphologically and culturally the two strains recovered from typhus guinea-pigs by Hasseltine and Neill at the Hygienic Laboratory and the strain of *Bacillus typhi exanthematici* furnished by Plotz. On microscopical examination of spotted fever blood there appears to be some resemblance between these bodies and those described by Seidelin as having been found by him in yellow fever blood; and in view of the criticism of Seidelin's work made by Wenyon and Low who claim to have found similar bodies in normal guinea-pig blood, no definite conclusions can be drawn from the findings of Fricks and his coworkers.

Frieks, however, thinks that from the fact that these bodies on account of their morphological and tinctorial characteristics may be regarded as probably of protozoan nature, and because they have thus far been found only in blood from animals infected with spotted fever, the publication of their description at this time is justified, in order that other workers may be on the lookout for them, and that their relationship to Rocky Mountain spotted fever may be fully established or disproved.

The Meningococcus.

It has been surmised, indeed known for some time, that the meningococcus which caused cerebrospinal fever is of more than one type. Capt. A. W. M. Ellis, in a paper contributed to the *Journal of the Royal Army Medical Corps* for January, gives the classification of meningococci based on a group agglutination obtained with monovalent immune rabbit sera. His summary is as follows: (1) The causative agent of cerebrospinal fever, the meningococcus, is of at least two types. (2) These two types are as regards the one immune reaction tested, agglutination, absolutely independent. (3) In a study of forty-six strains of meningococci obtained from various sources all were of one or another of these two types. (4) Both types are widely distributed, having been found in each of six epidemic foci. They may occur with equal frequency. (5) Both types have been found in the nasopharynx of healthy carriers. (6) These two types have been designated types one and two. (7) In so far as evidence is available, type one has been more frequently the cause of the disease in the recent epidemics than has type two. In view of the wide distribution of the two types, both must, however, be held equally responisble as causative agents of cerebrospinal fever. (8) The organism described as type two is probably identical with the parameningococcus of Doptex. (9) It is suggested that, in the treatment of cerebrospinal fever better results might be obtained and more exact knowledge of the adequacy of serum treatment gained if monovalent horse serum of appropriate type, and therefore known to be active against the infecting organism, were employed in place of the polyvalent sera at present in use.

Death from High Explosive Shells.

From time to time there have come reports from the battle-fields of Europe that the explosion of the so-called "high-explosive shell" might cause death over a wide area and that some of the bodies are without the slightest indication of any wound. It has been believed that the changes in air pressure occurring suddenly and to a great degree, acted to cause death and an interesting confirmation of this theory is reported by Fauntleroy (*U. S. Naval Medical Bulletin*, January, 1916, p. 34). An aneroid barometer had been damaged by the explosion of a big shell three yards away from it. It was sent to a French engineer, who found that the levers had been forced into a certain abnormal position. He replaced them in the proper position and put the instrument in a bell-jar and exhausted it. When the pressure had been reduced to 410 mm. the levers assumed the position in which he had found them. The explosion had, therefore, caused a sudden depression of atmospheric pressure to the extent of 350 mm., corresponding to a dynamic pressure of about 10 tons to the square yard. Fauntleroy discusses the possibility that this sudden lowering of pressure may be similar in its effects to acute caisson disease and that bubbles of nitrogen may be liberated in the blood and cause death. He thinks it more plausible, however, to assume that the primary compression which occurs may easily cause death by the violent air impact delivered as a blow over one side of the body and especially over the heart and readily compressed abdomen, thus causing reflex actions that register themselves with fatal effect.

The Polysyllabic Physician.

From time immemorial the professors of the healing art have been popularly reputed to be fond of obscuring their knowledge or want of it by a veil of verbal profundity. Witness the descriptions of physicians by Smollet, Fielding, *et al.* These fictitious practitioners invariably couched the simplest statement in a wealth of technical language calculated to make impressionable laymen reverent to their foundations. Even to-day some physicians are too much inclined to talk shop. Not ourselves to be sure, but some physicians. They are fond of referring to a contused orbit instead of a black eye, an acute gastralgia instead of a stomach-ache, and a fractured femur instead of a broken thigh. Even in medical circles we run across the specialist who constantly airs the abstruse jargon of his specialty; the psychiatrist, for instance, refers casually to confabulations, cyclothymia, metroeroticism, and regression of the libido as if we kept them in an instrument case, and the delvers in other specialties add their mites to the Babel. But other scientists are not free from this failing. In a paper in the *Journal of the Chemical Society* for September we find the word, tetradimethylaminotetraphenylhydrazine, a few lines farther on the writer speaks of trimethylindamino (dimethylaminophenylmethyloquionedi-imide), and a little later on he refers casually to tetramethyldiaminotetramethyldiaminodiphenyldihydrophenazine. After these Gargantuan philological outrages let no one accuse the physician of expanding his ideas into polysyllabic labyrinths.

News of the Week.

Hospital Ship Torpedoed.—Official announcement has been made of the sinking of the Russian hospital ship *Portugal* with a large number of wounded on board in the Black Sea by a German submarine. It is said that the vessel displayed conspicuous Red Cross markings.

To Standardize Tuberculosis Treatment.—A bill designed to standardize the treatment of tuberculosis in the United States and to provide Federal aid in caring for indigent tuberculous persons, has recently been introduced into the House of Representatives. The bill authorizes the Secretary of the Treasury, within the appropriations made from time to time for such purposes, to aid State authorities in providing care and treatment for indigent tuberculous persons who are citizens of the United States but not legal residents of the State in which they are temporarily located, and for this purpose to designate such public and private hospitals as may be necessary. Such institutions are to be open to inspection by the officers of the Public Health Service, and are entitled to receive from the Federal Treasury a sum not to exceed seventy-five cents a day for each indigent person so admitted, provided that the State shall pay an equal amount to the institution. The bill has been indorsed by many members of the medical profession, as tending to advance the treatment of tuberculosis and prevent the migration of unfortunate persons suffering from the disease.

Fake Medical Degrees.—A scheme for the sale in Chicago of fake medical degrees was bared by the arrest, on the complaint of Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, of a candidate for license to practise in

Missouri. The candidate had presented a diploma supposedly issued by Marquette University School of Medicine, Milwaukee, Wis., bestowing on him the degree of M.D. On questioning, he admitted that he had received the diploma from men in Chicago who had represented that they were members of the University, and that he had paid them the sum of $550.

Samuel D. Gross Prize.—The Philadelphia Academy of Surgery announces the Samuel D. Gross Prize of $1,500, which is awarded every five years to the writer of the best original essay, not exceeding 150 printed pages, octavo, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens. Essays in competition for the next award will be received until Jan. 1, 1920, and should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 South 22d Street, Philadelphia." Each essay must be written in the English language by a single author, must be typewritten, and must be distinguished by a motto and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. The committee in charge reserves the right to make no award if the essays submitted are not considered worthy of the prize.

Personals.—Dr. James V. May, at present chairman of the New York State Hospital Commission, with an office at Albany, has been elected superintendent of the Grafton State Colony for the Insane at Worcester, Mass., succeeding Dr. H. Louis Stick, who recently resigned the position.

Dr. Harry Plotz of Mt. Sinai Hospital, New York, has received, according to newspaper dispatches, from the Bulgarian Government the award of a medal without swords, this distinction being the highest one which it is possible to confer on a Bulgarian army surgeon. The medal is bestowed in recognition of Dr. Plotz's services in aiding in the stamping out of typhus in Serbia and Bulgaria.

American Ambulance.—The first annual report of the committee in charge of the operation of the American Ambulance in Paris and its branches has recently been made public. The report covers the first year of its activities with a supplement covering the period up to February 1, 1916. At present, it is stated, the committee is maintaining hospitals with a capacity of more than 1500 beds, while its motor ambulances had, up to February 1, transported from the battle front to the hospitals more than 105,000 men. As a result of the fighting around Verdun since that date the total has been increased, it is estimated, to over 125,000. Beginning soon after the outbreak of the war with accommodations for 200 men in the American Ambulance outside of Paris, the service has grown until there are now accommodations for over 600 in the main hosital and in nearby hospitals available beds for 600 to 800 patients who are visited daily by the American surgeons. The hospital has the use of 165 motor ambulances in the field and in Paris, and a new section of 25 is soon to be added. All the drivers are chauffeurs, and most of them are American college men. They are often under fire, and 31 have received the "croix de guerre" for gallant conduct. The expenses of the American Ambulance amount to about $500,000 yearly, all of which is met by contributions from America. The work of the medical staff is entirely volunteer, and the hospital has been served by some of the most eminent American surgeons.

Street Accidents in March. The National Highways Protective Society has reported that during the month of March 22 persons were killed by automobiles in the streets of New York City, the total number of fatal accidents being 36; 9 of the victims were under seventeen years of age. During the first quarter of the present year, 85 persons were killed by vehicles on New York streets, 58 by automobiles, 16 by trolley cars, and 11 by wagons. In the corresponding period of last year 88 persons were killed.

Montefiore Home Expands.—Announcement is made in the annual report, just issued, of the Montefiore Home, New York, of the acceptance by the home of the offer from the College of Physicians and Surgeons and Bellevue Hospital to become affiliated with these institutions. The report states that during the year 1,569 patients were cared for at the home, all of whom, with the exception of 118, were free patients. At the close of the year there were 630 patients under treatment. The expenditures for the year were $338,-335, involving a deficit of $3,751.

Infirmary to Change Name.—The trustees of the S. R. Smith Infirmary at Tompkinsville, N. Y., are planning to change the name of the institution to the Staten Island Hospital. The present name, it is said, is misleading, and increases the difficulty of securing nurses in the training school.

Women in Canneries.—There has recently been introduced into the New York State Legislature a bill amending the present labor law by granting to the Committee on Labor authority to permit women to work in the canneries for a limited number of days, for not more than twelve hours in any one day, and not earlier than 6 o'clock or later than midnight.

Gifts to Charities.—Mt. Sinai Hospital, New York, receives a bequest of $5,000 by the will of the late Herman Nathan Walter of Harrison, N. Y.

Announcement has been made of the probable contest of the will of the late Mrs. Mary A. Halloran, which provides for the establishment of a cancer hospital as a branch of St. Vincent's Hospital, New York. The bequest set aside for this purpose amounted to $260,000, and in addition the will contained bequests to other institutions amounting to $30,000.

Civil Service Examinations.—The New York State Civil Service Commission will hold examinations on May 6, 1916, for the purpose of filling vacancies in the following positions:

Assistant physician, New York State Hospital for the Care of Crippled and Deformed Children, West Haverstraw, N. Y. Salary, $1,200, increasing to $1,500, with maintenance, etc. The examination is open only to men who are licensed medical practitioners in the State, and who since graduation have had at least one year's experience on the resident medical staff of a general hospital. Unmarried men are preferred.

Physiological chemist, State Department of Health, at a salary from $1,800 to $2,500. Applicants should have a thorough knowledge of the principles of organic and physiological chemistry, and must have had at least three years' practical experience in physiological or biological chemistry. The examination is open to both men and women.

Candidates for either position must be citizens of the United States and at least 21 years of age. Those desiring to take an examination should apply at once to the State Civil Service Commission, Albany, N. Y.

Health of New York.—The Department of Health reports that during the week ending March 25 the death rate in New York City was 15.16 per 1,000 of population, a drop of 1.54 as compared with the corresponding week of last year. The total number of deaths was 1,624 and 1,750 respectively, an actual decrease of 126 lives, and a proportionate decrease of 165. This saving resulted from the reduction of the number of deaths due to heart disease, influenza, bronchitis, lobar pneumonia, bronchopneumonia, pulmonary tuberculosis, and other forms of tuberculosis. There was, however, a slight increase in the number of deaths due to the acute contagious diseases and to nephritis. Despite the good health conditions prevailing during the past few weeks, the death rate for the first thirteen weeks of 1916 was 15.66 as compared with 15.12 for the same period of 1915.

Harvey Lecture.—The tenth lecture of the present series will be given at the New York Academy of Medicine on Saturday evening, April 8, at 8.30 P.M., by Prof. Stanley R. Benedict of Cornell University. Prof. Benedict's subject will be: "Uric Acid in Its Relations to Metabolism."

The Pilcher Semi-Centennial.—Dr. Lewis Stephen Pilcher of Brooklyn on March 28 completed 50 years of medical practice. The occasion was appropriately celebrated, and on the invitation of the faculty of the Long Island College Hospital Dr. Pilcher made an address in the Polhemus Clinic on "The Finer Characteristics of the Medical Life and the Influences That Make for Them."

Claims Discovery of Epilepsy Germ.—Dr. Charles A. L. Reed of Cincinnati in an address before the Medical Society of the Missouri Valley in St. Joseph on March 23 announced the discovery of a new microorganism, the *Bacillus epilepticus*, which he believes to be the etiological factor in epilepsy. Dr. Reed asserted that the new bacillus, like the tetanus bacillus, probably exists in the soil, and that it enters the body through the stomach and intestines.

Trouble in Medical Society.—At a regular meeting of the St. Louis Medical Society, St. Louis, Mo., on March 18, fifteen officials of the society handed in their resignations, and it was voted to reconsider the decision of the previous meeting freeing Dr. Bransford Lewis of the charge of unethical conduct. The resignations were tabled. Dr. Lewis was suspended by the Board of Censors of the society on the charge of having given to a St. Louis newspaper a copy of a paper he was to read at a meeting of the Mississippi Valley Medical Society in Louisville, Ky., before the paper was read, but at a meeting of the society to consider the charges he was reinstated. The resignations followed.

River Smoke Nuisance.—Because of the nuisance created during the summer of 1915 by the discharge of dense smoke from steam vessels in the territorial waters of New York City, the Department of Health held conferences with several of the owners of the vessels, sent letters of warning to the violators of the section of the Sanitary Code forbidding such discharge, and had the section published in the maritime papers. These educational efforts, however, proved to be of no avail, and inspectors attached to the Sanitary Bureau were, therefore, sent out to serve summonses on some of the most flagrant offenders. Ten such cases brought before the Magistrates' courts and thence transferred to the Court of Special Sessions, have resulted in the imposition of fines in six instances and suspension of sentence in four. The inspectors have made trips on some of the steam vessels in the harbor and have given directions for the proper stoking of furnaces in which soft coal is burned, showing that it is possible to maintain suitable steam pressure without the discharge of dense smoke.

Memorial to Baccelli.—An appeal for funds for the erection of a statue of the late Professor Baccelli to be placed in the Policlinico at Rome, has been issued by Professor Rummo of Naples and Professor Maragliano of Genoa, vice-presidents of the Italian Society of Internal Medicine. Professor Baccelli was one of the founders of the Policlinico.

Obituary Notes.—Dr. JOHN W. DOHERTY of Jersey City, N. J., a graduate of the Castleton Medical College, Vt., in 1887, and a member of the American Academy of Medicine, the New York Medico-Legal Society, and the Hudson County Medical Society, died suddenly at his home, from heart disease, on March 26, aged 57 years.

Dr. SUZETTE E. DUNLEVY of New York, a graduate of the Homeopathic Medical College of Missouri, St. Louis, in 1879, died at her home on March 25, aged 81 years.

Dr. HARRY B. CASSELBERRY of Hazleton, Pa., a graduate of the Jefferson Medical College, Philadelphia, in 1886, died in Philadelphia on March 30, aged 53 years.

Dr. W. P. MILLER of Calhoun, Ky., a graduate of the Louisville Medical College in 1894, died suddenly at his home on March 17, aged 71 years.

Dr. ROBERT S. HART of Pisgah, Ky., a graduate of the College of Physicians and Surgeons, Baltimore, in 1869, and a member of the Kentucky State Medical Association and the Woodford County Medical Society, died at his home on March 21, aged 73 years.

Dr. MARY M. STRONG of Omaha, Neb., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1888, and a member of the American Medical Association, the Nebraska State Medical Association, and the Omaha-Douglas County Medical Society, died at her home on March 21, after a year's illness, aged 62 years.

Dr. WILLIAM P. BOLLES of Boston, Mass., a graduate of Harvard University, Medical School, in 1871, consulting surgeon at the Boston City Hospital, and a member of the American Medical Association, the Massachusetts Medical Society, and the Suffolk District Medical Society, died suddenly at Santa Barbara, Cal., on March 18, aged 71 years.

Dr. EZRA A. HOBBS of Framingham, Mass., a graduate of the Medical School of Maine, Portland, in 1869, and a member of the Massachusetts Medical Society and the District Medical Society, died at his home, after a week's illness, on March 25, aged 71 years. For thirty years Dr. Hobbs had been town physician of Framingham.

Dr. PERRY LEE BOLSINGER of Johnstown, Pa., a graduate of the Hahnemann Medical College and Hospital, Philadelphia, in 1900, died in the Hahnemann Hospital, Philadelphia, on March 21, aged 40 years.

Obituary.

CHARLES HENRY RICHARDSON, M.D.

NEW YORK.

Dr. CHARLES H. RICHARDSON, treasurer of the Medical Society of the County of New York, died at Roosevelt Hospital on Wednesday of this week, of heart disease, after an illness of several weeks. He was born in this city in 1861 and was graduated in medicine from the College of Physicians and Surgeons in 1884. He was a member of the New York State and County Medical Societies, of the American Medical Association, and of the New York Academy of Medicine. In 1904 he was elected treasurer of the County Society and held the office to the time of his death, being also a member of the Comitia Minor and a delegate to the State Society and to the American Medical Association.

NATHAN OPPENHEIM, M.D.

NEW YORK.

Dr. NATHAN OPPENHEIM died at the Hotel Belmont in this city on Wednesday of this week. He was born in Albany, October 17, 1865, and was graduated in arts from Harvard in 1888 and in medicine from the Medical Department of Columbia University in 1891. He was a member of the New York Academy of Medecine, the Medical Societies of the State and County of New York, the American Medical Association, the Metropolitan Medical Society, and the German Medical Society. Early in his medical life he specialized in the diseases of children and was the author of several books and numerous articles on the development, the hygiene, and the diseases of the growing child.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

RETRENCHMENT COMMITTEE—ROYAL COMMISSION ON VENEREAL DISEASES REPORT—LONDON HOSPITAL MEETING.

LONDON, March 11, 1916.

THE retrenchment committee, as we call it, has presented its final report, dated February 21. This committee was appointed to inquire what savings can be effected in our public expenditure, considering the necessities created by the war, without detriment to the interests of the State. Questions of policy decided by parliament were not within the scope of this inquiry and expenditure on the army, navy or munition services was not to be considered by the committee. The first section of the report shows the enormous increase of the civil expenditure of recent years, amounting to nearly 200 per cent.—viz. from £32,000,000 in 1895 to £90,000,000. New grants and new administrative work are responsible for almost all this. As an example, of £40,000,000 increase in the civil service estimates, old age pensions take £13,500,000; national insurance and labor exchanges, £9,500,000; education, £12,000,000.

A number of measures for promoting economy are mentioned, some of which could not claim success on first trial, for in the year 1915-16 showed an increase of £205,000 in the estimates for the civil service and revenue. In 1916-17 there were both increases and decreases excluding the cost of new services required solely for war purposes. The result is an estimated net decrease of over £3,000,000 apart from a large reduction of capital expenditure effected by curtailing the issue of loans to local authorities. This reduction is expected to amount to £4,000,000 or more per annum. Other reductions are also contemplated and the report makes a number of recommendations for economies which concern factory inspection, reports of certifying surgeons, the Board of Control, the local Government Board; department, the Board of Education's medical work and national insurance. The committee holds that much might be done to reduce the expenses under the act, and to increase the sums available for benefit by simplifying its more elaborate provisions. Something has been done in this direction by departments, but more might be accomplished. Government departments requiring reports from local authorities should carefully revise their requirements without delay with a view to their simplification and extension after the war.

The report of the Royal Commission on Venereal Diseases was issued on the 2nd of this month. This commission was appointed on Nov. 1, 1913, to inquire into the prevalence of venereal diseases in the United Kingdom, "their effects on the health of the community, and the means by which those effects can be alleviated or prevented." It was laid down that no return to the policy or provisions of the Contagious Diseases Acts was to be within the scope of the inquiry. By this last committee eighty-five witnesses were called and to them were put 22,-296 questions, from which it is obvious much information would be extracted of various degrees of importance, affording abundant material for criticism which will no doubt be extended to it from all directions. The committee which considered the acts of 1868-69 recommended their cautious extension. But since then such different proceedings and such controversy have filled our medical journals and occupied various associations that it is hardly practicable to do more at one time than take up a single point for discussion or for study.

At the London Hospital a meeting of governors was held on the 2nd inst., when it was reported that in the year past 18,933 inpatients were received, an increase of 600. The outpatients were rather fewer. In over 1900 cases anaesthetics were administered with two deaths. One hundred and twenty nurses were supplied to the army and twenty-six to the navy during the war. Ten of these nurses have been mentioned in dispatches in the last quarter. Three were killed in the accident to His Majesty's ship *Natal*. For the new nurses' home, named after Edith Cavell on the proposition of Queen Alexandra, £10,000 had been subscribed. Wards had been provided by the Grocers' Company for the salvarsan treatment, but are not yet open on account of the war, but they are now about to be opened and it is hoped will be fully worked.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 23, 1916.

1. Some Present-Day Problems in Surgery. Michael F. Fallon.
2. The Carnivorous and Herbivorous Types in Man. John Bryant.
3. Concerning the Raison d'Etre of the Term "Involution" as Applied to Melancholia. J. W. Courtney.
4. Bacteriological Work at the American Ambulance. Orville F. Rogers, Jr., and George Benet.
5. Spina-Bifida. Benjamin B. Cates.
6. Notes on the Recent Epidemic of Influenza. John A. Ceconi.

7. An Analysis of Fourteen Cases of Diabetes Mellitus Unsuccessfully Treated by Fasting. Elliott P. Joslin, F. Gorham Brigham, and Albert A. Horner.
8. A Simple Method of Obtaining Ragweed Pollen in Large Quantities. R. P. Wodehouse.
9. Recent Progress in Psychiatry. Henry R. Stedman.

3. Concerning the Raison d'Etre of the Term "Involution" as Applied to Melancholia.—J. W. Courtney refers to the common acceptance of ascribing to certain epochs in human life—puberty, climacteric, etc.,—with their organic upheavals as being cause for mental aberrations which may occur in the given epoch and to attach to these aberrations names suggested by the epochs. He takes issue with this procedure and endeavors to show that there is no pathological, differential, or descriptive reason for such conclusions. He takes involutional melancholia as an example and cites his views on Kraepelin's statement that this condition stands in direct causal relationship to *general* involutional changes, and that it embraces all pathological anxiety-depressions of the last half of life, which do not represent episodes in other forms of mental disease. It occurs between forty and sixty-five years of age, and is 60 per cent. among women as against 50 per cent. among men. Kraepelin considers that heredity plays but a small part as compared with acquired disposition, and that the condition is a dynamic one. Courtney refutes these statements because to him it is inconceivable that, in the absence of all other causes, the state of organic involution which normally obtains at forty is capable of producing a mental disorder in nowise distinguishable clinically from that produced by the same agent at the age of sixty-five. He furnishes more than one insuperable argument against the climacteric as a causal factor of this condition in women. First, that the number of female melancholics exceeds that of the male by only 10 per cent.; second, that melancholia sometimes makes its appearance either several years before or many years after climacteric changes being to manifest themselves; and third, that both pregnancy and lactation are not infrequently accompanied by a complex of morbid mental symptoms in no essential respects different from involution melancholia. Also that many cases of irrecoverable involutional melancholia terminate in a mental state indistinguishable from that considered the product of disordered evolution and which is called dementia precox. If any heed is given at all to the law of cause and effect it must be admitted that identity of effect signifies identity of cause, and this single fact should restrain all attempts at sharp differentiations in clinical psychiatry. Are involutional processes responsible for the intensification of morbid feelings which transforms psychastenia into melancholia? That the answer must be in the negative is determined by two facts: First, the march of events in certain cases in adolescents where the symptom-complex is at the outset that of psychasthenia and the terminal stage a dementia, called precox, which has no demonstrable connection with general involutional processes, yet is indistinguishable from one terminal stage of the disease designated, under present usage as involutional melancholia; the second is drawn from the observation of depressed states identical with so-called involutional melancholia, which make their appearance during the floodtide of mental and physical vigor, run their course and recover, and which may even recur several times before involution processes in the economy have fairly started.

7. An Analysis of Fourteen Cases of Diabetes Mellitus Unsuccessfully Treated by Fasting.—Joslin, Brigham, and Horner, while thoroughly believing in the fasting treatment of diabetes, have had under their care the fourteen cases of this condition which did not respond to their treatment, and of which they give a detailed account of the reasons for the apparent failure and deaths. The number of cases fasted from May, 1914, to December 1, 1915, has been 125; of these, fourteen patients have died. They say that in the light of later experience eight of these deaths might have been avoided or deferred, but no treatment could have saved the patient with cancer. Seven of these cases died because the fasting treatment was not completely carried out. Of the remaining seven cases, death in two was associated with an accompanying infection; one case represented extremely severe diabetes of long duration; in another cardio-renal complications and goitre were present; in a fifth cancer of the bladder; and the sixth syphilis. The cause of death of the remaining patient probably had nothing whatever to do with diabetes. A detailed account is given also as to the reasons why the fasting treatment was not thoroughly carried out in the seven cases, and of the treatment of the other seven cases. They consider that changes in the diet and régimé of patients who have suffered from diabetes for many years are always dangerous, and particularly so with the case of extraordinary length. Treatment of such individuals should never be undertaken lightly nor without a full realization of the danger involved. They summarize their treatment as follows: Fasting until sugar-free. Carbohydrate tolerance, which is begun when the twenty-four hour urine is sugar-free. Protein tolerance, which is begun when the urine has been sugar-free for two days. Fat tolerance, is commenced while testing the protein tolerance. Reappearance of sugar, which demands fasting for twenty-four hours or until sugar-free. Weekly fasting days. Whenever the tolerance is less than twenty grams carbohydrate, fasting should be practised one day in seven.

New York Medical Journal.

March 25, 1916.

1. Orientation and Equilibration. Arthur B. Duel.
2. Military Preparedness from a Medical Standpoint. Major Edmund Prince Fowler.
3. Duodenal Ulcer. Anthony Bassler.
4. Guelpa's Discovery. J. H. Kellogg.
5. Disease in Apparently Healthy Colored Girls. Gordon Wilson.
6. Migraine. Antonio H. Molina-de Saint Remy.
7. The Prevention of Fire in Old Buildings Housing the Insane. J. Allen Jackson.
8. The Elements of Psychanalysis. Arthur D. Dryfoos.
9. Nervous Symptoms in Visceral Diseases. Augustus A. Eshner.

2. Military Preparedness from a Medical Standpoint.—Major Edmund Prince Fowler (see MEDICAL RECORD, March 4, 1916).

4. Guelpa's Discovery.—J. H. Kellogg in discussing the importance of fasting in the treatment of diabetes says that in July, 1910, Guelpa, of Paris, presented a paper entitled Starvation and Purgation in the Relief of Disease, before the British Medical Association in London. Maintaining that diabetes is due to intestinal toxemia, he cited clinical results which demonstrated that by abstinence from food and through evacuation of the intestines by a saline laxative sugar may be made to disappear from the urine in most cases of diabetes within three days. If the sugar returned on the resumption of feeding, a repetition of the fasting and purgation once or twice caused a complete and often permanent disappearance of sugar. Little attention was paid to the observations of Guelpa by English-speaking physicians, although the French medical societies recognized at once the value of his work. Kellogg states that the discovery which entitles Guelpa to much credit is the fact that a diabetic may abstain from food for several days without inducing acidosis or diabetic coma, since in health it was known that

a fasting man develops acidosis within a few hours. Guelpa also laid special stress upon the importance of reducing weight, to which his attention had been called by the experiments of another Frenchman. Other advantages secured by the fasting method are: 1. A very marked change in the intestinal flora with a reduction of the number of bacteria. 2. Lowering of blood pressure when high, with increase in the percentage of hemoglobin and the number of red cells. 3. Reduction in the volume of the viscera when enlarged, especially of the liver. 4. The disappearance of pains in the joints and muscles. 5. A general feeling of well being, suppleness, and readiness for mental or physical activity and less necessity for sleep. Kellogg and his colleagues have verified these results in the treatment of 267 cases within the last two years. Careful investigation discloses the remarkable fact that when a diabetic is deprived entirely of food, he suffers a smaller loss of tissue than when taking the ordinary diabetic diet of meat and fats. The results are especially brilliant in young subjects who heretofore almost wholly baffled therapeutic effort. Allen, at the Rockefeller Institute, has for several years obtained remarkable results along the same line of treatment as Guelpa. Guelpa's treatment, aside from causing quick disappearance of sugar from the urine, lessens the danger of diabetic coma, gangrene, arteriosclerosis, renal disease, and other grave toxic complications of diabetes.

5. **Migraine.**—Antonio H. Molina-de Saint Remy in giving the cause, treatment, and cure of migraine defines it as an affection of purely nasal origin, though manifested by pain in the ophthalmic branches of the fifth nerve, and even in the occipital region. The disease usually comes on at puberty and lasts intermittently until sixty years of age. The symptoms are too well known to need description. The attacks begin as a rule in the morning on rising, get rapidly worse, and reach their acme several hours, or in some cases, several days later. The sufferer then is relieved and between attacks feels unusually well. Migraine is often confounded with headache caused by ocular trouble, which becomes worse after the eyes have been used and is relieved when they have been rested. Not so the headache of migraine. It runs its course, is present on rising, gets worse, especially on lying down or lowering the head, independently of whether the eyes are used or not. Pressure upon the sphenopalatine ganglion, caused by swelling of the mucosa of the middle turbinate impinging against a relatively high deviation of the nasal septum, by disturbance of the local circulation, ends in a reflex spasm of the cerebral vessels, which accounts for the vomiting, nausea, oppression, etc. It becomes clear why the disease comes on at puberty, for then the nasal septum begins to bend from pressure upon it by the faulty development of the facial bones; the disproportionate growth of the frontal and maxillary causes the vomer to yield. Double migraine is produced because the septum may be so thickened as to obstruct both nostrils and compress both ganglia or plug the nostril posteriorly, resulting in *occipital* (Dana) migraine. Here also is made clear why spontaneous cessation of the disease occurs late in life, when the nasal mucosa is no longer erectile. There is no migraine if the septum be normal. The intermittency of the attacks so characteristic of the disease can be explained only by the erectility of the mucous membrane of the "swell bodies," which by their susceptibility, react to stimulation by atmospheric conditions and barometric changes. Once the cause is known, treatment is indicated, namely, the thorough and complete submucous resection of the nasal septum. It is of utmost importance to bear in mind the true pathology, because if the resection be not properly done some points of contact may be allowed to remain and so render ineffective the operative interference. Treatment of the turbinates does no more than to relieve slightly the condition. Thorough extirpation of all the bony defect of the septum, with due care to avoid perforation, which is of importance in these cases, will give complete and prompt relief. No amount of swelling of the middle or superior turbinate can then cause pressure, as there remains only the resilient membraneous partition after the resection, which yields to their increase in volume.

Journal of the American Medical Association.

March 25, 1916.

1. Inhibitory Properties of Magnesium Sulphate and Their Therapeutic Application in Tetanus. S. J. Meltzer.
2. The Systolic Blood Pressure in Pregnancy: Observations on Five Thousand Consecutive Cases in the Pregnancy Clinic of the Boston Lying-In Hospital. Frederick C. Irving.
3. Nonadhering Surgical Gauze. Hart E. Fisher.
4. Diphtheria in Manila. A. P. Goff.
5. Studies on Diphtheria: The Treatment of Diphtheria Carriers by Tonsillectomy. H. O. Ruh, M. J. Miller, and R. G. Perkins.
6. The Use of Kaolin to Remove Diphtheria Bacilli from the Nose and Throat: Further Observations. B. Rappaport.
7. Vaccines of Favus and Ringworm. C. H. Lavinder.
8. Chaparro Amargosa in the Treatment of Amebic Dysentery. P. I. Nixon.
9. Foot-and-Mouth Disease in Man. Richard L. Sutton and Alfred O'Donnell.
10. Radium in the Treatment of Lymphangioma Circumscriptum: Report of a Case. Frank E. Simpson.
11. A Method for Graphic Demonstration of the Foreign Inorganic Matter and Carbon in the Lungs. Edwin F. Hirsch.
12. Sinus Thrombosis in Compression. Cecil E. Reynolds.
13. Intracranial Aerocele. E. H. Skinner.

1. Inhibitory Properties of Magnesium Sulphate and Their Therapeutic Application in Tetanus.—S. J. Meltzer states that it is not improbable that there are many who know that this salt is being used in the treatment of tetanus, but it is possible that many are unfamiliar with its pharmacological action on which this method of treatment is based. It is conceivable that it is assumed by some that any favorable therapeutic effect Epsom salt may exert on this condition rests on its well known action as a purgative. He goes into detail of the phenomena of inhibition in biology in order to arrive at the theoretical character of the inhibition property of magnesium salts in relation to tetanus. By an analysis of numerous living phenomena he came to the conclusion that all living functions are continually controlled by two opposing forces: augmentation or action on the one hand, and inhibition on the other hand. The state of every function at every moment depends on the relation and the predominance of each of these opposing functions. After long experience he states that the dominant action of magresium salts on the living body, no matter by which way it is administered, consists in depression or inhibition. His theory assumes that the magnesium solution contained in the lymph bathing the synaptic membrane enters with ease into these spaces, and interrupts the passage of nervous afferent impulses from one neuron to the other, especially of such impulses for which there is a less readily prepared path for transmission than the paths existing for normal active reflexes. It should be borne in mind that this magnesium treatment in no way precludes a simultaneous treatment with antitetanic serum. Even if the magnesium sulphate would do no more than relieve the most severe symptoms, the convulsions and the tetanus, it would be a duty to use it. Meltzer summarizes his general plan of treatment as follows: In every case of tetanus, 1.2 c.c. of a 25 per cent. solution of magnesium sulphate should be given by subcutaneous

injection three or four times a day throughout the entire disease. When the disease is complicated by severe tetanic attacks, 1 c.c. of a 25 per cent. solution for every 10 kg. (20 pounds) body weight (in adults) should be given by the intraspinal method. When the disease is attended by immediately dangerous tetanic complications, from 2 to 3 c.c. per minute of a 6 per cent. solution of magnesium salts should be given then by an intravenous injection until dangerous symptoms subside or the respiration becomes shallow or too slow. When the respiration seems to become impaired in consequence of the administration of magnesium salt by the intravenous, intramuscular or subcutaneous methods, calcium chlorid should be injected in the manner described above. It is advisable to have at hand an apparatus of intrapharyngeal insufflation ready for use, whenever the respiration becomes slow or shallow. Finally, the simultaneous treatment by antitetanic serum should not be neglected.

2. **The Systolic Blood Pressure in Pregnancy.**—Frederick C. Irving gives the result of his observations on five thousand consecutive cases in the pregnancy clinic of the Boston Lying-In Hospital, which cover from February 28, 1912, to March 11, 1915. At her first visit, each applicant is given a thorough examination, physical and obstetrical, the urine is examined, and the systolic blood pressure is determined. As a result of this work Irving deducts the following conclusions: 1. In 80 per cent. of pregnant women, the blood pressure ranges from 100 to 130. 2. In 9 per cent. the blood pressure may be below 100 once or more. A blood pressure below 90 does not mean that the patient will have shock unaccompanied by hemorrhage at the time of confinement. 3. In 11 per cent. of cases, the blood pressure may be above 130 once or more. Age, nationality and parity seem to have some influence on blood pressure. High blood pressure in the young is more frequently a sign of toxemia than in those over 30. 4. Elevated blood pressure is more commonly an index of toxemia than is albuminuria, and it is apt to be an earlier sign. The degree of elevation points more surely to the likelihood of toxemia than does the degree of albuminuria. Both, however, are of the utmost importance. 5. Isolated cases of elevated blood pressure unaccompanied by albuminuria or evidences of toxemia occurred not infrequently. Usually they responded to free catharsis. Some pressures remained elevated in spite of treatment, and apparently were normal, during pregnancy at least, for the patients who exhibited them. 6. A progressively rising blood pressure, often from a low level, even though it never reaches the arbitrary danger point, should be regarded with apprehension as a most valuable sign of approaching toxemia. 7. Toxemia is much more common with a blood pressure above 150 than it is below that point. 8. Most cases of eclampsia occurred with a pressure of 160 or more. Eclampsia may, however, occur with a pressure of only moderate elevation. 9. All toxemics developed both albuminuria and elevated blood pressure. 10. It is significant that two thirds of the patients who developed convulsions absolutely neglected advice and refused to return to the clinic. Had these patients been discharged against advice during pregnancy for disobeying instructions, very favorable statistics would have been obtained. The hospital feels that it would be most unjust to the ignorant foreigners who constitute the vast majority of its patients to desert them when they most needed skilled hospital care. With proper cooperation from the patients, and eliminating the fulminating cases which develop in a few hours, there is no doubt that eclampsia should be practically a preventable disease.

6. **The Use of Kaolin to Remove Diphtheria from the Nose and Throat.**—B. Rappaport states that since his last report of this method, he has made a study of one hundred unselected cases, ninety-six being diphtheria patients and four pure diphtheria carriers. A pure diphtheria carrier is a person with diphtheria bacilli in the nose or throat, who yields no history of sore throat or other symptoms of diphtheria, and who gives a negative Schick test. Kaolin is applied as follows: Crude kaolin, which is moist and lumpy, has not the adsorptive power of the thoroughly dried and finely powdered product, so it is dried for several days in a bacteriological incubator, then powdered through a fine flour sieve. Each morning the small amount necessary for the day's treatment is taken to the patient's room—on damp days it is taken from the incubator oftener, two or three times during the day. Kaolin must be perfectly dry and finely powdered or the results will be disappointing. Whenever possible, the application should be started as soon as the acute symptoms have subsided, and the kaolin must be distributed thoroughly over the diseased surfaces. In small children—of less than three years of age—it is best applied directly to the nasal mucous membrane, by means of a rubber bulb attached to a glass tube with a tapering end that fits the nostril. Six treatments at two-hour intervals during the day is the practice. It is necessary at each treatment to remove the old kaolin, as it prevents the fresh kaolin from reaching the mucous membrane, and for this purpose an alkaline spray does well, such as for a solution of sodium bicarbonate and sodium biborate, two per cent. each. In the case of older persons, the powder is best applied to the pharynx by having the patient swallow it. Four half-teaspoonful doses at two hour intervals, six times during the day, are given as a rule. Before dismissal of any patient, the cultures from nose and throat must be negative for at least three consecutive days after the discontinuation of the kaolin treatment, which is continued from two to five days after the first diphtheria-free culture. The average stay in the hospital of each patient was 7.84 days less than that for the untreated patients—a shortening of 23.4 per cent. Kaolin is not bactericidal, but when properly applied by its adsorptive power mechanically removes bacteria with which it comes in contact, and its application to the nose and throat helps to remove diphtheria bacilli and to shorten the period of quarantine. This action of kaolin is interfered with by various local pathological conditions, which must be remedied as promptly as possible. Removal of tonsils and adenoids is indicated when diphtheria bacilli persist unduly in spite of kaolin.

9. **Foot-and-Mouth Disease in Man.**—Sutton and O'Donnell describe this disease as among the acute exanthemas, although the eruption is seldom of generalized distribution. One attack confers only limited immunity, as short as ten or twelve days, hence the disease is an extremely infectious one. It has been recognized in continental Europe for more than two centuries, but in this country it has attracted attention only within the past two decades. The eruption is vesicular in character and involves the mucous membranes as well as the skin. In cloven-footed animals, the mouth and the interdigital spaces are the regions commonly involved. The disease is more prevalent in summer than in winter. The microorganism causing this condition has not yet been isolated. The lymph contained in the vesicles is very virulent, and infection may result through the medium of contaminated clothing or food. Stock markets play an important part in the transmission of the malady according to Hutyra and Marek. Cattle are the most susceptible, then hogs,

sheep, and goats. Horses, dogs, and cats, and rarely chickens, pigeons, and other fowl are affected. In man it is usually acquired through the ingestion of contaminated milk or milk products. Direct inoculation is of infrequent occurrence, and the disease is of low virulence (Bertarelli), but children are more severely affected than adults. The period of inoculation is from two days to two weeks. Moderate constitutional symptoms occur, with fever, general malaise, and in children, gastrointestinal symptoms. The mouth becomes dry, the mucous membrane swollen, reddened and glazed. The palpebral conjunctiva and genital mucosa may be involved. In three or four days vesicles appear on the dorsal surface of the hands and feet, and sometimes on the nose, face, ears, and knees. The base of the lesions is purplish and ill defined, and the distribution is roughly symmetrical. The clear lymph in the vesicles becomes pyogenic in character, and in a few days the pustules dry up leaving no scar.

10. Radium in the Treatment of Lymphangioma Circumscriptum.—Frank E. Simpson presents a report of a case of lymphangioma circumscriptum treated by radium. The case was that of a woman aged twenty-one, who came under Simpson's care at the Cook County Hospital, Chicago, in April, 1914. The tumor was situated over the right buttock and the inner surface of the right thigh, covering an irregular surface of approximately eight by fifteen centimeters involving the skin of this area. It had been present since the patient's earliest recollection and was seen to be composed of innumerable thick-walled vesicles on which had developed in places a thickened hyperkeratotic epithelium giving a wartlike appearance, parts of the tumor were more flat and were bluish black, being evidently made up of blood vessels. That the tumor would yield to radium was expected from the success already obtained in the treatment of pure angiomas of the skin and from Simpson's observations of the general effects of this agent on the skin and other tissues. The treatment was as follows: The most prominent part of the tumor was attacked first. Radium-varnish applicators of one-quarter strength were usually employed. Four applicators of this type covering an area of 16 sq. cm. were applied unscreened for one hour a day on four successive days. A series of four similar courses about four to six weeks apart sufficed to level the surface of the most prominent portions of the growth. As the height of the tumor decreased the treatments were of an hourly seance each day (0.1 mm. lead screens being applied over the surface of the applicators) for five successive days. Two series of treatments of this sort at intervals of six weeks sufficed to cause complete retrogression of the growth. In the less infiltrated parts a linen "toile" (one-twentieth strength) was sometimes used. With this applicator screened with 1/100 aluminum a series of applications of an hour each day on five successive days, repeated four times, at intervals of about six weeks, sufficed for decolorizing and removing these areas. The use of radium in these rare cases would seem to be the method of election.

The Lancet.

March 11, 1916.

1. The Lettsomian Lectures on the Effects of High Explosives upon the Central Nervous System. Fred. W. Mott.
2. Beriberi, with Special Reference to Prophylaxis and Treatment. William Henry Willcox.
3. An Unusual Form of Gunshot Arterio-venous Aneurysm in Which the Sac Was Situated on the Side Opposite to the Vein. Charles A. Morton.
4. Diet as a Factor in the Causation of Mental Disease. Charles Mercier.
5. The Lower Uterine Segment, Its Origin and Its Boundaries. E. Hastings Tweedy.
6. A Search for Typhoid Carriers among 800 Convalescents. A. Stokes and C. Clarke.

4. Diet as a Factor in the Causation of Mental Disease. — Charles Mercier reported thirty-five cases of mental conditions caused by errors in diet in the March 4 issue and in this number states that it is just forty years since he first ventured to call in question the accepted doctrines of the causation of nervous diseases. Among others he takes issue with Freud, and considers that his theories may be supplemented by researches less recondite. Granted that one or more errors in diet were found among the antecedents of mental disease, how would it be possible to assure oneself that errors were actual causes, and not mere causal associates or antecedents of the disease? He has recorded a number of cases of persons who have sought relief from mental disease; out of the thirty-five cases so reported only one could be certified as insane. He insists upon this especial fact because of the universally accepted doctrine that disorder of mind is equivalent to insanity, that they are the same thing. He has combatted this theory and considered that many and varied mental disorders are compatible with complete sanity. The peculiarities in diet which preceded and accompanied the mental disorder in his cases were mainly of two kinds—deficiency of meat, or excess of fat, starch, or sugar. The deficiency in balance of diet for the particular individual is practically the basis of his cause. In the cases suffering from excess of fat in the diet, headache proved to be one of the prominent symptoms; and Mercier suggests that this is not the only cause of the headache, but merely that deficiency of meat alone is not a cause of headache. It seems that it is a cause of confusion of mind, however, as the cases lacking sufficient meat diet, but taking excessive starch or fat diet all complained of dazed, confused mental states. Depression, defects of memory, and screaming fits may accompany the dazed state. Another point Mercier brings out is that those symptoms that seem to be due to excess of fat, starch, and sugar in the diet, and are relieved by diminishing these constituents, are almost always worse in the morning, clear up towards afternoon, and are often absent in the evening. Mercier states that he does not hold that there is only one cause of mental disease, but that by applying the true principles of ascertaining causation, in a small number of cases in proportion to the whole, but considerable in the aggregate, the disease is due to error in diet and can be cured by rectifying the error in the balance of diet.

6. A Search for Typhoid Carriers Among 800 Convalescents.—Stokes and Clarke carried on this investigation late in 1914 and early in 1915, when a serious epidemic of typhoid had occurred among the civilian inhabitants of an area about to be taken over by British troops. The patients were searched for in their homes by the R. A. M. C. authorities and removed to hospital. Very few of the first series of patients arrived in the acute stage. Difficulties were increased as many of the patients had been inoculated with stock army vaccine, many others had been treated with mixed typhoid group vaccines while ill, and very few knew if they had or had not been inocculated. Of 927 admissions it was estimated that 117 had not had typhoid, but had suffered from tuberculosis, diphtheria, or bad food. A bacteriological diagnosis was definitely obtained in only 165 cases, the infecting organism being isolated from the blood, excreta, rose spots (10 cases), and from the gallbladder of some that came to necropsy. The proportion of seven cases of typhoid infection to one paratyphoid B. is possible for the earlier part of the epidemic, but cases admitted during the later stages showed four typhoid to five paratyphoid B. In the remaining cases the diagnosis depended on the

agglutination test. The patients were examined at varying periods of convalescence, in the early part of the investigation at the tenth to sixteenth week after commencement of the illness, later whenever the medical officer in charge regarded them as fit for discharge. An arbitrary period of three months after the first onset of the fever is taken as the time when a patient should have ceased to excrete typhoid bacilli. Up to that time patients excreting the bacilli and not after are regarded as temporary carriers; if they continue to excrete they are considered as chronic carriers. Their percentages show that females more often become chronic carriers than males, the incidence of such being three to one. Two examinations were done on successive days until they should have ceased to excrete typhoid bacilli. Six consecutive negative examinations were required as the standard before the patient was deemed fit for discharge. Two methods of treatment were tried. Arsenic, as salvarsan, was injected into two intestinal carriers but did not alter their condition, and thirty-three temporary carriers were given urotropin for about ten days, and after an interval of a week proved on examination to give four consecutive negative results. Hence urotropin proved the more valuable means of treatment.

British Medical Journal.

March 11, 1916.

1. An Account, with Commentary, of a Case of Splenectomy in Addenbrooke's Hospital, Cambridge. Sir Clifford Allbutt, L. Humphrey, F. Deighton, and Dorothy C. Hare.
2. The Principles of Treatment and Their Application to Wounds. Charles F. M. Saint.
3. Notes on War Surgery. A. Mackenzie Forbes.
4. Work at a Base Hospital. W. Rankin.
5. Ulcero-membranous Stomatitis and Gingivitis Among Troops on Active Service. F. B. Bowman.

2. The Principles of Treatment and Their Application to Wounds.—Charles F. M. Saint describes a wound as the local effect of an irritant—noninfective or infective—on the tissues. His principles of treatment offered are: (1) remove the cause; (2) combat the effects; (3) assist the reaction; (4) prevent complications, or deal with them if they have arisen. (1). A sterile metallic body gives rise to a minimum of irritation sufficient for the production of a fibrous capsule, whereby the body is completely isolated, and in a large proporition of these cases missiles have come to be regarded as sterile, particularly rifle bullets presenting a small wound of entry. When the bullet presses on or produces irritation of nerves, interferes with the movements of a joint, etc., it must be removed, but operative measures for the removal of metallic bodies ought to be restricted where *x*-rays are not available. The commonest and most important indication for the removal of bullets, etc., is sepsis in the track; and in operating, it must be remembered that too small an incision increases shock from the excessive retraction demanded, and the longer time necessary for the operation. During this campaign it has been found that the degree of shock is greater than the nature of the injury would seem to warrant, due to excessive mental and nervous strain, rough transportation, etc. The requirements of the milder cases are met by a good meal, with some tea or cocoa, immediately followed by quiet and sleep. In the more severe cases, rest, with the foot of the stretcher elevated, is essential. Pain and restlessness demand morphine, one-half grain hypodermically. Stimulants by mouth must be given with caution, as they tend to increase shock. Subnormal temperature is met by the application of heat externally and internally. Transfusion, usually saline, may be given by rectum, subcutaneously, or intravenously; intermittent administration of saline per rectum being the most common method as sepsis is eliminated. Six to ten ounces of saline, with half an ounce of brandy may be administered in this way every three or four hours. Rectal injection of one pint of hot coffee and half an ounce of sugar is an excellent substitute. In local conditions, wounded blood vessels must be treated to stop hemorrhage, shock, and sepsis. First-aid work may be utilized, and the importance of ascertaining that no tourniquet is left on a limb too long, anything above two hours being dangerous. Removal of the irritant, if noninfective, may be accomplished (1) by forceps, or other instruments, (2) by irrigation, and (3) by the introduction of hydrogen peroxide. These are done after due consideration in the absence of the *x*-ray. Infective irritants are met by the means above, and if not effective, pure carbolic acid or hypochlorous acid is used. In this type of wounds free excision is often demanded. When pure carbolic acid is used over an extensive area it is to be followed by alcohol in the wound. Increased metabolism is gained by the recumbent position of the patient, easily assimilated liquid nourishment, fresh air, plenty of fluid, and baths. Abscesses must be evacuated and free drainage allowed. Carbolic acid is used freely in head wounds even when the brain is exposed, always keeping in mind the use of alcohol following the carbolic acid in the extensive wounds.

5. Ulceromembranous Stomatitis and Gingivitis among the Troops on Active Service.—F. B. Bowman gives the results of his study of a hundred cases of the above named condition found among the Canadian troops returned from the front. Ulceromembranous stomatitis resembles symptomatically Vincent's Angina, and may be superimposed upon a syphilitic infection of the mouth and throat. Upon the gums, tongue, mucous membrane of the cheeks, and tonsils, ulcers are to be found, that are covered with a white, friable membrane easily removed, leaving a bleeding surface beneath. In advanced cases the condition strongly suggests scurvy. Foul breath, bad taste, submaxillary and sublingual glandular enlargement occur, and the temperature ranges around 102 F. Accompanying this constitutional disturbance is lassitude and lack of "go," together with severe depression. This disease may become so severe as to present symptoms of noma. It is extremely contagious, as shown by the quick infection among the troops. The germs found by smears are Vincent's spirochete, and *B. fusiformis*. Tunnicliff has found that she was able to obtain distinct transition from the bacillary to the spirochetal form of Vincent's organism, and it is easily distinguishable from *Spirocheta dentium* and the *Treponema pallidum*. Bowman found after trying emetine and also salvarsan, that another form of arsenic could be used which cured this condition. Emetine had no curative effect and salvarsan was too expensive for the soldiers. The following formula gave remarkably rapid and favorable results: Vini ipecacuanhæ ℥ ss, glycerini ʒ j, liquoris arsenicalis ad ℥ j; M., fiat mist. Sig.: To be used as a mouth wash; do not swallow. Label "Poison." Where the gums only are affected the solution may be applied by means of an applicator, after cleansing the pus from the pockets around the teeth. Ulcers on the cheeks or tonsils should be touched twice a day with the solution. All patients, whether or not the gums be infected, are instructed to drop ten or fifteen drops on to a toothbrush twice a day and to brush the teeth and gums vigorously.

Berliner klinische Wochenschrift.

February 21, 1916.

War Literature of Internal Medicine.—Reckzeh concludes his review of this literature. He mentions the

supposed discovery of the etiology of typhus by the American, Proescher, without criticism. Jürgens has practically proven the doctrine that typhus is spread by body lice, had any further proof been needed. The peculiar, even unique method of spreading and the successful prophylaxis are the chief documents here. Lindner states that there can be a typhus without louse propagation, but this is not infectious. The louse not only transmits the infection but activates it. According to Wiener an early symptom of the disease and one which persists throughout, is conjunctival injection. Fraenkel's important histological discoveries in connection with the exanthem have been repeatedly corroborated and their diagnostic value is admitted. Typhus and typhoid can imitate each other clinically. Boral has shown that lice cannot transmit typhus during the incubation period. Lipschutz in a special epidemic saw hemorrhage occur at the site of preexisting acne lesions. Not much has been added to our knowledge of treatment. Authors differ as to the value of urotropin. Cresol in powder form has shown itself the best antilouse remedy. Beds have been made with louse traps—deep grooves filled with cresol solutions—which are sure death to the lice which must traverse them to reach the patient. For protecting the physician and personnel of the hospital suits made of glazed material, such as oil-cloth, serve best, for the lice cannot maintain a foothold on them.

Pestilences of the World War.—Möllers refers first to the march of Napoleon's half million seasoned troops upon Moscow. No one could have imagined that such an army would soon become extinct. But one battle was fought on the way. One fifth of the troops perished from infectious diseases, principally typhus. During the Crimean war the Russians lost 600,000 troops from disease. Great percentage losses of this sort persisted until Koch's advent and compulsory vaccination had alike contributed to suppress several of the worst plagues. With typhoid remaining as the worst of the endemic, ways were devised to prevent it, at first through warfare against insects and unsanitary water and eventually through immunisation. Measures of the same character dealt successfully with the occasional menace of cholera. Dysentery, once a fearful menace, appears to have been overcome chiefly by general advances in sanitation and personal hygiene and by prompt treatment of diarrheal cases. There remains typhus, so greatly dreaded in warfare, which has been kept checked in Germany while still claiming a high toll in Russia. Many Russian lives must have been saved in the German prison camps, not as much from humanitarian reasons as for the protection of Germany. Servia has also suffered heavily from typhus. Typhoid still remains the most feared disease because privations and hardships so weaken the individual resistance that immunisation efforts often fail. In the army of the United States the stamping out of the disease was carried out on intact subjects whose youth, despite the vigorous constitutions, invites the disease. It has not been realized that greatly weakened constitutions may also invite the disease irrespective of age provided the victim has been an unconscious host for the bacillus.

Münchener medizinische Wochenschrift.

February 22, 1916.

Yeast as Food. — Schrumpf refers to the nutritive yeast prepared at the Berlin Institute for Fermentation Industries and Starch Fabrication. It contains 54 per cent. albumin and 3 per cent. fat. According to the makers its taste is agreeable and it can be used in the preparation of many kinds of food. Although of vegetable origin it strongly resembles meat in several respects, such as albumin content, taste and stimulating properties. To replace meat entirely in an ordinary day's ration some 120 gms. would probably be required. This amount would be far less bulky and much cheaper than meat so that economy of diet is promoted in a twofold manner. About 80 gms. yeast will replace 200 gms. meat. This 80 gms. are not to be taken in the pure state, for 30 gms. can be incorporated into bread and 20 gms. more cooked up with vegetables (potatoes, tomatoes, celery). Unfortunately the yeast bread has an unpleasant taste and slices must have a "spread" either of butter or jam or both. Some young recruits who were fed some yeast soup could not finish their portions. Convicts were made to ingest yeast in some form in relatively large amounts, over considerable periods, and some lost weight, although other gained or held their own. It will be recalled that in giving yeast, whether wet or dried, to the victims of furunculosis, many patients are unable to take the treatment, so repellant is the yeast taste. No one has succeeded in overcoming the smell or taste of the latter and until this is done manufacturers' claims of its nutritive value will avail nothing.

Treatment of Digestive Diseases in the American Lazaretto at Munich.—Jung mentions some of the catchwords used in dieting. Thus diarrhea cases were allowed only scalded flour porridge and acorn coffee. In colitis, achylia, and cirrhosis of the liver only pultaceous food is given; in gastritis nothing but broths and soups. In hyperacidity a mixed, bland diet, with no opportunity for mechanical or chemical irritation. In ulcer, milk and mild soups and tapioca. In nephritis, milk for a time, followed by pultaceous foods, meat free. In more detail the author describes his normal and pultaceous diets, administered to two sets of patients in different dining rooms. In the normal room patients ate the typical German diet and were allowed beer or milk to drink, with a cigar after the meal. This regimen was naturally intended for those able to profit by it. In the "pap" room were gathered those shot through the mouth as well as those with gastroenteric disorders. Everything that was not fibrous in texture was passed through a coarse sieve while meats and the like were forced through a machine. The success of such finely communicated food, irrespective of quality, in the treatment of a number of digestive affections recalls the corresponding results of Fletcherism, to the effect that with complete mastication many substances become digestible which would give trouble if imperfectly chewed. Analysis of stomach contents revealed a high percentage of subacidity and achylia and the corresponding low rates of hyperacidity. There was little use for the alkaline tablets which had been provided in large amounts. Professor Adolf Schmidt had previously called attention to war achylia and it certainly seems that a marked difference exists between peace and war digestion. The Bavarian is naturally a meat eater, and often leaves his spinach, etc., quite untasted. It seems that in peace times his beer serves to balance his diet. When the war began he did not at first do well on the balanced army rations.

Digestibility of Proteins in Milk.—Holt says we have seen thus far that digestion of the protein of cow's milk is a much easier matter than was formerly supposed; that injury may occur in high protein feeding, but usually only when amounts much in excess of those commonly used in infant feeding are given; neither laboratory nor clinical evidences show that protein is harmful; and that the deficiency of cow's milk casein in certain amino-acids may be made up by giving an excess of this protein.—*Archives of Pediatrics.*

Book Reviews.

DISEASES OF NUTRITION AND INFANT FEEDING. By JOHN LOVETT MORSE, A.M., M.D., Professor of Pediatrics, Harvard Medical School; Visiting Physician at the Children's Hospital; Consulting Physician at the Infants' Hospital and the Floating Hospital, Boston; and FRITZ B. TALBOT, A.B., M.D., Instructor in Pediatrics, Harvard Medical School; Chief of Children's Medical Department, Massachusetts General Hospital; Physician to Children, Charitable Eye and Ear Infirmary; Consulting Physician at the Lying-In Hospital, Boston; Collaborator to the Nutrition Laboratory of the Carnegie Institute of Washington. Price, $2.50. New York: The Macmillan Company, 1915.

THIS book is a notable addition to the many volumes on infant feeding that have appeared during the past few years. Its chief merit lies in the thorough manner in which it presents the experimental and clinical data upon which is based a rational system of infant feeding. The method described is the one originally evolved in Boston and now taught to the students in the Harvard medical school, namely, the percentage method. In describing the home modification of milk the authors emphasize the fact that it makes no difference whether gravity cream, 10 per cent. cream, top milks, skimmed milk, or whole milk is used, provided the method is understood and used correctly. The authors have found a satisfactory method in the use of gravity cream and skimmed milk. Among the most valuable chapters in this book are those which deal with the physiology of digestion, the digestion and metabolism of fat, carbohydrates, and protein; the metabolism of the mineral salts; the energy metabolism of infants; the bacteriology of the gastrointestinal canal, and the stools in infancy. The subject of breast feeding is dealt with in satisfying detail. In the section on artificial feeding there are separate chapters on the chemistry and biology of cow's milk; its bacteriology and chemical tests; sterilization, boiling and pasteurization; certified milk; general principles of artificial feeding; the prescribing of modified milk, and the feeding of premature infants. The section on diseases of the gastrointestinal canal includes the following topics: spasm of the pylorus, hypertrophic stenosis of the pylorus, nervous disturbances of the digestive tract, disturbances of digestion, indigestion with fermentation, infectious diarrhea, and constipation. The section on diseases of nutrition comprises chapters on rickets and infantile scurvy. This book may be recommended to the student and general practitioner as a scholarly exposition of the subject of infant feeding.

ORAL SURGERY: A Treatise on the Diseases, Injuries and Malformations of the Mouth and Associated Parts. By TRUMAN W. BROPHY, M.D., D.D.S., LL.D., Sc.D., F.A.C.S., President and Professor of Oral Surgery, Chicago College of Dental Surgery; President International Dental Federation; Member American Medical Association, Illinois Medical Society, Chicago Medical and Dental Societies, Illinois State Dental Society, National Dental Association; Honorary Member of all National Dental Associations of Continental Europe, North America, and Several Other Countries; Medalist Odontological Societies of Paris and Italy, and of New York State Dental Society; Order of Officer of Public Instruction by the French Republic; Oral Surgeon to St. Joseph's, Michael Reese and Other Chicago Hospitals; Consulting Oral Surgeon Presbyterian Hospital, etc. With special chapters by MATTHEW H. CRYER, M.D.; G. HUDSON MAKUEN, M.D.; WILLIAM J. YOUNGER, M.D.; F. W. BELKNAP, M.D., and CALVIN S. CASE, M.D., D.D.S. Price, cloth, $10.00 net. Philadelphia: P. Blakiston's Sons & Co., 1915.

AT first glance one is amazed at the bulk of this book, but on clear examination one sees that this is accounted for mainly by the extremely exhaustive manner in which the various subjects have been treated. There has seemingly been an effort to compile everything in the literature bearing upon this subject that is of any importance, as is shown by countless direct quotations and still more numerous references to the opinions or methods of this or that writer or operator. With the exception of the chapters devoted to hare lip and cleft palate, occupying something over 200 pages and in which Brophy's methods and views are set forth at great length, the author's personal contributions are rather overshadowed by the wealth of borrowed material. It is very evident, however, that he has spent a great deal of time and care in the preparation of this work and has not hesitated to call to his aid others whom he considered better informed in certain special topics of importance to the oral surgeon; hence the work is rendered still more authoritative and covers the field most thoroughly.

While some of the reproductions from *x*-ray plates are bad and there are many illustrations, particularly of instruments in common use, that seem unnecessary, the greater part of the illustrations and colored plates are well chosen and add much to the value of the book. As a whole, the work is one that the general surgeon as well as the oral specialist will find well worth while.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College, Philadelphia; Assisted by LEIGHTON F. APPLEMAN, M.D., Instructor in Therapeutics, Jefferson Medical College, Philadelphia. December 1, 1915. Price, $6.00 per annum. Philadelphia and New York: Lea & Febiger.

THE current number of *Progressive Medicine* contains chapters on Diseases of the digestive tract and allied organs, the liver, pancreas, and peritoneum, by Edward H. Goodman; Diseases of the kidneys, by J. Harold Austin; Genito-urinary diseases, by Charles W. Bonney; Surgery of the extremities, shock, anesthesia, infections, fractures and dislocations, and tumors, by Joseph C. Bloodgood; and Practical therapeutic referendum, by H. R. M. Landis. A noticeable feature of the present number is the large amount of space devoted to military surgery. We miss the contribution of Dr. John Rose Bradford, whose articles on Diseases of the kidneys have been a feature of the December number of this quarterly since 1899.

PRACTICAL PRESCRIBING AND TREATMENT IN THE DISEASES OF INFANTS AND CHILDREN. By D. M. MACDONALD, M.D., F.R.C.P.E. Price, $1.50. London: Henry Frowde, Oxford University Press; Hodder & Stoughton; New York: Oxford University Press, American Branch, 1915.

THE author announces in the preface of this little manual that it is a mere truism to state that the faculty of prescribing for infants and children presents special difficulties. These difficulties are overcome in this book, which, published in a compact form and easily carried, gives the rational treatment of all the diseases of childhood, as well as a brief chapter on infant feeding. There are a dosage table and a diet table, a chapter on emergencies, formulæ, a therapeutic index, and an extensive chapter on tuberculin and the tuberculous child.

DISEASES OF THE NOSE, THROAT, AND EAR. By WILLIAM H. KELSON, M.D., B.S., F.R.C.S. (Eng.), Surgeon, London Throat Hospital, Golden Square; Hon. Surgeon (in charge of Throat, Nose and Ear Department), City Dispensary; Lecturer on Diseases of the Ear, Polyclinic. Price $3.00. London: Henry Frowde, Oxford University Press; Hodder & Stoughton; New York: Oxford University Press, 1915.

THE book is written "for general practitioners and senior students." It is an earnest effort to cover in simple form the many abnormal conditions of the nose, throat and ear, and to give treatments which the general practitioner can carry out. Operative treatments are given briefly. Some wise warnings are offered, among others, are those in regard to tonsil operations, the possible mishaps and reasons for bad results.

There is adequate emphasis on the need for early diagnosis in diphtheria. Kelson names "a bacteriological examination" as one of the methods "to enable us to arrive at a correct diagnosis" in acute tonsillitis, but after discussing treatment and the exhaustion which follows an acute tonsillitis, he says: "Should paralytic symptoms supervene affecting the eye, palate, etc., the practitioner may conclude that his patient has been suffering from diphtheria." One would scarcely consider this a true method for diagnosis. Under the discussion of laryngeal diphtheria also, one is led to feel that a correct diagnosis is fortunate, not an absolute necessity, and no mention is made of treatment with antitoxin.

Since the connection between tonsillitis, rheumatism, and endocarditis is so clearly recognized, more emphasis might wisely be placed on such a connection in a discussion of acute tonsillar infection—not a mere mention that it is "doubtless associated with rheumatism, often preceding rheumatic fever."

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held October 26, 1915.

DR. LEROY BROUN IN THE CHAIR.

Five Cases of Ureteral Fistula.—Dr. HENRY DAWSON FURNISS presented this report. He stated that in each instance the ureteral fistula had followed hysterectomy. In the first case, four weeks after the first operation the patient had both ureters implanted into the bladder by the abdominal route transperitoneally. The ureters were found to be about the size of the little finger and much indurated. Following this operation, the patient developed pneumonia and on the eighth day coughed the wound open, the intestines escaping. These were replaced and the patient then made an uninterrupted recovery. An examination made a few weeks after this operation showed the ureters projecting into the bladder about one-half to three-quarters of an inch. When last seen they projected only one-eighth of an inch. The point of interest in this case was the thickness of the ureters as observed a short time after the primary operation. In the second case the ureteral fistula involved only the left ureter. The fistulous opening was anastomosed into the bladder by a plastic operation through the vagina. Later, examination showed that the fistulous opening was discharging pus in large amounts. The ureter was then implanted into the bladder directly. Subsequently it became necessary to remove the left kidney, it being about one-third the normal size, with calyces much dilated and atrophy of the renal parenchyma. The ureter was the size of a lead pencil, dilated and thickened. This case taught that the patient should have been operated on very soon after the occurrence of the injury to the ureter and that the ureter should have been implanted into the bladder by an abdominal operation. It also taught that it was a mistake to anastomose the end of the fistulous tract into the bladder instead of anastomosing the ureter into the bladder, and the third operation should not have been an anastomosis of the ureter into the bladder, but should have been a nephrectomy at that time. The ureteral fistula in the third case followed an exceedingly difficult hysterectomy for fibroids of the uterus. In this instance it was deemed advisable to remove the kidney rather than to attempt to anastomose the ureter into the vagina. The removed kidney showed marked evidence of pyelonephritis with dilatation of the ureter and of the calyces of the kidney. If a ureteral anastomosis into the bladder had been made it was doubtful if this kidney would have resumed its function. In the fourth case it was determined that the injury was on the right side. A transperitoneal ureteral vesical anastomosis was made. This patient died three days afterwards from a general pelvic peritonitis. The point of interest in this case was that the kidney function was well preserved after several weeks. This was particularly to be noticed in those cases in which the injury to the ureter was a lateral injury and not where the ureter was completely divided. In the fifth case there was a discharge of urine through the abdominal wound, following an abdominal hysterectomy. Cystoscopic examination showed that there was no urine coming from the left ureter. When this patient was seen again a week later there was no urine coming from the abdominal wound and no discharge of urine into the bladder on the left side. This case illustrated the fact that in the ureteroabdominal fistulas the contraction of the long fistulous tract became complete and the kidney became inactive from the exclusion of the ureter. This patient was lost sight of and the subsequent history was therefore unknown.

Ruptured Ectopic Pregnancy Simulating Pelvic Infection.—Dr. ANTHONY H. HARRIGAN reported this case. He said that the patient was a woman 26 years of age, who had had one child that died of cretinism at the age of two years. Her last menstrual period had occurred June 5, 1915. The menstrual period did not take place in July. The patient was admitted to Fordham Hospital on August 12, stating that her illness began three weeks previously with severe pain in the right lower quadrant of the abdomen. She had had several attacks of pain before her admission to the hospital and a bloody vaginal discharge since two weeks before. The physical examination at the time of admission showed marked rigidity of the lower one-half of the right rectus muscle, associated with extreme tenderness over McBurney's point. While the uterus could not be mapped out accurately because of its extreme tenderness, its immobility was determined. A solid mass could be felt on each side of the uterus. The findings were characteristic of double tubal pregnancy. The patient's temperature was 100.6° F., pulse 36, and respirations 32. There was a leucocytosis of 15,200 with 77 per cent. polymorphonuclears. A diagnosis was made of pelvic infection of tubal origin, associated with secondary appendicitis. At operation on August 23, eleven days after admission, the abdomen was opened through a mesorectal incision. Upon entering the peritoneal cavity a fair amount of old blood clots escaped. The sigmoid was firmly attached to the pelvic organs. After freeing this the tubes and ovaries were found deeply imbedded in the pelvis. A large dense, black blood clot lay embedded between the rectum and the posterior surface of the uterus. The right tube showed a ruptured ectopic pregnancy. The appendix was tightly stretched across the brim of the pelvis and was markedly inflamed. A right salpingo-oorphorectomy, a left salpingectomy, and an appendectomy were performed. The patient made an uneventful recovery. The error in this case was made by not laying sufficient stress on the absence of menstruation in July.

Hemorrhagic Pelvic Peritonitis.—Dr. ANTHONY H. HARRIGAN reported this case, which occurred in a woman thirty-four years of age, who was admitted to the Fordham Hospital on August 13, 1915. Her present illness began three weeks before admission with severe pain in the lower quadrants of the abdomen. Seven days after the onset of the pain she was subjected to dilatation and curettement. At this time the left tube was found thickened. At the time of admission to the hospital a diagnosis of pelvic abscess was made. Pelvic examination showed a uterus tender and fixed and also a tender mass behind and lateral to the uterus. The patient was kept under observation and treated conservatively until August 25, at which time an operation was performed. The findings were almost identical with those of the preceding case. Owing to the condition of the uterus a supravaginal hysterectomy was done. The appendix was also removed. Dr. Norris, the pathologist, reported that the uterus was not punctured, but that it was enlarged and showed inflammatory exudate on the serosa. There was hemorrhagic cellulitis and perimetritis and also a chronic interstitial salpingitis, a large corpus luteum cyst and chronic obliterating appendicitis. This case was reported in conjunction with the first because of the great similarity of the operative findings. It would be interesting to know the cause of the hemorrhage in the second case.

Ruptured Interstitial Ectopic Pregnancy, Complicated by a Large Ovarian Cyst; Ovariotomy and Hysterectomy.—Dr. ANTHONY H. HARRIGAN reported this case. He stated that the patient was admitted to the Fordham Hospital September 16, 1915. She had never been pregnant, though married two and one-half years and desirous of having a child. Since March 15 she had had frequent menstruation, lasting about the usual four days. Her general health continued good until August 1, when she had her last menstruation. From this time until her admission to the hospital she had at times twinges of pain in the right lower quadrant of the abdomen and slight momentary nausea. On the morning of the day she was admitted she was seized with acute stabbing pain in the lower right quadrant, felt nauseated, weak and faint. There was no flow of any kind. Eight hours after the onset of these symptoms the patient presented the typical appearance of internal hemorrhage. A diagnosis of ectopic pregnancy was made. At operation on opening the peritoneum through a median incision, a large amount of free blood escaped. Further examination revealed a large ovarian cyst, springing from the left side and filling the entire abdomen up to the liver. Upon incising the cyst a large amount of fluid escaped and the cyst collapsed. It was then easily removed. Inspection showed a neglected ectopic in the region of the right horn. A supravaginal hysterectomy was performed. An intravenous injection of 700 c.c. of saline solution was given during the operation. The patient made a prompt recovery and was discharged in good condition. Dr. Norris had reported a simple ovarian cyst and a ruptured ectopic pregnancy. The specimen was interesting in that there was a walnut-sized dilata-

tion of the uterine end of the tube. The considerable amount of the organization of the hemorrhage confirmed his belief that the pregnancy was of the interstitial type.

Dr. THOMPSON T. SWEENY said that the history of the first case pointed towards a diagnosis of the condition found at operation. The leucocytoses and the high temperature were found present in ruptured ectopic due to the reaction of the peritoneum to the extravasated blood. In the second case the inflammatory condition was probably due to infection at the previous curettage. The question as to the cause of the presence of blood was an interesting one. Might it not have been an unexpected tubal abortion or blood from torn adhesions produced by injury at the time of curettage?

Dr. ANTHONY H. HARRIGAN said Dr. Sweeny's explanation of the hemorrhage was plausible, but in this instance there was more blood than could be accounted for by the rupture of adhesions. As for himself, he was at a loss as to how to explain it.

Vaginal Cesarean Section (Two Cases).—Dr. ARTHUR STEIN reported these cases. He stated that these two cases were interesting because they showed what could be done with vaginal cesarean section and what should not be done with it. The first case occurred in a woman 28 years of age, who was admitted to the Harlem Hospital on September 24, 1915, during the fourth month of her pregnancy. She had been vomiting for three or four weeks previous to her admission and could retain no food. Twenty-four hours before her admission she had had two convulsions and had marked mental confusion. The boiled urine was practically solid with albumin. Immediate surgical interference was indicated and the Duehrssen operation decided upon. Before proceeding with this operation it was advisable to inject one c.c. of pituitrin subcutaneously, which permitted of a practically bloodless procedure. The toxemia was so severe that even five days after the operation the patient was unable to retain any food, except small quantities of milk. However, she gradually improved, the urine cleared up, and she left the hospital on about the eighteentht day. The urine still showed some casts. The second case was that of a woman who had a unilateral fused kidney that was easily palpable. A report of this case had appeared in the *American Journal of Obstetrics* in 1913. The pregnancy showed nothing abnormal, except that the patient had been bleeding occasionally for the past month, when Dr. Stein was called to see her. The possibility of placenta previa suggested itself. Examination of the patient showed the head of the child on the left iliac fossa and showing no tendency to engage. The small parts and the breech were to be felt on the extreme right side underneath the ribs. The cervix admitted one finger and one could make out some spongy mass above the internal os. About two hours later the patient had another hemorrhage. She was at this time very anemic and there was no dilatation of the cervix. An immediate vaginal cesarean section was therefore decided upon. This was easily accomplished except for the extraction of the head, which was arrested through some obstacle and required some time for extraction. The child was born dead. There was a tremendous hemorrhage and the uterus showed no tendency to contract. In spite of injections of camphor and ether and the infusion of saline solution, the patient died two hours after confinement from extreme anemia. It might be possible that the unilateral fused kidney on the right side was the cause of the head not entering the pelvis and of its being arrested on the iliac fossa. Had this been considered before the operation a vaginal cesarean section would never have been done, since in all probability an abdominal operation could have been performed with greater success. The rule had now been adopted at the Harlem Hospital that a vaginal cesarean section be done in all cases in which cesarean section is indicated up to the seventh month, and that after that time the abdominal section was indicated.

Gangrene of the Lower Extremities after Gynecological and Obstetrical Operations.—Dr. ARTHUR STEIN made this report in which he stated that all obstetricians had seen cases of thromboses and emboli, but very few even of the busiest obstetricians had seen cases in which these conditions had led to complete gangrene of one or two extremities during pregnancy or the puerperium. Two such cases, however, had come under the observation of the writer at the Harlem Hospital, and strange to say, practically at the same time. The first patient was a young woman, 20 years of age, who shortly after her admission to the hospital on June 9, 1915, aborted a three months' fetus. The patient's temperature which was 104° F. at the time of her admission dropped to normal on the day following the abortion but again rose and continued high until the seventh day, when it was decided that curettage was indicated as the uterus was still enlarged and soft. Examination revealed numerous grayish-white superficial ulcers around the cervix. After the curretage, at which considerable placental tissue was removed, the whole interior of the uterus, as well as the cervix, was swabbed with tincture of iodine, and this was repeated daily for the next seven days. Even after the curettage the temperature did not become entirely normal. About a week after the curettage the patient began to complain of pain in her right leg and three days later the right leg began to swell, became cold, and showed a purplish discoloration. Pulsation of the artery of the foot could not be felt. Seven days from the time the patient began to complain of pains in her leg gangrenous spots about one-half inch wide appeared above the previous line of demarcation. There was no improvement whatever in the condition of the foot. Inflammation was extending along the external side of the leg about 4 inches above the discoloration. The vaginal discharge was very much decreased. The patient was finally transferred to the surgical ward and the leg amputated below the knee on July 29. The patient made an uneventful recovery. A histological examination of the part removed showed that there was thrombosis of the peroneal artery, necrosis of the skin and superficial fascia, necrosis of the muscle, and periostitis of the fibula. This case was of extreme interest because, so far as the writer could find, it was only the third case on record in which gangrene set in after abortion. The outcome in the second case was not so fortunate as in the first. This patient was a young woman, 19 years of age, who was admitted to the Harlem Hospital in generally good condition on June 12, 1915. On June 14 she was delivered with forceps, after a double episiotomy had been performed. The child was dead. The episiotomy and second degree laceration were repaired. Two days after confinement the patient had a temperature of 104.5° F. and a slight chill. On examination some slight ulcers were found around the cervix for which the patient received the ordinary treatment. On the sixth day the sutures were removed because the whole area was sloughing. Ten days after confinement, she still had irregular temperatures and appeared to be very ill. Twelve days after confinement the patient left the hospital against advice, only to return on July 3, five days later, in a critical condition. Both lower extremities for a distance of about 4 inches above the ankles were discolored bluish black, were extremely tender to the touch, cold, and in some places showed rather large vesicles filled with white fluid. There was no difficulty in making a diagnosis of gangrene of both feet. The patient's general condition of extreme exhaustion and debility did not permit of operative interference and she died on July 19. It was impossible to get an autopsy in this case. As an explanation of the symmetrical gangrene the writer advanced the theory that a thrombus left the uterus and migrated into the uterine artery, thence into the internal iliac and the common iliac up to the bifurcation of the aorta, where it also occluded the other common iliac artery, and by so doing caused a symmetrical gangrene on both sides. There were few cases on record in which gangrene occurred during the puerperal state (60 to 70), and in only a few were the upper extremities affected.

Dr. HERMANN J. BOLDT said that as to the vaginal cesarean section it seemed to him that in primiparæ at the seventh month the abdominal operation was preferable. Personally he felt that the vaginal operation was productive of considerable trauma, and he always felt that he ought to make an extensive paravaginal incision to insure satisfactory delivery. During the past summer, Dr. Boldt said he had seen a case of gangrene following a radical operation for cancer of the uterus. In this case the gangrene was limited to three toes. Discoloration was present for two weeks and he thought the toes would have to be amputated. However, the patient recovered without operation.

Dr. ASA B. DAVIS said he had seen the cases of gangrene that Dr. Stein had just reported. In his hands he had found vaginal cesarean section a difficult operation and he had watched some of the men who

claimed that it was easy to perform the operation, but in watching them he was not impressed that it was easy. He did not think a vaginal cesarean section should be done in any case in which the child had reached considerable size; the abdominal route was much safer, especially in primiparæ. As to the case with hemorrhage, in which there was hemorrhage with the cervix closed and the woman not in labor, the hemorrhage was either due to placenta previa or was from the placenta, and the woman should not be allowed to have more than one such hemorrhage. In reading up the literature on this subject, Dr. Davis said it was noticeable that when obstetricians did not wait after such hemorrhage, but operated promptly the results were much better than when a waiting policy was followed.

Dr. ABRAHAM RONGY expressed the opinion that vaginal cesarean section was a suitable operation during the earlier months of pregnancy, but that at the seventh month it was difficult and after the seventh month it was likely to give one a great deal of trouble. In the second case in which there was a placenta previa hemorrhage a vaginal cesarean section should not have been done. As to the postoperative gangrene, two cases had come under his observation; one of these occurred eleven days after a pubiotomy in a general hospital and the patient died without having been operated upon. The other case followed a placenta previa. This patient developed a pneumonia also and died on the seventeenth day. Curetting a uterus that was in a septic condition was a bad practice.

Dr. ANTHONY H. HARRIGAN asked Dr. Stein whether he had blood cultures taken in those cases.

Dr. O. P. HUMPSTONE of Brooklyn said he wished to say a word in defense of vaginal cesarean section. They at present had a living baby as the result of a vaginal cesarean section performed at the eighth month of pregnancy on a patient in uremic convulsions. Vaginal cesarean section could be performed at the seventh or eighth month if the baby was not large and if the anterior section was employed.

Dr. LEROY BROUN said that he could recall but one case of post-operative gangrene. This patient died. She was not one of his own cases and he did not recollect what operation had been performed, but he recalled that the patient had a gangrene of the foot and that it continued to ascend. She had two operations, but they were not successful in checking the disease.

Dr. ARTHUR STEIN said that he agreed with almost all that had been said with reference to vaginal cesarean section, and he had reported the second case only because it was unsuccessful. There was, however, a wide field for cesarean section, as in cases in which the uterus was already infected, but one had to be sure of his technique. As to what had been said about leaving infected cases of abortion alone, he knew that many gynecologists were treating these cases without operative interference. It was planned at the Harlem Hospital to treat a series of infected incomplete abortions conservatively, and a series operatively, so as to be able to compare the results in both series. In answer to Dr. Harrigan's question, Dr. Stein said that cultures from the womb had been taken but they only showed mixed infection, streptococcus, staphylococcus, etc. It was not feasible to make a culture from the thrombosed vessels, and the state of the amputated leg was such that it was not feasible to make a culture.

Fibrocyst of the Ovary with Suppurating Tubo-Ovarian Cyst on Opposite Side.—Dr. HERMANN J. BOLDT presented this specimen, taken from a patient thirty-seven years of age, who had never been pregnant. It should be borne in mind that nearly 2 per cent. of ovarian tumors were fibroids, and that a number of tumors that at first sight impressed one as being fibroids on histological examination revealed a sarcomatous structure. The occurrence of a fibroid ovary in which the larger part of the tumor was to all appearances a true ovarian cyst in structure was comparatively rare. This tumor weighed originally 2200 grams. No malignant changes were found. The other tumor was a large pyosalpinx, and the ovary was transformed into a cystic tumor.

Four Uteri the Seat of Chronic Inflammation. — Dr. HERMANN J. BOLDT presented these specimens. The women from whom they were removed were between forty and forty-five years of age and had had very profuse and typical bleeding from one to four years, which resisted all other treatment. It was to be noted that in three cases the uterus was increased from double to three times the normal size, so that in two of the cases the mistaken diagnosis of probable adenomyoma was excusable. Indeed, they showed small myomata in the uterine muscularis. All showed the characteristic increase of connective tissue and an increase in the muscularis of the blood vessels. While in the fourth case the size of the uterus was not so much increased, the organ was so globular as to almost resemble a ball. In the case of younger women such radical treatment was not carried out, but intrauterine applications with zinc chloride were tried.

Adenocarcinoma of the Uterus and Carcinomatous Gall Bladder.—Dr. HERMANN J. BOLDT presented this specimen, which had been removed from a woman forty-four years of age. After removing the uterus, the general abdominal cavity was explored and the gall-bladder was removed because of the carcinomatous appearance macroscopically. Subsequent microscopical examination verified the suspicion. Undoubtedly in this instance the uterine cancer was a metastasis from the gall bladder. Quite frequently ovarian cancer was a metastasis from the stomach or gall bladder, but uterine adenocarcinoma, as a metastasis from the gall bladder was not of such frequent occurrence.

Myofibromatous Uterus. — Dr. HERMANN J. BOLDT presented this specimen, which had been removed from a patient forty-six years of age who had had one pregnancy five years previously, but aborted at the third month. The pelvis was tightly impacted by a solid tumor in this case. It was with difficulty that fibromyomatous tumors could be dislodged with a corkscrew tractor. The pathologist's report showed a repetition of what he usually found, which was contrary to the findings usually reported, namely, almost invariably he had found that myoma was accompanied by an endometrial inflammation, and also that the greater number of these patients had a catarrhal inflammation of the appendix. Some operators reported just the contrary.

Intermediate Trachelorrhaphy. — Dr. HERMANN J. BOLDT read this paper. He said it was not likely that any one doubted that extensive lacerations of the cervix during childbirth might do much harm, nor that occasionally they might favor the causation of cancer. Did it not behoove them, if only as a prophylactic measure, to repair cervical tears, and to do this before pathological changes incident to the trauma manifested themselves? Dr. Boldt purposed to plead for such procedure, and especially that it might be done when the sacrifice of material tissue was not a necessity. His justification lay in the fact that those who had made a careful study of the results of cervical tears almost invariably verified the assertion made by Dr. Thomas Addis Emmet concerning their deleterious effects. In support of this he called attention first to the careful study of Brooks Wells made from the clinical material of the late Paul F. Mundé, and then to a paper read by Clement Cleveland before the New York Obstetrical Society. What these papers stated then held good to-day. The analyses made by the authors cited he could multiply several times from his own practice having, before and since then, seen thousands of lacerated cervices from which he could verify the position taken by these writers. Resulting ills had been exaggerated by some physicians, but this applied to most matters, everything depending on the point of view. Some indeed had gone so far as to say that every laceration required repair. Dr. Boldt had seen many patients with slight tears who had been told that they must have the laceration repaired, although they had existed a long time, too long to do an operation witout denuding the torn edges by cutting away tissue, and were causing absolutely no trouble. It was not his purpose to dwell on the pernicious effects that lacerations might cause, but rather to call attention to a slight operation, to be applied in properly selected instances, whereby eventual ailments due to such injuries might be prevented. He did not claim that all lacerations were productive of pathological changes; neither did he claim that there was any time limit as to symptoms showing themselves after the injury. According to Cleveland the average time in his cases was four years and six months; but this might be shorter. Some held that tears should be closed immediately after delivery, but it would be conceded that this was not practical or necessary, except in cases of hemorrhage from an exceptionally extensive tear. It was far better to wait until the effect of contusion had passed off and bleeding had ceased, so that one might inspect with exactitude. Moreover, many small tears healed spontaneously post partum. After, say from four to six

weeks post partum, however, the genital tract should be inspected, particularly in primipara, because for these the operation was particularly intended, and if a tear of some extent was found, it should be repaired. His present method of repair was simple, so simple that anyone with a little surgical ability could easily adopt it. The patient was placed in the lithotomy position and the customary disinfection attended to. If she was not hypersensitive and not nervous, no anesthesia was required, for the operation was not very painful. The cervix was pulled down with a pair of well-working bullet forceps, and exposed with vaginal retractors. The bullet forceps were then adjusted, one pair in the line of the cervical canal on the anterior lip, and one pair similarly applied on the posterior lip. With a narrow but very sharp scalpel, sharp especially at the point, a superficial film of tissue was scraped off the torn surface, taking particular care that the angles of the tear were made raw. For sewing he usually used a full-curved medium-sized Martin needle which had cutting edges; but one might use any other needle if more accustomed to it. A No. 2 chromic catgut was passed so as to include the entire depth of the tear. Usually two sutures sufficed for each side of the tear. Sometimes only one suture was required for one side, it frequently being the case, in instances of bilateral tear, that the tears were unequal in extent on the two. sides. This also held good for stellate tears. Care should be exercised in tying. The surfaces should be brought together just snugly, never too tight, so that the sutures might not cut into the tissue. No after-treatment was necessary, and the patient might be about as usual after the operation. It would be seen from the foregoing that the operation was not applicable to any case in which the tear had existed long enough to cause pathological changes, in which scar tissue was present in the angles. In all such patients the scraping, or making the torn edges raw, did not suffice. That was why he said it was particularly applicable for primiparæ who had not previously sustained a tear, and that in the case of every primipara it should be a part of the accoucheur's duty to make a visual inspection in about four to six weeks subsequent to delivery, and then to repair any existing laceration (unless it was of negligible extent) in the way outlined. It was understood that in scraping the edges scrupulous care should be taken to avoid the mucosa of the cervical canal.

Dr. Thompson T. Sweeny said that experience had taught them the futility of immediate repair of the cervix. If Dr. Boldt's results were as he stated, his procedure was to be recommended, if only to save the patient from the formation of scar tissue with possible subsequent cancer involvement. Lacerations of the cervix unless they were so deep as to interfere with the retentive power of the uterus, produced no symptoms save where scar tissue was present. The erosions so frequently seen and blamed on the lacerations were not necessarily caused by the lacerations, since the same condition was found in virgins and was due to the constant leucorrheal discharge.

Dr. George W. Kosmak related that some years ago at the Lying-in Hospital one of the members of the staff was working up the subject of the immediate repair of the cervix and conscientiously sutured up all the tears. It was observed that these patients usually showed an elevation of temperature within twenty-four to thirty-six hours; this was due to insufficient drainage of the uterus. At this time he was much interested in this work and made it a practice to inspect all his private cases. He had found that, even where there was a laceration that looked very dubious immediately after labor, four weeks later it had largely disappeared. If one remembered that in the event of a subsequent labor the cervix was likely to be torn in the line of the former repair, one might hesitate a little before making such repair. More damage occurred from the absorption of infectious material than from slight laceration, and hence, wherever one had a raw surface it should receive proper treatment. As to the danger of scar tissue as a focus for future malignant disease, this might ge attended to in an intermediate stage and should be in women likely to have more children.

Dr. Boldt, in closing the discussion, said that by an intermediate operation he meant one performed after the immediate effects of labor had passed and before any pathological changes had taken place in the cervix. After such changes had taken place trachelorrhaphy was not indicated. If at future delivery a tear occurred in the line of the former repair one could sew it up again, as the operation as he had described it was a perfectly simple one.

SECTION ON PEDIATRICS.

Stated Meeting, Held November, 11, 1915.

Dr. Walter Lester Carr in the Chair.

A Simple Outfit for the Distribution of Diphtheria Toxin.—Dr. Abraham Zingher presented this apparatus. He stated that in a series of 800 children who reacted negatively to the Schick test and a considerable proportion of whom were exposed to diphtheria, not a single child had developed the disease. They therefore felt confident that a negative reaction meant immunity, while a positive reaction indicated a probable susceptibility to diphtheria. In recent experiments as to the duration of immunity, they had found that after the usual 1,000 units of diphtheria antitoxin the immunity lasted from fourteen to twenty-one days, while after a second dose of similar size immunity lasted only from seven to ten days. They had also found that in those naturally immune an immunizing dose produced greater immunity. Some of their recent experiments with the toxin-antitoxin mixture showed that an active immunity did not develop soon enough to be of value in giving immediate protection in the wards of a contagious hospital, but that many who did not become immune at first later developed immunity. The outfit presented was devised to overcome the difficulties that had stood in the way of popularizing the Schick test; namely, that the diluted toxin rapidly deteriorated whether kept in solution or in tablet form. This outfit furnished a standard amount of undiluted diphtheria toxin, which remained of fairly constant strength when kept in the ice-box, and could be readily diluted when required. The operator who attempted to use it should be skilled in the intracutaneous method of making the injection, and should consider all reactions true unless he was able to distinguish the positive from the pseudo-reaction. The pseudo-reaction appeared earlier, was less sharply circumscribed, and usually disappeared in from three to four days. It was characterized by a central area of redness of varying size surrounded by a secondary areola. On fading it left only a faintly pigmented area, which soon became invisible. The true reaction persisted for several weeks. This outfit consisted of a capillary tube containing two minimum lethal doses of diphtheria toxin for the guinea pig, and a bottle containing 10 c.c. of sterile physiological saline solution (with 0.025 per cent. phenol). This toxin should not be a freshly prepared lot, but should be ripened for at least a year. In using the toxin, the one end of the capillary tube was broken off and pushed carefully through the neck of the rubber bulb until it punctured the diaphragm within, and entered the cavity of the bulb; then the other end of the tube was broken off. Holding the bulb between the thumb and middle finger and placing the index finger over the opening in the larger end of the bulb, the toxin was expelled into the saline. The capillary tube should be rinsed out by drawing up saline several times. The bottle was then corked and shaken. Exactly 0.1 c.c., representing one-fiftieth of the lethal dose for the guinea pig, was then injected intracutaneously on the flexor surface of the forearm. The contents of the bottle were sufficient for about eighty tests. On account of the fairly rapid deterioration of the diluted toxin, it was not advisable to use it after about twelve hours. A 1 c.c. record tuberculin syringe and a fine platinum iridium needle, No. 22, or a steel needle, No. 3, were to be preferred. An ordinary hypodermic syringe, unless graduated to 0.1 c.c., was not satisfactory.

The Chemistry of Cow's Milk and Other Products Used in Infant Feeding.—Prof. F. W. Howe of Boston presented this paper by invitation. He stated that he had very little that was original to present, that not being the object of the paper, but that he had endeavored to compile the somewhat voluminous literature of this subject in such a way as to be of practical value to the busy practitioner. After giving the chemical composition of cow's milk according to Van Slyke and Bosworth, he stated that this percentage composition was influenced by a number of factors chief among which were the breed of the cow, its health, stage of lactation, and the feed that the animal was receiving. The composition of milk was also influenced by physi-

cal, chemical, bacteriological, and physiological means after it was drawn from the cow. Among the physical changes were alterations in odor and flavor due to feeding strong herbs and vegetables, changes by manipulation, as by the use of the hemogenizing machine by which the fat globules were broken into much smaller ones, so that they would remain in suspension for weeks with no cream line appearing, and changes by heat. In discussing the changes in composition brought about by chemical means the author reviewed the action of lactic acid, lime water, sodium bicarbonate, sodium citrate, and milk of magnesia. He pointed out that there were about three hundred varieties of lactic acid bacilli, and that each one exerted its own peculiar action on the casein. In discussing the composition of milk as influenced by bacteriological means, the writer considered the fermentative and the putrefactive types of bacteria. He stated that according to Kendall and his associates it could be stated almost as a biological axiom that under natural conditions fermentative actions almost invariably preceded putrefactive actions. This being true, the souring of milk coming first gave us a natural danger signal to warn us of what might come later. The composition of milk as influenced by physiological means led them to the study of the natural ferments and their enzymes, the diastases, lipases, catalases, peroxidases, and reductases. Each one of these had its own specific action on the constituents of milk, fulfilling its function in the part of self digestion. The author then reviewed the chemistry of milk sugar, malt soup, dextrimaltose, sucrose, dextrose, cereal jellies, protein milk, protein milk plus lactic acid milk, whey, and proprietary foods. In discussing the composition of proprietary foods, Dr. Howe stated that all were familiar with the fact that it was difficult to keep fats sweet and wholesome, and while it was not so difficult to keep the proteins, it was no easy matter. This narrowed the field very considerably when it came to making proprietary foods, with the result that most of them were made of blended carbohydrates. These foods had been admirably treated in Holt's book in which an analysis of the principal proprietary foods was given. This analysis Dr. Howe presented.

The Digestibility of Cow's Milk Protein and the Use of the Protein Milks.—Dr. L. Emmett Holt presented this paper in which he said that clinical and laboratory researches of the last ten years had greatly modified our views regarding the proteins in infant feeding. It was not many years since the difficult digestion of the protein of cow's milk was looked upon as the important, probably the chief, cause of their troubles in infant feeding. Metabolism experiments made at the Babies' Hospital and in many other places had revealed the fact that under almost all circumstances infants possessed a remarkable capacity for retaining nitrogen. Even in conditions of severe malnutrition the protein of cow's milk was well borne, as shown by a positive nitrogen balance even though the infants were losing weight. Clinical evidence also of the infant's tolerance of protein was not wanting. At present they could mention no symptom or group of symptoms which could be positively attributed to the proteins in the sense that definite symptoms could be attributed to the fats or carbohydrates. However, it was pertinent to inquire whether the present practice of giving much higher proteins than formerly was to be recommended without reservation, or whether it was possibly injurious. Taking the composition of woman's milk as a guide it was found that it contained 3.5 per cent. fat, 7.5 per cent. sugar, and 1.25 per cent. protein; thus a nursing infant was receiving a little over 7 per cent. of his calories in the form of protein. An artificially fed infant taking cow's milk one-half strength with sufficient sugar added to bring the carbohydrates up to 6 per cent. is receiving over 14 per cent. of his calories in proteins. In their metabolism experiments they had shown that with high protein feeding there was at first a marked increase in nitrogen retention, but that this persisted for only a short time, and that increased intake was followed by increased excretion, which was nearly but not quite proportional. Rubner believed that the excess of nitrogen taken could be used up in the place of other food elements. Evidence had been brought forward showing that the protein of cow's milk when given in considerable excess of the needs of the body might bring about disturbance of metabolism causing clinical symptoms of importance and even of gravity. But such symptoms were seen only when protein was given much in excess of the amounts commonly employed. Experiments along this line, while not conclusive, were strongly suggestive of possible harm from very high protein feeding. The latest studies of the food proteins had indicated that the amount of protein given was much less important than the nature of the protein furnished. The amino acids, dysin, cystin, tryptophan, and glycocoll, were of great importance. It did not seem possible for nutrition to go on unless the first three mentioned were present in the food; there was good reason to believe that glycocoll could be produced in the body by synthesis. As to the bearing of this on infant feeding,—animal proteins were rich in essential amino acids, while many vegetable proteins were deficient in them. Lactalbumin was one of the animal proteins that contained the essential amino acids in the largest proportion. Casein was, however, notably deficient in cystin. The deficiencies of casein were ordinarily made good by lactalbumin. It surely was not an accident that woman's milk had twelve times as much lactalbumin as cow's milk. Nature had not intended the milk of the cow to nourish the calf for a long period, since the maximum excretion of cow's milk was about the second month, after which it steadily declined, the calf at birth had six teeth and at six weeks from twelve to sixteen teeth, indicating his capacity for other food than milk. The secretion of woman's milk increased until the seventh or eighth month and the infant did not get his teeth until this time, suggesting that up to this time other food was unnecessary for normal nutrition. In artificially fed infants the conditions are different, and they had lately seen the advantage of feeding other articles of diet, fruit juice, egg, broth, and even fresh vegetables. In this way they had been supplying the deficiencies of cow's milk. The success which had attended the use of formulas made from whole milk had not been entirely due to the fact that fat disturbance had been avoided, but that in these formulas by increasing the protein they had come nearer supplying the infant's actual amino-acid needs. The writer stated that in his experience in acute intestinal disturbances it was the carbohydrates that were most frequently the exciting cause, and sugars were even more badly borne than starches. Milk sugar seemed to cause more disturbance than any other form of carbohydrate. It was for such cases that Finkelstein's milk modification was so valuable. Its usefulness was seldom enhanced by preparing it from skimmed milk, but rather the contrary. Its relatively high fat was tolerated without difficulty when very low sugar was given. However, this preparation should be regarded as a therapeutic agent and not a method of infant feeding. These newer facts regarding the proteins were bound to have an important influence in their future study, not only of the rôle of protein in infant feeding, but in making clear the fundamental protein requirements in nutrition and in opening up a new field for investigation in the problem of artificial feeding.

Present Opinions as to the Rôle of Fat in Infant Feeding.—Dr. John Lovett Morse of Boston presented this phase of the subject. He stated that the fat in infant's food was chiefly in the form of neutral fat. The amount of digestion upon it in the stomach was therefore unimportant. The real digestion of the fat took place in the small intestine, where it was split into fatty acids and combined with alkaline carbohydrates to form soaps. Fat was largely if not entirely absorbed in the form of soap in all probability. Neutral fat was not absorbed. The absorption of fat was extremely good in health, more than 90 per cent. of the fat ingested being absorbed whether the food was human or cow's milk. Little was really known of the significance of the fatty acids and soaps. Fatty acids were irritating to the intestines; soaps were not. A loose acid stool could often be changed to a soap stool by a relative increase in the amount of casein in the food, while an alkaline soap stool could be changed to an acid stool by a relative increase in the amount of carbohydrates. The intestinal flora also changed with the change in the reaction. The absorption of fat in babes that were passing soap stools was less than when the stools were normal. This made one question why so many pediatricians were anxious to get soap stools. Diarrhea, whatever its cause, resulted in an increased loss of fat. The relation between the amount of fat in the food and the absorption of such salts as combined with fat was by no means a simple one. It seemed probable that when there was a large amount of soap the absorption of calcium and magnesium was diminished, and it also seemed reasonable to suppose that

when the fat in the food was increased beyond a certain point there would be an increased loss of mineral salts. This was apparently not the case; data from metabolic experiments showed that in the normal infant a high fat intake did not change the mineral composition of the stools. In chronic malnutrition the output of salts in the feces was considerably raised by increasing the fat in the food, and in these cases there seemed to be a considerable diminution in the absorption of fat. There was nothing in the present knowledge of the digestion and metabolism of fats in infancy to justify the assumption, or even the supposition, that the normal infant could not digest fat in reasonable amounts. It was also evident that the ills that had been attributed to the fat in the food were in reality due to an excess of one of the other food elements or to an improper relation of the food elements to each other. However, in abnormal infants suffering from serious disturbances of nutrition the ability to digest and absorb and utilize fat was unquestionably diminished. Investigation had shown that the infant digested the fat of cow's milk about as well as that of human milk, and thrived on artificial foods containing approximately the same amount of fat as human milk. The caloric value of a gram of fat was 9.3, while that of a gram of starch was 4.1, so that very considerable amounts of carbohydrate must be given to make up for a deficiency of fat, and if the carbohydrates were increased beyond a certain point, carbohydrate indigestion was certain to follow. Fat and carbohydrate could not, therefore, be used interchangeably beyond a certain point. As to just how much fat the infant should take, it might be said, as much as it needed to satisfy its caloric needs, which should be met by fat and not enough to overtax its digestive capacity for fat. Nature had decided that in human milk this was 3.5 to 4 per cent. Dr. Morse said that his experience had taught him that this was the optimum amount after the first few weeks of life for the artificial food of the normal infant. There were many reasons why excessive amounts of fat had been given; among them was the failure to distinguish between normal and abnormal infants. What was proper, advisable, and necessary in the normal infant, was improper, inadvisable, and not only not necessary, but harmful in the abnormal child. It was self-evident that infants that had developed an intolerance for fat could not take without injury the amount of fat which the normal infant needed in order to thrive. It was equally self-evident that when there was an exceedingly acid condition of the intestinal contents the products of the decomposition of fats, which were acid, would increase the symptoms.

Present Opinion as to the Use and Action of Carbohydrates in Infant Feeding.—Dr. THOMAS S. SOUTHWORTH discussed this phase of the subject. After reviewing the part played by the carbohydrates in the human economy, and showing that this was the same in the infant as the adult, he stated that the fact that sugar entered largely into the composition of breast milk indicated that carbohydrates in some form were an essential part of the food of the infant. In the feeding of the normal health infant there really seemed little to choose between the employment of lactose, saccharose, and maltose-dextrin. This statement, however, called for qualifying comments. Lactose would seem to have nature's endorsement. Its lower absorption and favoring influence upon the intestinal flora presented certain advantages, but these might cease upon the occurrence of intestinal disturbances. It might also be mentioned that from the medical standpoint of the production of toxins the sources from which sugar and maltose-dextrin were derived were cleaner than those from which lactose was obtained and that lactose from an unreliable source might be productive of an otherwise inexplicable disturbance of digestion. The relative cost of these three forms of sugar might also be a determining factor among the poor and in certain charitable institutions. It might also be mentioned that the limit of toleration for maltose-dextrin was about double that of the other forms of sugar, and it was less liable to cause disturbance when reasonable amounts were unwittingly exceeded. Probably Finkelstein's most valuable contribution to infant dietetics had been the emphasis which he had placed upon the irritative and laxative effects of the sugars, especially lactose when not well borne and the measures he had suggested for combating them, even though one could not accept his views *in toto*. The injurious effects of carbohydrate intolerance were manifested, when they became irritative in the course of abnormal fermentation, in increased persistalsis, with its resultant disorganization of the orderly process of absorption in the bowel, and nutritive material was swept out with resulting malnutrition. When this occurred the desideratum was to eliminate or decrease the fermentation in order to restore absorption. The essayist said it was his opinion that this loss of nutritive material from increased persistalsis would in the future play a large part in the management of malnutrition cases. Furthermore, in fat intolerance accompanied by excess of unneutralized fatty acids, or the increased formation of ammonia by the body, an abnormal fermentation of the sugars might intensify the picture. Thus acidosis might be caused not only by the abstraction of alkali but through failure of normal absorption of nutritive material. Here, not only the reduction of the quantity of fat in the food and the administration of some alkali was indicated, but the substitution of a combination of lactose, dextrin, and starch often changed the flora of the intestinal tract and favored much needed absorption. They had long been using cereal decoctions with little regard to the percentages employed, owing to the impression that their action was largely mechanical. But the importance of the careful determination of the percentage of the cereal employed should not be overlooked. It appeared that 0.75 per cent. was within safe limits. The author stated that he had some time ago called attention to the protective, curative, and remedial properties of boiled starch in disturbances of the gastrointestinal tract in infants. Its mechanical value was widely recognized, and that cereal contained vegetable proteins which were utilized would probably also be conceded. Dextrin and starch might be discussed together since they had a close relationship and similar properties. Difference of opinion as to the use of these cereal foods was chiefly confined to the question as to the age at which such utilization became sufficient to be taken into account. Undoubtedly the age varied somewhat with the individual, but as long as amylolytic ferments and their steady increase in production was admitted there was no question of their acting on cooked starch when this was introduced into the food. Such feeding, however, should be kept within safe limits, but in the normal infant these limits were somewhat elastic if the other food elements were well balanced. The essayist discussed the curative and protective action of starch in cases in which there was intestinal disturbance due to faulty digestion of other food elements or to abnormal fermentation or putrefaction of bacterial origin, and showed that there was a definite advantage where the intestinal disturbance had arisen from the use of a single disaccharide, either lactose or saccharose, in substituting for them mixed carbohydrates, dextrin, and maltose, or starches, dextrin, and maltose.

The Parts Played by Salts in Infant Feeding.—Dr. FREDERICK H. BARTLETT read this paper, in which he reviewed the more recent investigations in reference to salt metabolism as they related to the connection between salt, metabolism and the food elements, to the low content of iron in cow's milk as compared with that of woman's milk, to rickets and to gain in weight. In speaking of the relation of salts to proteins, he said that the nitrogen circulating in the blood was loosely held by the tissues, but could not be thus loosely held for any length of time without being excreted unless the salts were in sufficient quantity to make the nitrogen available for the building up of living protein. The investigations of Howland and of Levene, Holt, and Courteney, at the Babies' Hospital, on the effects of high protein feeding and salt metabolism might be summed up by saying that a large intake of protein was accompanied by a large retention of salts, if the intake of salts is also high. The influence of the carbohydrates on salt retention was apparently an indirect one. Carbohydrates increased the water retention, and with the increased water retention there was an increased salt retention. This accounted for the increase in weight sometimes observed in high carbohydrate feeding, but such a gain was by no means to be taken as an index of improved nutrition. The effect of diarrhea on salt metabolism was manifest whatever its cause, since the rapid draining of water from the system interfered with salt retention. After reviewing the work of German investigators with reference to the effect of fat on salt metabolism, the essayist said that in their observations at the Babies' Hospital it was found that there was in the stools which had a high calcium content also a high phosphate content. This would indicate that there was adequate calcium to combine to

form soaps and also to take care of the phosphoric acid. It had also been observed that in infants with soapy stools the calcium loss, as a rule, was not sufficient to cause a negative balance. The molecular weight of the fatty acids was very high, and accordingly only a small weight of calcium was required to hold a relatively large amount of fatty acids. This investigation was not in accord with the conclusions of the German investigators, who regarded the presence of soapy stools as an indication of abnormal digestion involving excessive alkali withdrawal. In the cases observed at the Babies' Hospital it was observed that the only way that fat affected salt metabolism unfavorably was in diarrhea in which was seen a great withdrawal of salts, especially potassium and sodium. Even here this result was largely due to increased peristalsis. It might be said in general that in healthy infants the addition of large amounts of fat to the food disturbed mineral metabolism only to a slight degree. If, however, high fat feedings were persisted in long enough, disturbances might result in which there was a dealkalinization of the tissues of serious import. The practical lesson from these investigations seemed to be to give moderate percentages of fat, such, for example, as were obtained by the dilutions of whole milk. As to the deficiency of iron in cow's milk, as was well known, cow's milk contained much less iron than woman's milk, and when the cow's milk was diluted the iron was reduced to a negligible quantity. It was desirable to make up this loss, for in the author's opinion many children suffered from a failure to supply this deficiency early enough. The deficiency usually manifested itself at the sixth or seventh month, and at this age the loss of iron might be made up by other foods, such as yolk of egg, cereals, green vegetables, and cooked fruit. By giving these articles properly cooked and in small quantities adaptation to them might be brought about without harm. Children thus fed seemed to be stronger and healthier than those exclusively milk fed during the first year. As to the amount of calcium an infant needed if he was to be free from rickets, it had been found that the amount of calcium varied with different children; for instance, a long infant would require more than a short one and a rapidly growing one more than a slowly growing one. An average deposition of 0.17 to 0.18 grams of calcium in the tissues daily was a fair average. It seemed that this question could not be definitely answered, because the cause of rickets seemed to lie in the failure to make use of the calcium which was ingested and not to an inadequate supply in the food. The salts were an essential element in the food in the determination of a gain in weight. A diet without normal salt would invariably be accompanied by a rapid loss in weight, which could only be explained by a loss to the organism of water. The sodium salts were most intimately associated with the retention of water in the organism. The potassium and calcium salts, for the most part had the effect of withdrawing water from the organism. This effect of the salts on the water was only operative if an adequate amount of water was ingested. For an infant of four weeks, each kilogram of body weight required 35 grams of water per kilo body weight. The essayist exhibited charts which showed the results of experiments as to the value of hypodermoclysis in cases in which there had been an excessive withdrawal of water from the tissues. The results of these experiments showed that while hypodermoclysis might produce a temporary retention of salts, say for twenty-four hours, this would be followed by a rapid excretion of salts, so that the procedure was of no permanent value. The question remained, however, whether the retention of salts even for this short period might be of value in cases of severe diarrhea accompanied by a great loss of water.

Dr. Charles Gilmore Kerley expressed himself as having been much impressed by Dr. Bartlett's paper on the salts in cow's milk. This had opened up a field which had been very much neglected. The giving of salts in the form of vegetables when the infant was five or six months of age, as Dr. Bartlett had described, was a point well taken. Of course maternal nursing was the ideal way of feeding a baby, but many babies after reaching the age of seven months showed some signs of malnutrition in the way of rickets if they did not receive additional food. Perhaps a great deal of the credit given to maternal nursing was due to the fact that very frequently where the mother nursed the baby it received additional food at a comparatively early period. Instead of giving egg and milk, especially in young infants, a better scheme was to give protein-free milk. Dr. Harrison of Yonkers had been preparing a skimmed milk which was protein free and is supplied in powdered form so that one got the salts of the milk and the milk sugar. This preparation could be given in amounts desired to infants on the breast, thus furnishing the amounts of salts that were desirable. This protein-free skimmed milk furnished a useful supplementary feeding. Dr. Morse had spoken of the distinction that must be made between the well child and the sick child. This was a distinction which should always be kept in mind. The well child required and took care of 3 or 4 per cent. of fat, but it was not difficult to feed well babies. Hundreds of them were brought up all over the country on milk and cereal and that was not their problem. It was the feeding of the sick child that taxed all their efforts and in such instances one had to follow a different line of procedure. In case a child had carbohydrate indigestion, one gave it low sugars and found that it would take proteins better. If there was fat indigestion one reduced the amount of fat and made it up by the addition of starch. Some young children had a very good capacity for starch and could tolerate it up to 4 per cent. In these various ways one had to raise the calories to the required amount and thus carry a baby over a difficult feeding period.

Dr. Henry Dwight Chapin said he was interested in what Dr. Morse had said with reference to the amount of casein in the feeding being less important than its nature. Many years ago he had called attention to the fact that casein had a developmental function in young animals and in infants as well as a nutritive function. The protein in the milk of different animals coagulated in different ways. In the ruminant herbivora the casein coagulated in hard lumps which were intended to develop the motility of the animal's stomach, because the animal must later feed on grass, grain, etc. In this class of animals the stomach was 70 per cent. of the entire digestive tract, and it was of importance that the casein be of such a character as would develop the motility of this organ. On the other hand in the non-ruminant herbivora, the mare and the ass, the casein coagulated in a gelatinous mass, that passed easily through the pylorus, and later on digestion was largely in the intestines in these animals. In human milk, which was midway between these two, the coagula was soft and flocculent. In the infant the stomach was only 20 per cent. of the digestive tract, so that a considerable portion of the digestive process took place in the intestines. Thus they learned from biology that the casein had not only a nutritive but also a developmental function to perform, and th , had learned why they need not be as much afraid of giving protein as they formerly were, and why it was not advisable to go to extremes in trying to modify it. At birth the different species of animals all digested milk alike, but at the end of a year all were taking different kinds of food. The milk had developed the digestive tract in each species in a different way, and if one wished to be successful in feeding infants he would have to follow nature. Dr. Chapin said he was glad to hear Dr. Morse champion fats as he did. We had frequently been giving too low fats and placing too much emphasis on calories. One could get the required number of calories by substituting starch for fat, but there was danger in this method that rickets would result.

Dr. Morris Stark called attention to the work of Funk with reference to beriberi and pellagra. He had shown that these were probably deficiency diseases due to the lack of certain substances in certain carbohydrate foods, in rice in the case of beriberi and in maize in reference to pellagra. These substances Funk had called vitamines, and they were absolutely necessary if certain carbohydrates were to fulfill their nutritive function. It was possible that these vitamines might have a definite relation to rickets, which was probably also a deficiency disease. If a study was made of metabolism in rickets and these other deficiency diseases we might get much more definite knowledge on this subject.

Philadelphia Neurological Society.

At a stated meeting held March 24 Drs. Charles W. Burr and Williams B. Cadwalader presented a "Report of a Case of Pellagra in a Child, with Necropsy." The patient was a child, eleven years old, of Italian parentage, but born in the United States, who presented an appearance of imbecility, but who was found on ex-

amination to possess average intelligence. She presented a spastic-ataxic-paralytic gait, with exaggerated reflexes, but no appreciable muscular wasting, and no sensory changes. There was an erythematous eruption on face and hands. Wassermann and tuberculin tests yielded negative reactions. While under observation an attack of diphtheria developed without complications, and at a later date death resulted. Post-mortem examination disclosed no gross lesion, but on histological examination degenerative changes were found in the ganglion cells of the spinal cord and in the nerve-fibers of the anterolateral and posterior columns.

Dr. WILLIAM E. DRAYTON presented "A Case of Pellagra," occurring in a child of American parentage who had never been out of the country, and who had never partaken of cornmeal in any form. In addition to a more or less persistent diarrhea the child exhibited a spastic-ataxic gait, with exaggeration of the reflexes and for a time a batwing erythema of the face. Negative reactions were obtained to Wassermann and Moro tests, and the blood exhibited evidences of secondary anemia. The cutaneous exanthem disappeared under observation, but the peculiar gait and the exaggeration of reflexes persisted.

Dr. ALFRED GORDON exhibited "A Case of Progressive Muscular Atrophy of the Scapulo-Humeral Type." The patient was a woman of about twenty-four, who for several years had noticed weakness in the upper extremities more especially on the right side, with muscular wasting without fibrillary twitching and with alar scapulæ. The reflexes were diminished in the upper extremities, but not altered in the lower, and the muscular responses to electric stimulation also were diminished. The calves of the legs were not enlarged. The Wassermann reaction yielded a negative response. The condition was looked upon as a dystrophy of progressive type.

Dr. NATHAN S. YAWGER demonstrated "A Condition in the Hand Resembling Raynaud's Disease Resulting from Frost-Bite." The patient was a brakeman about twenty-five years old, who, following exposure to severe cold, found the right hand swollen and painful and thereafter, particularly in cold weather, the affected member would become white, especially when elevated, and be the seat of burning and cutting pain. From time to time ulcers formed on the fingers and healed. No other part of the body was affected.

Dr. FRANCIS X. DERCUM exhibited "A Case of Tumor Giving Rise to Brachial Plexus and Sympathetic Palsies (Klumpke-Dejerine Symptom-group)." The patient was a young man twenty-three years old, engaged in the manipulation of a waterhammer, and in whom weakness developed in the right upper extremity, together with the appearance of retraction of the eyeball on the right side, narrowing of the palpebral fissure and contraction of the pupil. Examination disclosed a neoplastic mass in the right supraclavicular region and in the upper portion of the anterior aspect of the right chest. Under treatment with Coley's fluid and *x*-ray applications improvement ensued, with noticeable reduction in the size of the growth.

Dr. DERCUM also demonstrated "A Case of Probable Disease of the Pineal Gland." The patient was a man, twenty-eight years old, of rather diminutive stature, without hair on the face and in the axilla and but slight growth on the pubes. For a number of months there had been headache and vomiting, and examination of the eyegrounds disclosed optic atrophy consecutive to neuritis. Carbohydrate tolerance was unaltered and there was no change in the size of the bones of the skeleton; nor could any change in the size of the thymus be demonstrated. *X*-ray examination disclosed a condition of internal hydrocephalus, with atrophy of a portion of the sphenoid bone.

Dr. S. F. GILPIN exhibited "A Case of Paralysis Agitans (?) with Unusual Symptoms." The patient was a man, about fifty years old, who had been a stationary fireman, and who presented synchronous tremor of the right hand and of the head, with rather a fixed countenance and some awkwardness of speech. There was also immobility of the pupils, which were somewhat dilated, and also paroxysmal cough of a suffocative character, without intralaryngeal abnormality except for some displacement of the epiglottis. The tongue when protruded was slightly deflected to the left and the left side of the face appeared rather more active than the right.

Dr. SAMUEL LEOPOLD reported "A Case of Jacksonian Epilepsy limited to the Right Upper Extremity." The patient was a young man who had received an electric shock of high voltage, and who subsequently on numerous occasions exhibited tonic flexion of the right arm on the forearm, with application of the right upper extremity against the chest-wall. Only on one or two occasions was there loss of consciousness or biting of the tongue, and there was no loss of control of sphincters in the attacks. There was no palsy and no changes in the eyegrounds.

Dr. E. M. AUER read a communication (see page 641), entitled "Phenomena Resulting from Fatigue and Shock of the Central Nervous System Observed in France."

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

OKLAHOMA STATE BOARD OF MEDICAL EXAMINERS.

January 11 *and* 12, 1916.

ANATOMY.

1. Give terminal branches of external carotid artery.
2. Describe popliteal space, giving boundaries, contents, and relations.
3. Name structures seen in cross section at middle of forearm.
4. Give anatomy of appendix with reference to its being a cause of appendicitis.
5. Give origin, relations, and branches of phrenic nerve.
6. Describe the "circle of Willis." What is its anatomical purpose?
7. Give anatomical reasons for varicocele occurring more frequently on left side.
8. Give weight of human brain; of the liver. Name lobes of the liver.
9. From what blastodermic layer are the following derived: Skin, intestinal tract, brain, spinal cord?
10. Make cross section of coverings of skull, including five layers.

CHEMISTRY.

1. Name the halogen group and give physical property of each.
2. What is the specific gravity of normal urine? Diabetic?
3. Give chemical formula of nitric acid; of silver nitrate; barium chloride; common salt; ferrous chloride.
4. What are your chemical tests for cancer of the stomach?
5. Define difference between -ic and -ous salts.
6. Define molecule, atom, chemical affinity, an acid, an alkali, and a salt.
7. What is chemistry? Organic chemistry? Inorganic chemistry?
8. Give two tests for albumin.
9. What is Fehling's solution? Haines'? What is aspirin?
10. What is your antidote for carbolic poisoning? For lye poisoning?

MATERIA MEDICA.

1. Write a prescripton demonstrating what is meant by chemical incompatibility; give reasons.
2. What is meant by emmenagogue? Name three with their dosage.
3. Name the hypnotic drugs; give dose of each.
4. Name two general anesthetics and the signs indicative of danger to the patient in the administration of each.
5. What is the official name for calomel? Give dose. With what class or classes of drugs is it incompatible and why?

BACTERIOLOGY.

1. Define aerobic and anaerobic bacteria. Give an example of each variety.
2. How would you prepare a specimen of blood for examination in which malarial plasmodium was suspected?
3. Describe and give method of staining *Bacillus diphtheriæ*.
4. Name six systemic diseases caused by microorganisms; name and describe each microorganism.
5. What microorganism may cause meningitis? Where is it located and what is the appearance of the microorganism causing epidemic meningitis?

PATHOLOGY.

1. What changes occur in the tissues of the body after death?

2. Describe hypertrophy and atrophy; give example of each process.
3. Give pathological and clinical causes of edema.
4. Define leucocytosis; name varieties and give significance of each.
5. Give the pathology of pneumonia, pleurisy, influenza, acute parenchymatous nephritis.

PHYSICAL DIAGNOSIS.

1. Name the types of dyspnea.
2. Give technique for percussing the thorax.
3. Describe lung reflex and give causes.
4. Diagnose gallstone.
5. Name physical signs of aneurysm of the abdominal aorta.
6. Diagnose pulmonary stenosis.
7. Name the anomalies of respiration.
8. Name the topographic lines and areas of the thorax.
9. Describe the typical phthisical chest.
10. Differentiate gastric ulcer from cancer.

PRACTICE.

1. Outline the treatment of cirrhosis of the liver.
2. Differentiate between cholera infantum and cholera morbus; give ordinary treatment of each.
3. Give etiology, symptoms, and treatment of pertussis.
4. Describe the Wassermann reaction. What is its significance and value?
5. Define rubeola and describe its symptoms.

ANSWERS.

ANATOMY.

1. The terminal branches of the external carotid artery are the superficial temporal and the internal maxillary arteries.

2. THE POPLITEAL SPACE is *bounded: Above, and externally by the* Biceps; *above, and internally* by the Semimembranosus and Semitendinosus; *below, and externally* by the Plantaris and external head of the Gastrocnemius; *below, and internally* by the inner head of the Gastrocnemius. *Contents:* Popliteal vessels with branches, external saphenous vein, external and internal popliteal nerves, small sciatic nerve, lymphatic glands, and loose areolar tissue.

The internal popliteal nerve is superficial, and lies in the middle line of the space; it crosses the artery from without inward. The external popliteal nerve is close to the tendon of the biceps. The popliteal vein is superficial to the popliteal artery; it is at first on the outer side of the artery, and then to the inner side. The lymphatic glands are found surrounding the artery.

3. In amputation of forearm at middle third there will be severed: Skin, fascia, supinator longus, extensor carpi radialis longior and brevior, extensor communis digitorum, extensor carpi ulnaris, supinator brevis, anconeus, pronator radii teres, flexor carpi radialis, palmaris longus, flexor sublimis digitorum, flexor carpi ulnaris, flexor profundus digitorum; arteries: anterior interosseous, radial, ulnar; veins: radial, interosseous, ulnar, median; nerves: posterior interosseous, radial, median, ulnar; bones: radius, ulna.

4. The *vermiform appendix* is a long, narrow, musculomembranous tube which is given off, as a rule, from the inner side of the posterior wall of the cecum; but its position, as well as its size and direction, are very variable, usually it is about 2 or 3 inches in length by about ⅛ to ¼ inch in diameter, but it may vary in length from ½ to 9 inches. It generally points upward and inward (in a line pointing toward the spleen); it may be found in almost any relation to the cecum and ascending colon. It consists of four coats: the serous (usually completely covering the appendix, and making a mesentery), the muscular, submucous, and mucous; this last contains bloodvessels, nerves, and lymphatic glands.

The *features which make it particularly liable to infection*, are: It is a long, narrow, tube, blind at one extremity, containing a large amount of lymphoid tissue of low vital resistance and therefore very prone to bacterial infection; the blood supply is defective, the appendicular artery having (as a rule) no anastomosis, and only traveling part of the length of the appendix; any twist or obstruction here means gangrene; further, drainage is deficient, owing to its position. The mesoappendix may be too short, and so cause twisting or curling, with resultant obstruction.

5. The *phrenic nerve* is derived from the third, fourth, and fifth cervical nerves; it lies in front of scalenus anticus, descends inward on it in front of subclavian artery to enter the chest, having crossed the internal mammary artery at origin, behind the subclavian vein. In the thorax it descends in front of the root of the lung, being between the pericardium and the mediastinal pleura, to the diaphragm, which it perforates, and is distributed on its abdominal surface. The *right* nerve lies outside right innominate vein and superior vena cava. The *left* nerve in the neck is crossed by the thoracic duct, and below crosses the arch of the aorta and left pneumogastric, and is longer than the right. Filaments from each supply the pericardium and pleura. *Deep branches*, are: *Communicating:* to spinal accessory in sternomastoid and trepzius muscles. *Muscular:* to sternomastoid, levator anguli scapulæ, scalenus, and trapezius. (*Aids to Anatomy.*)

6. The circle of Willis is situated at the base of the brain. The *circle of Willis* is formed: In front by the two anterior cerebral arteries (branches of the internal carotid) which are connected by the anterior communicating artery; behind, by the two posterior cerebrals (branches of the basilar artery), which are connected to the internal carotid on each side by the posterior communicating artery.

The circle of Willis equalizes the flow of blood in the brain, and tends to preserve the cerebral circulation when one or more of the branches of the supplying arteries are obliterated.

7. *Varicocele occurs more frequently on the left side*, on account of the greater pressure in the left spermatic vein (which enters the left renal vein at a right angle, and not like the right vein which enters the inferior vena cava at an acute angle); also, on account of the greater length of the left spermatic vein, the left testicle being lower than the right one; and the left spermatic vein is more exposed to pressure (from the sigmoid colon).

8. The average weight of the human brain is a little less than 50 ounces (about 45 to 50 ounces); the liver weighs about 50 ounces (50 to 60 ounces in the male, and 40 to 50 ounces in the female).

The *lobes of the liver*, are: Right, left, quadrate, spigelian, and caudate.

9. The *skin* is derived from the ectoderm; the *intestinal tract*, from entoderm; *brain* and *spinal cord*, from the ectoderm.

10. The *coverings of the skull*, are, from without inward: (1) Skin; (2) Superficial fascia, with fatty tissue and arteries and nerves; (4) Muscular fibers and the aponeurosis of the occipito-frontalis; (4) loose cellular tissue, called the "dangerous area"; (5) the pericranium.

CHEMISTRY.

1. The *halogen group* consists of: Fluorine, chlorine, bromine, and iodine.

Fluorine is a gas, with a very faint greenish-yellow color; it becomes a liquid at a temperature of — 187° C.; it decomposes water; it is very irritant to mucous membranes.

Chlorine is a greenish-yellow gas, with a penetrating odor; it is soluble in water; it is very irritant to mucous membranes.

Bromine is a dark, reddish-brown liquid, volatile, and giving off irritating fumes; it is slightly soluble in water, more soluble in alcohol, chloroform, and ether; it boils at 59° C., and becomes solid at —7° C.

Iodine is a solid, occurring as blue-gray crystalline scales; it is volatile, and its vapor is of a violet color; it is very slightly soluble in water, but is soluble in alcohol, chloroform, and ether.

2. The specific gravity of normal urine is about 1015 to 1025; of diabetic urine, about 1030 to 1050.

3. Nitric acid, HNO_3; silver nitrate, $AgNO_3$; barium chloride, $BaCl_2$; common salt, NaCl; ferrous chloride, $FeCl_2$.

4. Chemical tests for cancer of the stomach, are absence of free hydrochloric acid, and presence of lactic acid in the stomach contents after a Boas' test-breakfast.

5. When two salts contain the same two elements, the salt containing the less proportionate quantity of the more electronegative element, terminates in *-ous;* the salt containing the greater proportion of the more electronegative element ends in *-ic.* Thus SO_2, sulphurous oxide; SO_3, sulphuric oxide. Hg_2Cl_2 mercurous chloride; $HgCl_2$, mercuric chloride.

6. A *molecule* is the smallest portion of a substance (element or compound) which can exist free.

An *atom* is the smallest quantity of an element which can enter into the composition of a molecule.

Chemical affinity is the force which attracts atoms to each other.

An *acid* is a compound of an eletronegative element or residue with hydrogen, which hydrogen it can part with (in whole or part) in exchange for an electropositive element, without the formation of a base.

An *alkali* is a substance which is strongly basic, of an alkaline reaction, and capable of saponifying fats.

A *salt* is a substance formed by substituting part or all of the replaceable hydrogen of an acid by an electropositive element.

7. *Chemistry* is that branch of science which deals with the composition of bodies, their changes in composition, and the laws governing such changes.

Organic chemistry is the chemistry of the carbon compounds.

Inorganic chemistry is the chemistry of such substances as do not contain carbon.

8. *Two reliable tests for albumin in the urine:* "The urine must be perfectly clear. If not so, it is to be filtered, and if this does not render it transparent, it is to be treated with a few drops of magnesia mixture and again filtered."

I.—*The heat test:* "The reaction is first observed. If it be acid, the urine is simply heated to near the boiling joint. If the urine be neutral or alkaline, it is rendered *faintly* acid by the addition of dilute acetic acid, and heated. If albumin be present, a coagulum is formed, varying in quantity from a faint cloudiness to entire solidification, according to the quantity of albumin present. The coagulum is not redissolved upon the addition of HNO_3."

II.—*Heller's modification of the nitric acid test:* "Place in a test-tube a layer of HNO_3 about 2 c.c. in thickness; then, with a pipette, carefully float upon the surface of this a layer of the urine in such a manner that the liquids do not mix. If albumin be present, a cloudy ring appears *at* the point of juncture of the two layers, the borders of the cloud being sharply defined. A cloudy ring may be formed by the presence of an excess of urates, but in this case it is not *at*, but *above*, the point of junction of the layers, and its upper border is not sharply defined, but fades off gradually."—(Witthaus' *Essentials of Chemistry.*)

9. *Fehling's Solution:* The reagent must be kept in two solutions, which are to be mixed immediately before use. Solution I consists of 34.653 gr. of crystallized $CuSO_4$, dissolved in water to 500 c.c.; and Solution II of 130 gr. of Rochelle salt dissolved to 500 c.c. in NaHO solution of sp. gr. 1.12. When required for use equal volumes of the two solutions are mixed, and the mixture diluted with four volumes of water.

Haines' Solution: Dissolve 30 grains of copper sulphate in half an ounce of distilled water, and add half an ounce of glycerin; mix thoroughly, and add 5 ounces of liquor potassæ.

Aspirin is acetyl salicylic acid, $C_6H_4O.COCH_3.COOH$.

10. *Antidote for carbolic acid poisoning:* Sodium sulphate, in solution; alcohol.

Antidote for lye poisoning: Vinegar, or a weak acid, followed by oil or milk.

MATERIA MEDICA.

1. ℞

Ammonii carbonatis ʒj.
Syrupi Tolutani.
Syrupi Scillæ aa ʒiv.
Aquæ p. s. ad. ʒvj.M.

Sig. Take half an ounce every four hours.

In this prescription, the syrup of squill contains free acetic acid, and this acting on the ammonium carbonate produces effervescence and forms ammonium acetate. If the prescriber intended this, the prescription is not considered incompatible.

2. *Emmenagogues* are agents which restore the menstrual function. As: Wine of ergot, ʒij; Apiol, gr. xij; Potassium permanganate, gr. ij.

3. *Hypnotics:* Sulphonal, gr. xv; trional, gr. xv; tetronal, gr. xv; veronal, gr. viij; paraldehyde, ♏ xxx; chloral hydrate, gr. xv; urethane, gr. xv; medinal gr. xv; chloral formamide, gr. xv; chloralose, gr. iv.

4. Ether and Chloroform.

Signs indicative of danger in the administration of ether: Pupils widely dilated and immobile; complexion pale and dusky; respiration shallow, jerky, and irregular.

Danger signs in chloroform anesthesia: Respirations becoming irregular or ceasing; pulse feeble, irregular, or imperceptible; pupils widely dilated and not reacting to light; complexion dusky or very pale.

5. The official name of calomel is Hydrargyri Chloridum mite; laxative dose is gr. ij; alterative dose gr. j.

Incompatibles of Calomel: Solutions of alkalies and their carbonates convert calomel into a black mass, usually the black oxide; ammonium hydroxide and carbonate form with it a complex black compound. Iodides, bromides, cyanides, and other reducing agents convert it into mercury and a mercuric compound. Oxidizing agents oxidize it to the mercuric state. Exposure to sunlight gradually decomposes it; the process is accelerated by the presence of iodoform and other organic substances. (Marshall's *Manual of Prescribing.*)

BACTERIOLOGY.

1. *Aerobic bacteria* are such as require the presence of oxygen in order to live and grow, as the bacillus of influenza. *Anaerobic bacteria* are such as can only live and grow in the absence of oxygen, as the tetanus bacillus.

2. *Method of preparing blood for examination for malarial plasmodia:* "This consists in spreading a very thick layer of blood, drying, placing for a few minutes in a fluid containing 5 per cent. formalin and 1 per cent. acetic acid, which removes the hemoglobin and fixes the smear, rinsing, drying, and finally staining. Carbol-thionin is very useful for this purpose. If Wright's stain be used in this method, it is recommended that the preparation be subsequently stained for a half minute with borax-methylene-blue (borax, 5; methylene-blue, 2; water, 100)." (Todd's *Clinical Diagnosis.*)

3. The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are non-motile and aerobic they are noted for their pleomorphism; they do not stain uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline-methylene-blue.

4. *Six diseases caused by microorganisms:* Typhoid, malaria, pneumonia, gonorrhea, syphilis, anthrax.

Typhoid fever is caused by the *Bacillus typhosus* of Eberth. This organism is rod-shaped, with rounded ends, is from 2 to 4 microns in length, and about three-fourths of a micron in breadth; it does not stain by Gram's method, but stains with all the anilin dyes; it has flagella, no spores, is aerobic and faculative anaerobic, and is motile.

Tuberculosis is caused by the *Bacillus tuberculosis.* This is a small, slender rod, slightly curved, occurring singly or in chains; it is 3 or 4 microns long, and about 0.2 to 0.4 micron broad. It is non-motile, does not form spores, is aerobic, and stains with difficulty.

Pneumonia is caused by the *diplococcus pneumoniæ* (of Fraenkel). This is a coccus, occurring in pairs, it has a capsule, is non-motile, stains readily with anilin dyes and by Gram's method; it is aerobic and facultative anaerobic.

Gonorrhea is caused by the *gonococcus,* which is a diplococcus with the appearance like that of two coffee beans; it is aerobic, can be cultivated on human blood serum; will not grow on gelatin, agar, bouillon or potato; it stains with ordinary anilin dyes but not by Gram's method.

Syphilis is caused by the *treponema pallidum,* which is a slender spirillum with regular turns, about 4 to 20 mikrons long, with a fine flagellum at each pole; it is flexible, hard to stain, and has not been cultivated on artificial media. How it divides is not known. It stains best with Giemsa's eosin solution and azur.

Anthrax is caused by the *Bacillus anthracis,* which is a large, rod-shaped microorganism with slightly thickened ends; it is from 5 to 20 mikrons in length, and a little more than one mikron in breadth; it has a tendency to form long threads, is non-motile, non-flagellated, and aerobic; it stains by anilin dyes and also by Gram's method.

5. *Meningitis* is caused by the *diplococcus intracellularis meningitidis,* also by the tubercle bacillus, and the diplococcus of pneumonia.

The *diplococcus intracellularis meningitidis* occurs in the polynuclear leucocytes of the exudate, and may be obtained from the cerebrospinal fluid and the nasal secretion. It resembles the gonococcus, but may appear within or outside the cells; the size is variable; it grows readily on meat infusions, and is probably Gram negative; it is aerobic.

PATHOLOGY.

1. After death, the temperature of the body falls to that of the surrounding atmosphere; the dependent parts of the body become discolored; rigor mortis, or a stiffening of the muscles appears (this is due to the coagulation of the albumin of the muscles, with the formation of myosin); the cornea loses its transparency, the tissues lose their elasticity, the pupils dilate, the sphincters relax; the body becomes discolored, the tissues soften, an odor is given off, and decomposition takes place.

2. *Hypertrophy* is an increase in the size, weight, and functional activity of a part beyond the limit of health, due to an orderly enlargement or multiplication of all its normal constituents. Its nature is physiological; it is pathological only in extent. Hypertrophy is said to be compensatory when one organ carries on the work formerly accomplished by two organs. The uterus and the mammary glands hypertrophy during pregnancy.

Atrophy is a decrease in the amount of a tissue owing to a diminution either in size (simple atrophy) or in number (numerical atrophy) of the histological elements of which it is composed. Loss of weight and impairment of function are generally observed. It may be general or local. *Example:* Atrophy of the sexual organs in old age.

3. *Causes of edema:* "Six factors enter into the production of edema, usually more than one acting at a time, *viz.* positive pressure in the vessels, permeability of the vessel walls, osmosis from excess of salts outside the vessel, selective action of the endothelium, variations in the blood plasma, and obstructed onflow in the lymph channels." (Thayer's *Pathology.*)

4. "*Leucocytosis* is that condition of the blood in which the leucocytes are temporarily or persistently increased in number. When several forms of leucocytes are increased in number and the usual proportions are but partially disturbed, we speak of *mixed leucocytosis.* Such a condition is seen in some forms of anemia. When the polynuclear neutrophile leucocytes alone are increased, the condition is termed *polynuclear leucocytosis,* or simply *leucocytosis.* If the mononuclear cells are chiefly affected, the condition may be denoted as *lymphocytosis.* The eosinophile cells alone may be increased. *Polynuclear leucocytosis* may be either *physiological* or *pathological.* The *physiological* is seen during normal digestion, in the later months of pregnancy, and in the first days of infancy, and is usually of moderate grade. The *pathological* variety occurs in many inflammatory and infectious diseases, and accompanies the various cachexias. Of the infectious diseases attended with leucocytosis may be mentioned pneumonia, diphtheria, scarlet fever, erysipelas, rheumatism, suppurative cerebrospinal meningitis, and any disease associated with a pronounced exudative or suppurative lesion." (Delafield and Prudden's *Pathology.*)

5. ACUTE LOBAR PNEUMONIA: "It is convenient to describe four stages, those, namely, of (1) hyperemia or engorgement, (2) red hepatization, (3) gray hepatization, and (4) resolution. *First stage or splenization.*—The lung is injected, dark red, and heavy, and pits under the finger; on pressure, there exudes a frothy serum tinged with blood and slightly aerated. The lung still floats in water. *Second stage or red hepatization.*—The part involved in solid and friable, presents a granular or red granite appearance, and sinks in water. The alveoli are filled with a coagulated exudation which shows under the microscope fibrin, leucocytes, red corpuscles, proliferated alveolar epithelium, and pneumococci. *Third stage or gray hepatization.*—The lobe has now the appearance of gray granite, the lung substance is softer and more friable; on pressure, a dirty purulent fluid exudes. The gray appearance is due to four factors: (1) Decolorization of the red blood corpuscles; (2) obliteration of the alveolar blood vessels from pressure; (3) fatty degeneration of the coagulated material; (4) great infiltration of leucocytes. A more advanced stage, in which the lung tissue is bathed in purulent fluid, is known as purulent infiltration. It is probably inconsistent with life. *Fourth stage or resolution.*—Resolution of the inflammatory exudation is brought about principally by absorption (autolysis), but partly by liquefaction and expectoration. Pneumonia may affect a lobe, or the whole of a lung, or it may attack both lungs. Double pneumonia occurs in about 10 per cent. of cases. Different parts of the same lung may at the same time show different stages. There is always some degree of pleural inflammation over the affected area. Moderate enlargement of the spleen is very common." (Wheeler and Jack's *Practice of Medicine*).

Acute pleurisy: "As in inflammation of other serous membranes there are five stages—hyperemia, exudation, effusion, absorption, and adhesions. The first stage is marked by congestion and irregularly diffused redness of the membrane with scattered flakes of exudation. The second stage is characterized by the copious formation of lymph, which more or less completely covers the membrane, giving it a dull, cloudy, or shaggy appearance. If the inflammation ceases at this point, it is termed dry pleurisy. If the condition progresses, an effusion is poured out into the pleural cavity, which may be serofibrinous, fibrinous, or purulent. The serofibrinous variety is most frequent and consists of a straw colored fluid containing fibrinous flocculi, blood, and ephithelial cells. Its quantity is usually rather large. When the exudate is fibrinous, the amount is small and the consistency is greater than that of the preceding. It undergoes organization quickly and gives rise to adhesions and pleural thickening. The exudate becomes purulent (empyema) only as the result of microorganismal infection. The effusion may become bloody in some instances as the result of ulceration (tuberculous or cancerous) and grave blood diseases. Displacement of the viscera is common in this stage; if on the right side, the effusion pushes the heart farther to the left; if on the left side, the heart is displaced to the right, the impulse often being seen to the right of the sternum. The lungs are also compressed and displaced upward and against the spinal column. On removal of the fluid they again expand, except in cases of chronic pleurisy, in which the adhesions interfere with the functional activity of the pulmonary structure. Absorption of the effused material is the natural sequence in most cases. Unabsorbed portions undergo organization, producing adhesions, which, in extreme instances may obliterate the entire pleural cavity. Sacculation of the effusion by adhesions is not uncommon, especially in purulent exudations in which the adhesions form an abscess wall. Varying degrees of adhesions of the opposing pleural surfaces are encountered, depending on the character of the exudate." (Hughes' *Practice of Medicine.*)

Influenza: There are no characteristic lesions; a catarrhal inflammation of the respiratory tract may be found, and occasionally enlargement of the spleen and the lymph follicles in the small intestine.

Acute parenchymatous nephritis: "The kidneys are usually enlarged, soft, and edematous, the cortex pale and the stellate veins injected. The capsule strips easily, although tense, and the kidney may bulge through the incision. On section, bloody fluid escapes. The cortex is thicker than normal and is much paler than the medulla, which is dark red. The glomeruli may appear as minute red dots. The anemia of the cortex is due to the swelling of the cells, which compress the capillaries. The epithelium is swollen, cloudy, and in many places has become desquamated. This is most marked in the convoluted tubules." (McConnell's *Pathology.*)

PHYSICAL DIAGNOSIS.

1. *Types of dyspnea:* Inspiratory, expiratory, constant paroxysmal, that which occurs only on exertion, and a simple accelerated respiration.

2. *Percussion:* "The plexímeter finger having been laid firmly and smoothly upon the surface to be percussed and adapted to its inequalities, the stroke is delivered upon the middle phalanx of the finger by the plessor finger, its tip striking vertically upon the plexímeter finger. The blow should be given by a quick, elastic movement of the wrist and finger joints, the hammer-finger rebounding at once in order not to damp the vibrations which have been initiated. It is sometimes serviceable to place the four fingers of the left hand upon the surface and percuss from one to the other with successive single strokes. A change from dulness to resonance is often thus brought out with unusual clearness." (Butler's *Diagnostics of Internal Medicine.*)

3. *Lung reflex:* If a spray of ether is directed over the borders of the lungs posteriorly, the lung borders will descend from 2 to 4 inches. The application of any cutaneous irritant or stimulus over any point in the course of the distribution of the pneumogastric nerve will cause a dilatation of the lungs.

4. In *gallstones,* while the calculus remains free in the gall-bladder, usually there are no symptoms. Impaction of the stone in the common duct gives rise to intermittent jaundice, following sharp pain in the right

hypochondriac or epigastric region, frequently radiating toward the right scapula, nausea, vomiting, sweating, depression, and often intermittent fever (Charcot's intermittent fever). When the stone is impacted in the cystic duct, jaundice is less common, but the hepatic colic is severe, and dropsy of the gall-bladder may occur. The diagnostic points are the age, and history of previous attack, with jaundice and intermittent fever, location of the pain, dark, amber-colored urine, containing bile, and sometimes the finding of the stone in the feces.

5. *Aneurysm of the abdominal aorta:* The physical signs are abnormal dulness over a large area to the left of the median line and near the left lobe of the liver, a tumor with expansile pulsation (generally in the epigastric region; a systolic bruit may be heard over the swelling; and sometimes there is a soft diastolic murmur. The femoral pulse is apt to be small and delayed.

6. In *pulmonary stenosis*, a systolic murmur is heard in the second left intercostal space; this murmur is not transmitted, but a systolic thrill is heard over the precordium. The right ventricle is enlarged. The pulmonary second sound is weak. Murmurs of hemic origin are to be excluded.

7. *Anomalies of respiration:* Respiration may be exaggerated, puerile, feeble, emphysematous, asthmatic, cavernous, amphoric, bronchovesicular, or tubular; egophony, bronchophony, and pectoriloquy; vocal resonance may be increased, diminished or absent; râles and friction sounds may be present.

8. The *lines of the thorax*, are: Midsternal, sternal, parasternal, mammillary, anterior axillary, midaxillary, posterior axillary, scapular, midspinal (all of which are vertical); and the following horizontal lines: From cricoid cartilage to outer end of clavicle, through third chondrosternal articulation, through sixth chondrosternal articulation, the line of the clavicles, through the spines of the scapulæ, through the inferior angles of the scapulæ.

The *regions of the thorax*, are: (1) Anterior region, containing the clavicular, supraclavicular, infraclavicular, mammary, inframammary, and upper and lower sternal regions; (2) Posterior region, containing the scapular, suprascapular, infrascapular and interscapular regions; and (3) Lateral regions, containing the axillary and infra-axillary regions.

9. The *phthisical chest* is characterized by a short anteroposterior diameter and a long vertical diameter. The chest is flat, and the ribs are oblique. The supraclavicular and infraclavicular spaces are much depressed, and an acute angle is formed at the lower portion by the divergence of the costal margins from the sternum. Posteriorly the scapulæ are very prominent. (Hughes' *Practice of Medicine.*)

10. *Carcinoma of the stomach* does not usually occur before forty years of age, is more common in males, the pain is localized and constant, vomiting is copious and occurs some time after eating; the vomitus contains "coffee ground" material; hemorrhages are common; a tumor may be palpated, and examination of the gastric contents shows absence of free HCl and presence of lactic acid; severe anemia and cachexia are also present.

Ulcer of the stomach is generally caused by injury or bacteria, is most apt to occur between the ages of twenty and forty-five; after eating there is pain localized in the stomach, vomiting occurs soon after eating, hematemesis is common, there is localized tenderness over the stomach, and examination of the gastric contents shows an excess of free HCl.

PRACTICE.

1. *Treatment of cirrhosis of the liver:* "The diet should be restricted to milk and similar unirritating food. Fatty and saccharine substances should be eliminated. Alcoholic individuals should be advised to cease drinking. The gastrointestinal catarrh should receive symtomatic treatment. Bichloride of mercury, sodium phosphate, and potassium iodide are highly recommended. The portal congestion is best relieved by salines. The abdominal dropsy or ascites will require the administration of saline purgatives and diuretics. A half ounce of a concentrated solution of magnesium sulphate taken daily before breakfast is of value, as is also the pill containing 1 gr. each of calomel, digitalis, and squill when given after each meal. Acetate of potassium may also be used. Tapping is necessary when these measures fail.

"*Surgical treatment*, with a view to establishing an anastomosis between the portal and systemic circulation, has been employed; but it should never be considered in the presence of complicating renal or cardiac disease." (Hughes' *Practice of Medicine.*)

2. CHOLERA INFANTUM: "*Symptoms.*—Diarrhea is the initial symptom. The stools are more or less fecal, but soon become watery, colorless, and odorless. In some cases they may be of a brownish-green color with a musty odor. There are restlessness, high fever (105-108° F.), thirst, vomiting, and purging. The child rapidly wastes, and the surface temperature falls. The urine is scanty or suppressed, and the child becomes apathetic, which condition may pass on to convulsions, stupor, and death.

"*Treatment.*—Ordinary diarrhea should be prevented from terminating in cholera infantum. The stomach and colon should be irrigated. From ℥ 2-4 of water at 100° F. should be allowed to flow into the stomach through a soft-rubber catheter and be siphoned out. This should be done only once. For the colon, sodium bicarbonate, ʒ 1, should be added to the pint and the irrigation performed twice daily. If the rectal temperature is very high, ice-cold water should be used; otherwise warm water. When symptoms of collapse appear, hot pack is used. Ice water quenches the thirst, even if it is vomited. Champagne and drop-doses of brandy may be given if the stomach is tolerant. Strychnine, gr. 1/100-1/48, hypodermically, to a child one year old, is a valuable stimulant. Morphine, gr. 1/100, and atropin, gr. 1/800, may be given in the same way and repeated every hour until the child is quieted. If the child's condition improves, food must be administered with the utmost caution; bland liquids only should be used."

CHOLERA MORBUS: "*Symptoms.*—The onset is generally at night or in the early morning hours. Nausea, vomiting, and purging of a bilious material, severe colicky pains in the abdomen, moderate fever, and prostration are present. Profuse liquid diarrhea then ensues and considerable tenesmus is present. The pulse is rapid and feeble, and there is intense thirst. Cholera morbus is distinguished from Asiatic cholera and poisoning by arsenic, mercury, and antimony by the time of onset, by the sour and bitter taste of the vomit, free from blood, the colicky pain in the abdomen, the absence of blood in the stools, the absence of metallic substances in the vomit and feces, the history and absence of the comma bacillus in the stools.

"*Treatment.*—Hot turpentine stupes to the abdomen or morphine, gr. ¼, hypodermically may be given for the pain. Salines should be administered to remove the offending particles. Should the salts move the bowels too frequently, give paregoric, ʒ 1, and compound tincture of lavender, ʒ 1, every three hours until two or three doses have been taken. Should the pain and diarrhea still continue, give the 'Sun Cholera Mixture' in teaspoonful doses after each evacuation of the bowels." (*Pocket Cyclopedia.*)

3. PERTUSSIS: *Etiology.*—The bacillus discovered by Bordet and Gengou.

"*Symptoms.*—The incubation period is from four to fourteen days, and is followed by a stage in which catarrhal symptoms, loss of appetite, fever, and restlessness are present. The paroxysms begin about the second week and consist of a number of short, spasmodic, expiratory coughs, succeeded by a long-drawn inspiration and a peculiar whoop, often terminating in vomiting. The eyes are suffused and the under lids are swollen and pinkish in color. The number of paroxysms may be very great, and this stage lasts from three to four weeks or longer. The symptoms then gradually ameliorate, and the stage of decline lasts two or three weeks longer. Convulsions, vomiting, bronchitis, and bronchopneumonia may complicate the affection. The outlook is favorable in uncomplicated cases.

"*The treatment* consists in isolation, proper feeding, protection from draughts, and the administration of atropine, belladonna, and antipyrin. Bromoform may be given to quiet the cough. During convalescence cod-liver oil, syrup of the iodide of iron, syrup of hydriodic acid, etc., should be administered."

4. *Wassermann reaction:* To the syphilitic antigen (extract of syphilitic organs) are added (1) the complement (fresh guinea-pig serum), (2) the suspected serum heated, (3) the amboceptor (heat-inactivated rabbit's serum), (4) the washed red corpuscles of the sheep, and the mixture is subjected to the action of incubator temperature. No hemolysis occurs by reason of the complement having been absorbed in the hemolytic series, the antigen and the serum tested being homologous. Such reaction is called positive.

Value. A well-pronounced positive reaction probably indicates the presence of syphilis; but leprosy, sleeping sickness and scarlet fever must be ruled out. Cancer is also said to give a positive reaction. It may indicate that the patient *has* syphilis, or that he has *had* it. The test requires elaborate technique at the hand of an expert.

5. *Rubeola* (better known as *measles*) is an acute infection and contagious disease, characterized by catarrhal symptoms of the respiratory mucous membrane, fever, and a mottled papular eruption which terminates by branny desquamation. *Symptoms.*—The prodromes are coryza, lacrimation. photophobia, hard bronchial or croupy cough, somnolence, irritability of temper, and sometimes convulsions. The temperature rises to 100° F. or 104° F. and increases until the rash is fully developed. On the second day hard papules of a dark purplish color may be seen on the palate, and on the fourth day an eruption made up of crescentic patches of small papules upon a slightly reddened base appears on the neck, forehead, trunk, and extremities. *Koplik's spots*—which are characteristic, minute bluish-white spots on a reddish punctate area—may be observed on the mucous membrane of the cheeks and lips, in the pre-eruptive stage of measles. They usually disappear when the skin eruption is at its height. The rash remains for from one to six days, after which the symptoms subside and a branny desquamation occurs.

(To be concluded.)

Books Received.

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THOSE ABOUT TRENCH. By EDWIN HERBERT LEWIS. Published by The Macmillan Company, New York, with 326 pages.

TONSILS AND ADENOIDS, TREATMENT AND CURE. By RICHARD FAULKNER, M.D. The Blanchard Company, Pittsburgh, Pa. Price, $1.

NEW CONCEPTS IN DIAGNOSIS AND TREATMENT. By ALBERT ABRAMS, A.M., LL.D., M.D., F.R.M.S. Published by Philopolis Press, California, 335 pages, with 80 illustrations.

ROADSIDE GLIMPSES OF THE GREAT WAR. By ARTHUR SWEETSER. Published by The Macmillan Company, New York, contains 272 pages, with illustrations. Price, $1.25.

Miscellany.

Battlefield Casualties.—In the figures for the total British losses since the beginning of the war, recently given out by the War Office, the proportion of killed to wounded works out almost exactly in the ratio of one dead for each three wounded. This was for all the forces in all zones and classes of military activity. No differentiation for the casualties in trench warfare has as yet been given out officially, but certain reports indicate that in such warfare about one person is killed to each two wounded. These figures are interesting in comparison with the proportion of 1:4 which had been accepted before the war, and indicates that the kind of warfare which is being conducted bears directly on the amount and character of transportation and hospital facilities required in the zone of such warfare. Our accepted basis for estimates on the clearance of the battlefield will, like so many other standards, doubtless have to undergo material modifications.—*Military Surgeon,* January, 1916.

First Aid Instructions to Police Force of Baltimore.—Since the early part of 1914 first aid instructions have been given to the police force of Baltimore. Dr. Joseph M. Craighill, Chief Surgeon, began this work among the captains, but later decided to instruct the probationer policeman and installed it as a part of the curriculum at the regular school of instructions of this department at the Northern Police Station. Instructions have been along the lines of simplicity to enable the policeman to aid the sufferer until he could be taken to a nearby hospital; how to handle a man who had been overboard; how to get him to the ambulance; how to apply temporary splints, etc. These men are also taught what not to do, which is in many instances as important as the reverse. First aid packages containing a bandage, a pad to be applied over the wound, a triangular bandage, and two safety pins, have been placed in the lower part of each patrol box and are at the disposal, not only of policemen, but of any passing doctor who might be assisting in an accident case on the street. These packages have been placed also in each police patrol wagon together with an outer splint, to extend from the axilla down the side of the body, and an inner shorter one, and five leather straps to be used on various parts of the body. Instructions in swimming and how to rescue and resuscitate drowning persons have been given to the policemen around the waterfronts.—*Maryland Medical Journal.*

The Harrison Antinarcotic Law.—Two decisions by United States courts construing section 8 of the Harrison Antinarcotic Law have recently appeared. This section makes it unlawful for any person who has not registered and paid the tax under the law to have in his possession or under his control any of the habit-forming drugs named in the act, and such possession or control is made presumptive evidence of a violation of the act. The United States District Court for the Western District of Washington took the view that Congress intended to prevent the importation, manufacture, or sale of habit-forming drugs except as allowed by the law, and that the law should be so construed as to carry out this intention. The same section was considered by the United States District Court for the State of Montana about the same time. Judge Bourquin decided that section 8 applies only to persons who are required to register under the law. —Public Health Reports.

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SIGNIFICANCE OF HEMORRHAGE IN OPERATIONS ON THE NOSE AND THROAT.

BY FRANCIS J. QUINLAN, M.D.,

NEW YORK.

PROFESSOR OF LARYNGOLOGY AND RHINOLOGY, NEW YORK POLYCLINIC; LARYNGOLOGIST AND OTOLOGIST TO NEW YORK CITY AND ST. VINCENT'S HOSPITALS; CONSULTING LARYNGOLOGIST TO THE NEW YORK FOUNDLING HOSPITAL, AND TO ST. JOSEPH'S HOSPITAL, YONKERS; TO ST. AGNES' HOSPITAL, WHITE PLAINS, AND TO THE JAMAICA HOSPITAL.

HEMORRHAGE, as a common and frequently fatal complication of operations on the nose and throat, was already known in ancient medicine. Cornelius Celsus recommended that the wound after incision of the tonsils be washed with vinegar and covered with hemostatic substances. The removal of the tonsils was altogether rejected by Rhazes in 950, as quoted by Velpeau, on account of the danger of hemorrhage; and Paul of Ægina refused to touch inflamed tonsils for the same reason. The loss of blood was likewise feared in cases of much enlarged and congested tonsils by medieval writers, such as Albucasis (1104), Brunus of Padua (1251), and Mercatus (1454). The same dread of hemorrhage in connection with nasopharyngeal surgery is expressed in medical writings of the sixteenth and seventeenth centuries, including Morgagni, in 1750, and several French authors in the *Journal de Médecine* of 1775. At this period, the operating surgeons were chiefly concerned with the avoidance or control of this type of bleeding. Not only were special instruments devised to arrest the hemorrhage, but remarkable suggestions were offered as to the wisdom of operating first upon the left tonsil, proceeding to remove the right only in the absence of hemorrhage. Even at the present day, when giant strides have been made on the prophylaxis and treatment of operative hemorrhage, incontrollable oozing from the mucous surfaces of the upper respiratory passages still occasionally follows after intervention in this region.

For the better avoidance of hemorrhage, patients requiring operations in the pharynx or the tonsils are preferably operated upon in the sitting (upright) position, as the recumbent posture naturally favors the outflow of blood, by gravity. Before undertaking such a procedure on any patient, it is advisable to learn as much as possible of the personal and family history regarding previous tendency to exaggerated bleeding after slight injuries or minor operations, such as the extraction of a tooth, wounds, etc.

Operative hemorrhage may take place directly during the course of the operation, and it may be, more strictly speaking, postoperative, or delayed for a few hours up to several days. When the interval between operation and hemorrhage is considerably prolonged, the bleeding is known as secondary. The clinical picture is variable, and the causes differ in the great majority of cases.

The *parts most liable to bleed* in operations on the nose and throat are, in the first place, the vessels of the cartilaginous and bony septum; and, in the second, the pillars of the fauces, especially the upper portion of the free margin of the posterior pillar. Interventions high up on the nasal septum are apt to prove more sanguinary than upon the lower part of this plane. Injuries of the plica triangularis or transversa are a common cause of bleeding. Not infrequently the pharyngeal mucosa is wounded through the straining of vigorous patients, and ragged wounds of this kind are a very frequent cause of bleeding. Over-radical and unnecessarily deep scraping of the fossæ of Rosenmüller sometimes interferes with the proper retraction of the divided blood-vessels, resulting in copious hemorrhage. Hardened and sclerotic adenoid vegetations are another prolific source of postoperative bleeding. In this connection, it may be emphasized that cutting instruments are more likely to cause bleeding than the snare, as evidenced by surgical operations on vascular lymphoid tufts at the base of the tongue, and in the Sluder method for the removal of the tonsils.

Delayed primary hemorrhage, coming on without an apparent cause soon after the operation, is usually due to the same pathogenic factors as direct hemorrhage, and is especially observed after the employment of cocain or adrenalin; in consequence of secondary vasodilatation of the blood-vessels. Secondary hemorrhage, occurring weeks or many hours after the operation, is often extremely grave and is usually due to the detachment of a clot or the shedding of a scab, which is naturally favored by violent movements, such as walking, coughing, crying, vomiting, or clearing of the throat; it is one of the most serious aspects of postoperative hemorrhage; its onset is often abrupt and at night while the patient is asleep. Sometimes a dark blood clot (the physiological hemostatic plug) is vomited several days after the operation, and this is followed at once by profuse bleeding from the mouth and nose. Such hemorrhages are difficult of control and are very likely to be repeated with suddenness equal to that of the primary ones. The local blood-vessels in these cases have lost their elasticity and are sometimes greatly enlarged and varicose, as the result of chronic inflammation.

The etiological factors of hemorrhages, in operations upon the nose and throat, are divided in a general way into *local* and *constitutional*, both of which may be combined in a given case. There are four chief local factors, ranking in order of importance as follows:

Incomplete removal of tissue, due to faulty technique is a most common cause of bleeding. When

the bleeding is unusually profuse after operations in the nose and throat, it should always be kept in mind that a portion of loose tissue may have been left behind; the hemorrhage, as a rule, stops promptly after its removal. Proper trimming of the field of operation, at the hands of an experienced operator, removes one of the most serious causes of hemorrhage; for imperfectly detached tissue-fragments, left behind in the nasopharynx, will cause the vessels to remain agape, with the result of persistent oozing or outright bleeding. Wounds of the pharyngeal mucosa represent an important cause of hemorrhage.

Local lesions of blood-vessels are perhaps the next important cause of postoperative hemorrhage. A classification has been made into arterial hemorrhages, which are the most frequent on account of the fibrous stroma which keeps the vessels open; venous hemorrhages, through the incomplete division of the peripharyngeal veins; and capillary hemorrhage, which is usually referred to the hemophilic diathesis. Anatomical anomalies of the palatine and tonsillar artery, in the capsule of the tonsil, are largely responsible for traumatic hemorrhages of this kind. Fatal cases are on record in which the internal artery itself has been accidentally incised or punctured. Operative lesions of adjacent tissues, such as the pillars of the fauces, or wounds of the cheek, tongue, or lips, naturally result in more or less abundant hemorrhage.

Local tissue anomalies, such as severe inflammatory processes, on account of the resulting congestion, or mucous patches, on account of delayed cicatrization and wound repair, predispose to the occurrence of postoperative hemorrhage.

The general anesthetics, viz., chloroform, ether, and ethyl chloride, as well as nitrous oxide, etc., may be enumerated among the causes which operate locally, as they give rise to marked congestion of the vessels of the head and may thereby induce a very considerable loss of blood at the time of operation; while local anesthetics, such as cocaine, novocain, and eucain, are most apt to produce delayed hemorrhages.

Among the *constitutional* causes of hemorrhage in operations upon the nose and throat, by far the most important is represented by *hemophilia.* Other abnormal conditions of the blood itself, such as exist in purpura hemorrhagica, leucemia, and anemia in general, have also been held responsible for postoperative bleeding, likewise the blood changes incident to thyroid disease, notably exophthalmic goiter. The character of the blood is a factor of the greatest importance from the viewpoint of the operating nasolaryngologist, and in the best interests of both physician and patient the coagulation time should be ascertained before any surgical intervention is practised. In hemophilic conditions, the hematic organism endeavors of its own accord to increase the coagulability of the blood as a defensive act; and the existing deficiency in the production of fibrin ferment is advantageously supplemented by introducing into the blood stream some normal blood serum, which assists the organism to establish a new supply. Serotherapy has been found to be of value for the control of nasopharyngeal bleeding, both in topical and internal administration, but will be considered in detail under the constitutional the nose and from the throat, respectively.

The *treatment* of postoperative hemorrhage, with particular reference to surgical interventions in the nose and throat, is naturally divided into *local* and *constitutional* measures. The former may be subdivided into those destined to relieve bleeding from the nose and from the throat, respectively.

Local measures for the control of postoperative *nasal* hemorrhage.—Unless the bleeding stops of its own accord while the patient keeps absolutely quiet for some time after the operation, perhaps with local applications of chopped ice, etc., it becomes necessary to insert tampons posteriorly or anteriorly. Nasal tamponing is a tedious and a disagreeable measure to be adopted, and should not be resorted to unless the bleeding spot cannot be located and the severity of the hemorrhage demands prompt attention. Posterior tamponage is to be resorted to only as an extreme emergency procedure for obstinate hemorrhages which refuse to be controlled by ordinary methods. Under no circumstances should tampons be left in the choanæ for more than twenty-four, or at most forty-eight, hours; as the retained secretions are otherwise apt to induce middle-ear infections, or even meningitis in especially unfavorable cases.

Pinching the alæ close together and bending the head forward, in order to hold the clot in position until organized, are the best, simplest, and most effective measures for the control of nasal hemorrhage. Local gelatin injections, although somewhat out of date, are sometimes useful and may be applied by means of a glass syringe, throwing into the nose twenty to thirty cubic centimeters of warm liquid gelatin, which promptly solidifies in the current of cool air in the nose. A highly ingenious but difficult and not always reliable hemostatic device is represented by Yankauer's method of stitching the posterior tip of the turbinal after nasal operations.

Local measures for the control of postoperative *tonsillar* hemorrhage.—The first rule is absolute rest—meaning that the patient must sit still, the head slightly inclined forward, without talking, gargling, or clearing the throat. He must also be cautioned against swallowing, and as this rule is not easily enforced, it is often deemed necessary to place a cork or mouth gag between the patient's teeth to prevent involuntary swallowing. This is a most important point, for the reason that the resulting traction on the constrictors forcibly detaches the newly-formed blood clot before it has been sufficiently organized. If the bleeding should continue, digital compression of the bleeding spot should be tried, the operator wrapping a finger of one hand in gauze, which is first dipped in hydrogen peroxide or a solution of antipyrin. The fingers of the other hand make counterpressure, or a tonsil compressor may be used for the same purpose, but the instrument must not be left in situ too long, so as to guard against pressure necrosis of the contused tissues. A simple but effective method consists in the application of towels soaked in ice water immediately after operations on the throat. This serves to regulate the superficial capillary blood supply through the relief of deeper congestion.

If the foregoing measures fail and bleeding persists, the tonsillar pillars may be brought together by means of large metal clamps, after a tampon of sterile gauze has first been pressed between faucial folds. A more complicated procedure consists in suturing the pillars together with two or three stitches, or in acupuncture and constriction of the bleeding stump. The most radical treatment, as a last resort, for uncontrollable hemorrhage in operations upon the throat is ligation of the common carotid artery—a serious operation, but not usually danger-

ous, or one interfering with the cerebral circulation.

Successive measures for the management of operative tonsillar hemorrhage.—(1) Application of local hemostatic agents, such as ice, oxygenated water, antipyrin, or horse serum. (2) Attempts at staunching the flow at its source from the blood vessel. (3) Local digital compression, lasting several minutes. (4) Injection of 20 to 40 c.c. of serum, combined with (5) Instrumental compression. (6) In persistent hemorrhage, suture of the pillars or acupuncture of the tonsil. (The purse-string suture for the control of postoperative tonsillar hemorrhage, recommended by Dawbarn, is not practicable in all cases.)

Precipitated blood sera, in the form of serum powder, have yielded favorable results in hemorrhages after tonsillectomies and turbinectomies. Not only has this serum powder been successfully applied as a local styptic to bleeding surfaces, as in oozing after nasal operations, but it has also been employed with good results as a prophylactic before operative procedures upon the nose and throat. Relatively large doses of the precipitated serum powder are recommended (0.6 to 0.7 grams, which is equivalent to 10 c.c. of whole serum). Prophylactic injections may be given the day preceding, or an hour before the operation; postoperative hemorrhage is guarded against by an injection one or two hours after the operation (Clowes and Bush).

Opinions differ as to the value of coagulin (Kocher-Fonio), a preparation made from animal blood plates, and usually employed on cotton swabs soaked in a solution. It is obtained through fractional centrifugation of mammalian blood, production of blood plates free from all blood elements, extraction of a cell-free solution of thrombozyme, and sterilization of this substance by boiling for fifteen minutes at 100°. Coagulin acts through hastening and strengthening the normal process of coagulation.

Constitutional Memostatic Measures.—Aside from hemophilic bleeding, there is a risk of postoperative nasopharyngeal hemorrhage in luetic conditions, and it is the author's habit, in suspected cases, to adminster the therapeutic test as a routine procedure In his experience, bleeding is often prevented by the internal administration of potassium iodide in 10 grain doses for a week prior to operations on the nose and throat.

In the treatment of operative hemorrhages from the nose and throat on the basis of a hemophilic diathesis, serotherapy seems to be specially indicated. According to Matas, "this mode of treatment, while not at all specific in character, is based on a rational principle, and has yielded sufficiently encouraging results since its introduction to deserve further trial, not only in hemophilia but in all the allied hemorrhagic states." The evidence collected from the literature is greatly in favor of serotherapy, practically no failures having been reported when fresh serum was used in sufficient quantities in conditions indicating its employment. When fresh normal sterile serum can be obtained it is to be preferred to the therapeutic antitoxic sera, as it contains all the desirable fibrin ferments (Matas).

The idea of utilizing serum for hemostatic purposes is based upon the observation that bleeding is checked by the application to the wound surface of blood from another individual. That local application of serum, however, failed to subdue the hemorrhage in intranasal interventions was the experience of Fleischer. He tried the subcutaneous injection of 10 c.c. of horse serum in fourteen individuals known to have a strong tendency to hemorrhage. At the end of twenty-four hours after the injection the coagulation time of the blood was found to be lessened by six and a half minutes on an average. Subsequent operative interventions in the nose were associated with very slight or no hemorrhage, so that serum would seem to represent a useful prophylactic agent against hemorrhage in nose and throat surgery. If the bleeding is not controlled by the first administration of serum, little good can be expected from its continued use, according to Billings and Irons (1914). Sometimes a single dose suffices to check the hemorrhage. In cases of continued bleeding, the dose (10 to 30 c.c. subcutaneously, or 10 to 15 c.c. intravenously) may be repeated at intervals of two to six hours, or longer, depending upon the urgency of the conditions.

An interesting case illustrating nasal hemorrhage following turbinectomy in a hemophilic patient, treated by injections of blood serum, was reported by Linn Emerson in 1913. The patient, a man of thirty-one years of age, some thirty hours after the removal of the left inferior turbinate, had a profuse secondary hemorrhage of an alarming character. The bleeding was controlled by means of an injection of 2000 units of diphtheria antitoxin, and the nostrils were packed with cotton and gauze soaked in adrenalin. Precisely two weeks after the operation the hemorrhage recurred, and the following serum therapy was given: Serum was obtained from the blood of the patient's brother. On the first two days 20 c.c. were injected subcutaneously, three times daily, with immediate well marked results. The bleeding returned, although to a less degree, when the injections were again given, but were reduced to one a day. These injections were continued for nearly a week afterward. The patient's recovery was very slow, but no unfavorable symptoms of any sort were caused by this large amount of serum, more than half of which was derived from a donor unrelated by blood.

Although serotherapy often exerts a beneficial effect on bleeding connected with changes of the blood itself, the coagulation of hemophilic blood is not regularly accelerated in these cases, suggesting that aside from the retarded coagulation the condition of the blood vessels—perhaps the endothelial lining of the intima—also plays a part in hemophilia and other blood diseases. The blood vessels, as well as the heart, are stimulated by normal serum, which also possesses a natural stimulating action upon the various cellular elements, such as the leucocytes and red corpuscles of the blood. Upon the basis of practical experience in fifty operative cases serotherapy is advocated as a most potent and valuable ally in the control of hermorrhage by Goldstein. (Transactions of the XIX Annual Meeting of the Am. Laryngological and Otological Society, 1913, p. 256.) It is used by him as a routine procedure in nose and throat work, the coagulation time of the blood being systematically tested in all operative cases. Whenever this exceeds seven minutes, a serum injection is given.

The serum most frequently used is horse serum, which sems to yield more uniform satisfactory results than all others, and can be obtained in large amounts without difficulty. The frequent efficacy of antitoxic serum in postoperative hemorrhages is explained by the fact that fresh antidiphtheritic serum also contains the fibrin ferment which is lacking in blood with an abnormal coagulation.

Endocrinic medication for the control of operative hemorrhage from the nose and throat is employed in the form of *adrenalin, thyroidin,* and, more recently, *pituitrin.* The latter, an extract of the posterior lobe of the hypophysis, has been successfully used by the Italian operator, Citelli, who reports excellent results, superior to those of the customary vasoconstrictors. The interventions in which pituitrin was efficacious included resections of the nasal turbinates, removal of polypi, tonsillectomies, and sinus operations. The injection of pituitrin is also recommended as a prophylactic, and Citelli injected 1 to 3 c.c. subcutaneously and intravenously without untoward effect; although 1 c.c. is usually sufficient, and is best injected from a quarter to half an hour before operating, to be repeated, if necessary, two to four hours afterward. The bleeding during sanguinary operations, such as inferior turbinectomy or tonsillectomy, will be considerably diminished, as pituitrin exerts a well marked vasoconstrictor action, like that of adrenalin. It is preferable to the latter in so far as the influence on the vasoconstrictors lasts a much longer time, several hours up to a day, while the subsequent vasodilatation sets in very gradually, so that the newly-formed thrombus is not easily detached and the hemorrhage is permanently arrested. In the experience of Denker, pituitrin was found to be a valuable hemostatic agent, which frequently permits an almost bloodless operation upon the upper air passages. It was injected in doses of 1.0 gram in men, 0.5 gram in women and children, half an hour before the intervention, and was never followed by injurious effects. On the other hand, the enthusiastic claims of Citelli and others as to the hemostatic power of pituitrin are not indorsed by Donelan, who is not inclined to set aside adrenalin, or even hydrogen peroxide, as a method of checking operative nasopharyngeal hemorrhage. Pituitrin was employed by him in twenty-five cases, including five intranasal operations according to his method on the maxillary antrum, twelve middle turbinectomies, and six tonsillectomies. In the case of the latter, for example, no difference in the amount of postoperative bleeding was perceived, except that it was certainly greater than in cases where adrenalin was employed. This is contrary to the experience of the writer.

As a constitutional hemostatic measure, calcium lactate has been recommended on account of its capacity of hastening the coagulation of the blood, its efficacy being especially marked in hemophilic cases. It was used by Simpson in hemorrhages associated with nose and throat operations, with an idea to their modification, if not prevention. He administered it for three days prior to operation and three days or longer afterward. In children the average dose of 20 grains three times daily was administered. These operations included septum and tantrum interventions, turbinectomies, extirpation of adenoids, and tonsillectomies. From the results of seventy-five cases of the last-named groups, Simpson was convinced that calcium lactate not only controlled the bleeding at the time of operation, but that it was especially helpful in preventing secondary hemorrhages.

A few remarks may well be made in this connection on the prophylaxis of operative hemorrhage in nose and throat work. Children are far safer risks than adults, for age is a predisposing factor, and serious bleeding does not usually occur in patients under fifteen years of age. Postinflammatory sclerotic changes of the tonsils are very common in adults, and the resulting scar tisue prevents the retraction of the vessels after the extirpation of the tonsil. No operation should be performed upon actively inflamed tonsils. In case the tonsils are known to be full of scar tissue, and the seat of fibrous degeneration, prophylactic serum injections are advisable. A general examination of the patient may reveal the existence of lues or of kidney or heart diseass, which often involves a tendency to operative hemorrhage. More or less serious nasopharyngeal bleeding in nose and throat operations has been reported coincident with the menstrual period in women. It is therefore the part of wisdom not to operate during the week immediately preceding or following menstruation. As hemorrhage is especially apt to occur when the venous circulation of the face is obstructed and free breathing is hindered, it is essential that the patient's neck be not encircled by a high collar or other impediments.

The verdict of the laity to-day is to condemn us for any accident that may occur during or as the result of our surgical interference, and hemorrhage is not considered by them as an unavoidable accident, but rather as a sequence of our faulty technique in handling our cases.

Touching, in conclusion, upon the sequelæ of hemorrhage in operations upon the nose and throat, it is obvious that the general and inevitable result of profuse bleeding is anemia and exsanguination. Such a condition is particularly dangerous on account of its frequent combination with chronic diseases, and also when it occurs in patients who were already anemic prior to the operation. Recovery in these cases is apt to be prolonged, tedious, and sometimes interrupted by infectious diseases, recurrin attacks of bronchitis, gastroenteritis and general exhaustion. Although fortunately rare, complications of this kind have been known to take place in the train of operative nasopharyngeal hemorrhages, and their development must be guarded against by directly combating the cause, namely, the post-hemorrhagic anemia. This means the institution of proper measures for the regeneration of the blood by means of rest, nourishing food, internal medication, and last, but not least, an abundance of fresh cool air and sunshine.

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66 West Fifty-second Street.

ARTERIAL DEGENERATION.*

By CHARLES EDWARD NAMMACK, M.D., LL.D.,

NEW YORK.

VISITING PHYSICIAN TO BELLEVUE AND TO ST. VINCENT'S HOSPITALS; PROFESSOR OF CLINICAL MEDICINE, CORNELL UNIVERSITY MEDICAL COLLEGE, NEW YORK CITY.

During the past fifty years modern inventions have revolutionized methods of living, and in place of a comparatively easy-going existence, life has developed into a strenuous, uneasy, nerve-racking struggle. This is especially true of life in the large cities where amusements must be deferred until the evening, or until far into the night, while the days are spent in the excitement of keen, almost fierce, competition. To be sure, the city dweller has advanced intellectually, but physically he has deteriorated, in spite of the fact that preventive medicine has in recent years saved the lives of thousands by improving the food supply, and by discovering the way to control certain of the infectious diseases. The tissues of which the human organism is constructed do not seem able to meet the demands of the present day existence, in the centers of population. Breakdown occurs early in those who fill the important places in our community. What are the causes of this premature decay?

Success in war is not so much a question of men and money as it is a question of bread and meat. The efficiency of entire armies has been seriously jeopardized by difficulties in the commissary department. This has been illustrated in Cuba, in South Africa and in the Russo-Japanese conflict. The present European war will probably not be ended until the productive fields of central Europe have been saturated by the blood of countless victims and the food supplies brought to an end. The history of a military campaign may be aptly compared to the battle of life, which the tissues of the human body are constantly undergoing. In this battle there is constant effort to make up for inevitable losses, to maintain the position already gained, and to seek further advance, all in the face of the powers of wear and tear which threaten disability or total extermination of the forces engaged,[1] and the final result will depend upon the integrity of what are technically called the physiological processes of nutrition. It is purely a question of food supply. In the human body the circulatory system constitutes the commissary department. The blood vessels are the purveyors of its nutrition. They deliver the proper kind of nutriment required by each individual part. They do not leave powder and shot at the field hospital and send carbolic acid to the firing line, but each ultimate tissue of the body receives, during health, the material proper to its rebuilding. More attention has been directed to the blood-vessels during recent years than was formerly accorded. The arteries show more truly than the family calendar the age of the individual.

To appreciate properly the importance of the arteries we must remember that these vessels are not mere inert tubes for the conduction of the blood, but are really vital organs. Vital they certainly are, not only as being necessary to life, but vital in the other sense of being living tissue, a living part of a living whole.[1] It is in the arteries and their terminal branches, the capillaries, that the ultimate processes of life take place. It is upon these vessels that the stress and strain of our daily life must fall. There is no doubt that arterial disease is more frequent than it was twenty-five years ago, and that the deaths from diseases which depend upon changes in the blood vessels are increasing. One of the most frequent causes of this increased mortality is the high tension under which business is done in this country and the fierce competition for material success. Among our own profession, sedentary habits, protracted and intellectual work, emotional disturbance, anxiety, grief, and a sense of responsibility, either directly disorder blood pressure or indirectly cause disturbances of digestion and metabolism, which load the blood with excrementitious substance. As a consequence, death reaps a harvest among medical men from the threefold results of arterial disease, to wit: Bright's disease, apoplexy, and heart disease. It has been shown by the Health Department records of New York and Brooklyn that the death rate of medical men from these three causes is exceeded only by that of saloonkeepers, who are supposed to be intemperate; by that of butchers, who are thought to be gluttonous; by that of quarry men, who are exposed to the dangers of explosives and inhalation of irritant dust; and by that of factory operatives, who are usually underpaid and underfed. No apology is therefore necessary for inviting the attention of working physicians to the importance of a careful study of this subject.

To detain you with an exhaustive description of the anatomy of the blood vessels would transcend the limits of this paper and exhaust your patience. It will only be necessary to recall that the walls of the vessels are three in number; the outer wall, chiefly fibrous, carries the nutrient vessels and gives strength to the structure; the middle wall is muscular and elastic; it receives the nerve supply and is the essential factor in the regulation of the circulation and the distribution of the blood. The whole vascular system, including the heart, has an endothelial lining, which may constitute a distinct inner coat, the tunica intima, or may be without coverings, as in the case of the capillaries. The essential portion of any blood vessel is this endothelial tube, composed of flat cells cemented together by intercellular substance and having no stomata between the cells. The whole circulatory apparatus is under the control of the nervous system, which acts not only directly upon the heart, but also on the vessels themselves, in whose muscular walls there are "local hearts," and these local hearts regulate local pressure, and have, moreover, immediate connection with the central heart. The increased complexity of our modern life causes increased wear and tear upon this complicated circulatory apparatus, and the brunt of the wear and

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tear falls upon the arteries. Hence, the old saying, "A man is as old as his arteries," is, if anything, more true to-day that it was when the axiom was first uttered. Various names have been suggested to describe this diseased condition of the arteries, and the term, arteriosclerosis, like "that blessed word Mesopotamia" in the Highland lady's system of theology, has become so fastened in our minds by repetition that it is difficult to understand that the word has not in every case the same constant and sharply defined significance. This is due, of course, to the fact that the secondary results of degeneration of the arteries are so multiform in their manifestations and so widespread in their distribution as to require a distinguishing subdivision in any individual case. How then shall we define arteriosclerosis?

Arteriosclerosis is a hyaline degeneration of the structural elements of the arterial wall, with connective tissue substitution, hyperplasia, and subsequent contraction with induration, whereby the characteristic functions of the vessel wall—retention, absorption, metabolism, with the power of expansion and contraction, are weakened and lost.[2, 3] The hyaline process is usually associated with atheromatous and often with chalky and fatty changes. Atheroma may be regarded as the physiological form of thickening of the arterial wall, which is the usual accompaniment of advancing age. Arteriosclerosis is, on the other hand, the pathological form of disease of the arterial wall and may arise in early life, in childhood, or even in infancy. Arteriosclerosis may exist without atheroma, and atheroma without arteriosclerosis, though frequently both are manifested in the same subject.

Whether the first pathological change in arteriosclerosis begins in the blood, or in the blood-vessel wall, or in the nervous system, has not been determined as yet, but the tendency of modern opinion is to locate the origin in the blood. The first effect of arteriosclerosis in the vessels shows itself in the impairment of contractility, and later in weakening of elasticity and osmosis, and consequent interference with metabolism; next in the escape of fluid constituting the various dropsies and the exudation of albumin from the walls of the vessels of the Malpighian bodies; finally, in the failing nutrition, emancipation, and marasmus which mark the terminal stage of the disease. The increased resistance in the vessel throws extra work upon the heart, which first hypertrophies and then dilates. We are apt to forget the enormous amount of work which the heart is called upon to perform during a life time. It has been calculated that each pulsation of the heart is equivalent to a force of two foot pounds; a heart beating 72 times a minute will thus expend an energy equal to 144 foot pounds, or 8,640 foot pounds per hour, or the enormous total of over 100 tons of work in 24 hours. When arterial disease throws more work upon the heart, the heart muscle tries to overcome the increased resistance by more forceful contraction and accomplishes this by an increased size of the muscular fibers and also by adding additional new fibers. For a while this addition compensates for the increased labor of the circulation and the patient is comfortable, but after a time the obstruction become stoo great to be overcome by the increased power of the heart muscle, and slowly and stubbornly the heart yields, its chambers become enlarged, and the valves, which should accurately close the chambers, begin to leak. If, however, the heart continues strong and the vessel grows weak we may have distention of the vessel wall, giving aneurysm, or rupture, causing apoplexy. As the arterial system was first in the development of the human body, so also is it that upon which the finger of decay is earliest laid. It is sometimes impossible to foretell whether the damage will first be done to the heart, the vessels, the kidneys, or the brain.

The causes of arteriosclerosis fall under the headings of heredity, age, sex, alcohol, syphilis, acute rheumatism, certain acute infections, high living, and hard work. As Osler has tersely said, the onset may be said to depend in the first place upon the quality of arterial tissue (vital rubber) which the individual has inherited, and secondly upon the wear and tear to which he has subjected it. Our parents determine to a great extent the kind of tissue with which we start life; we ourselves may control the factors which tend to injure this tissue. Age is also a factor beyond our control, but according to comparative anatomy man is entitled to live 100 years if he conserves his energy by self-denial, protects himself as best he can against disease, and is able to secure the comforts of life. Age is a very indefinite expression; one man may be old at 30, another may be young at 60. Lives of self-denial may enjoy a corresponding reward of longevity; lives of self-indulgence receive the punishment of premature senility. Of course the gross alteration of atheroma cannot be prevented but the finer changes of arteriosclerosis may be postponed or eliminated by our own care. Sex enters into the question insofar as men are more frequently affected with alcoholism, syphilis, gout, and are subject to more mental and physical strain than the average woman. Alcohol acts in many ways to cause arterial degeneration. It over-excites the heart so that the vessels are subjected to greater strain; it disturbs digestion, causes liver cirrhosis and kidney insufficiency, which load the blood with poisons; lastly, alcohol is itself a poison to the blood. Syphilis causes so much thickening of the inner walls of the vessels as to lead to great diminution or even obliteration of their caliber. Disease of the intima is, however, always secondary to disease of the media, in which infection first takes place.[3] Syphilis may also deposit gummatous nodules in the outer wall. The *Spirochetas pallida* has been found in the degenerated vessel walls and in the gummata.[4] Since the discovery of the Wassermann reaction the syphilitic origin of arterial disease has been demonstratively proven. Syphilitic changes will affect the brain by preference, because syphilitic arteritis is localized in arteries supplied with lymphatic sheaths. Certain acute infectious diseases, especially typhoid fever, malaria, influenza, scarlet fever, and diphtheria, may cause arteriosclerosis either by injuring the vasomotor nerves, or by directly affecting the endothelium by their specific microorganisms or toxins. Thayer and Brush have found the arteries more palpable in those who have recovered from an attack of typhoid fever than in average individuals of equal age who have never had the disease. Chronic diseases, like gout, rheumatism, and diabetes frequently produce changes in the vessel wall. Poisons like ergot and lead produce contraction of the smallest vessels, thereby increasing blood pressure and throwing extra work upon the heart and vessels. Over-feeding and excessive drinking induce a simple plethora of the vessels, and in addition load the blood with poisons. Hard work acts by raising the blood pressure and subjecting the

heart and the vessels to strain, especially if the work be accompanied by depressing emotions or accomplished under circumstances of prolonged mental or physical strain. Muscular overwork deserves more consideration than has hitherto been given it. We see it as an etiological factor, especially among the laboring class, in both whites and negroes, possibly because this class indulges in coarse heavy food and in alcohol. The high tension produced by athletic training has also been brought forward as a cause of premature failure of the heart and blood vessels. To what symptoms and physical signs does arteriosclerosis give rise?

The story of arteriosclerosis is not the story of the past few weeks, but must comprise the life history of the patient from his cradle, and often include that of his forefathers also. It is doubtful if the sclerosis itself could produce symptoms were it not that the organs supplied by the diseased arteries suffer from an insufficient blood supply, and the symptoms then arising become referable to any or all of the affected organs. The symptomatology sometimes makes the diagnosis easy and certain; sometimes only presumptive; sometimes impossible. The disease may be latent for a long time, the symptoms occurring only after effort. In the diagnosis of latent arteriosclerosis the invention and perfection of blood pressure apparatus has afforded us valuable assistance. The instrumental determination of blood pressure is regarded by the laity as something new, and has been made the subject of much satirical jest by our professional humorists, and by the class of playwrights who cater to the individual known as the tired business man. One of these humorists has recently written that the real advantage in knowing what one's blood pressure is lies in the fact that it gives one a new thrill of terror. As a matter of fact attempts to determine blood pressure for man by instruments began in 1855, when K. Vierordt placed weights on the radial pulse until this was obliterated. The first useful instrument, however, was devised by Marey, in 1876. V. Basch, in 1887, devised an instrument which was used to some extent. This instrument recorded only maximum pressure. In 1896 and 1897 the present flat rubber bag encased in some non-yielding material was used by Riva-Rocci. This instrument, with its various modifications, is the one in general use to-day. The instrument devised by Dr. Rogers has also met with considerable popularity. It is hardly necessary to say to this audience that it is most important to estimate accurately the diastolic pressure as well as the systolic pressure,[6] for only in this way can we obtain any data of value regarding the driving power of the heart and the condition of the vasomotor system, nor it is necessary to emphasize the fact that high blood pressure may be conservative and that we must not rush at it madly with a big stick.[9] It cannot be too frequently emphasized that high pressure may exist without arteriosclerosis or anteriosclerosis without high blood pressure.[8] It would lead us too far afield to attempt to discuss the great variety and protean character of symptoms and physical signs which may be manifest in a disease which is capable of carrying its destructive work into the ultimate living cells in any or every important organ in the body. It must suffice to say that when the aorta suffers we may have aneurysm with its accompanying train of symptoms or of physical signs. When coronary arteries are involved we have heart failure, arrhythmia, and stenocardia. Thickening of the bronchial and intercostal arteries may give weak respiratory efforts, defective expansion of the chest, and emphysema of the lungs. In the classical arteriosclerotic kidney we may have abundant urine of low specific gravity, little albumin, hypertrophied heart. Brain symptoms at first require keen observation, or rather keen perception, on the part of the patient himself; earlier fatigue, disinclination to effort, especially to the effort which has perhaps made the man successful in life; irritability, alteration of disposition, headache when in bad air. Headache after the very moderate use of alcohol, tobacco or coffee are all danger signals to the man over 40 years of age. In the vessels of the extremities, coldness of the surface, rheumatoid pains on walking, the vasomotor phenomena of Raynaud's disease, the remarkable condition first described by Charcot known as intermittent claudication, may be evidences that the stiff vessels cannot accommodate themselves to changes in the necessary vascularity of the part. The ocular signs and symptoms are most important in early diagnosis, and the ophthalmologist may be the first to recognize them. With the improved electrically lighted ophthalmoscope now upon the market, characteristic changes in the retina and disc may be readily discovered by the general practitioner.[10]

The diagnosis of early changes in the arteries among young persons depends largely upon how carefully these changes are looked for. The obvious advantage of early recognition of the disease need not be dilated upon. Even the tyro in medicine will have no difficulty in recognizing arteriosclerosis when it has advanced to the combination of hypertrophied heart, increased blood pressure, palpable arteries, and ringing accentuated aortic second sound. Even then much may be done to ward off complications and prolong life, but we should not wait until such signs are apparent before making the diagnosis and instituting treatment. The history of the case is the first essential. A good history is half the diagnosis; in some instances, the whole diagnosis. It should include the personal habits of the patient, a record of all his preceding infectious diseases, and an inquiry into his family history, especially with regard to gout, rheumatism, and alcoholism. More potent than all other diseases to cause arteriosclerosis is syphilis; not only the fact of actual infection, but the duration and thoroughness of treatment should be carefully studied. The patient's occupation should be carefully noted. Athletes, laborers, brain workers who are under constant mental strain, and those whose work brings them into contact with such poisons as lead, present every factor necessary for the development of arteriosclerosis. The use of tobacco is a much debated question. Personally I am convinced that moderation in the use of tobacco is not attended by any of the dangers which fanatics ascribe to it. Of much more importance is the habit of overeating. Overeating is the curse of the American people. An excess of food distends the capillaries with blood; capillary resistance is increased, with stretching of the arteries and consequent damage to the walls. The successful business man of florid type, who works all day, drinks from three to seven whiskeys, is proud of his physical development, and boasts that for more than twenty years he has never had a doctor, is sometimes astounded when his application for life insurance is rejected because of palpable arteries, beginning heart hypertrophy, and high blood pres-

sure. People should be taught that at least twice a year they should be carefully examined by a doctor who has the time to go through every step of a systematic examination. The public are beginning to realize the importance of this, as is evidenced by the number who submit themselves to such periodical examination.[3] In this way we may hope in the future to make the early diagnosis of arteriosclerosis much more frequently than it has been made in the past. It must be remembered, however, that arteriosclerosis may be marked in some vessels and so slight in the peripheral vessels that it cannot with certainty be made out. Particularly may this be true when there are marked changes at the root of the aorta, leading to sclerosis of the coronary vessels alone, and giving no symptoms until an attack of angina pectoris sends the patient to a physician. When true angina pectoris occurs it must be carefully differentiated from pseudo angina pectoris, which usually occurs in neurasthenic individuals; or from toxic agents; in which no age is exempt; in which the paroxysms of pain are periodic and often nocturnal; in which there is no sense of real anguish; in which the duration may be an hour or more; in which restlessness and emotional symptoms are usually prominent; in which there is no increase in arterial tension; and which has a favorable prognosis. True angina pectoris, on the other hand, is associated with coronary arteriosclerosis or with aortic regurgitation; is rare before 40; usually affects males; rarely has periodicity of the paroxysms; there is a sense of impending dissolution; the attack lasts only from a few seconds to several minutes; the patient has a silent and fixed attitude, the suffering being too intense for emotional display; the arterial tension is increased as a rule, and the case presents a most unfavorable prognosis.[4] What is the outlook for the patient with arteriosclerosis?

In a disease so protein in its manifestations it is not possible to give a certain prognosis. The chief factors to be considered are, (1) the seat of the sclerosis; (2) the probable stage; (3) the existing complications, and last and most important, the patient himself. It is much more dangerous for the patient when the disease affects the root of the aorta than when it has attacked the peripheral arteries. When the kidney arteries are involved the disease is usually bilateral and widespread and symptoms of renal insufficiency may appear at any time and rapidly prove fatal. In the peripheral arteries very serious, even fatal, results may be brought about by interference with the circulation, with resultant extensive gangrene of the part supplied. In the larger vessels there is danger of aneurysm in the early stages of the disease before the artery or arteries have had time to become strengthened by proliferation of the connective tissue. In the brain, apoplexy, either slight or severe, may occur. The first attack of cardiac asthma is to be looked upon as the beginning of the end. In the kidneys it is not always possible to determine the extent of the kidney lesion by urinary examination. In the intestines, arteriosclerosis of the splanchnic vessel may give embolism or thrombus, or intestinal hemorrhage. In giving a prognosis the general condition of the patient, his build, physical strength and powers of recuperation, etc., must all be taken into account. It is the whole patient that we must consider, and not any one symptom that at the time happens to be the occasion of greatest trouble. The willingness of the patient to follow the directions of his physician also determines to a great extent the prognosis.

With regard to the treatment or arteriosclerosis it is impossible, of course, to lay down definite rules. The keynote is individualization. The laboring man must be differently managed from the successful financier. One may treat fifty patients who have typhoid fever by a routine method and all may recover. Far different is it when treating a disease like arteriosclerosis. The successful treatment of the latter cannot be learned from text books, nor pointed out within the limits of any paper. It requires the tact, the intuition, the knowledge of human nature, the subtle something, that makes the successful therapeutist. For those who cannot get out-of-doors, exercise in the room with the windows open must take the place of out-of-door sports. As a tonic or invigorator the cold or cool bath in the morning, on arising, can be highly recommended, but it is folly to urge it on one to whom it is distasteful, or on one who does not feel a comfortable glow or reaction after it. Turkish and Russian baths should be absolutely condemned, because the increased force of the heart beat that accompanies a hot bath might be sufficient to rupture a small cranial vessel. Obstinate constipation should be sedulously avoided. The use or non-use of alcohol in advanced life has been the subject of so voluminous a controversy that each man must dogmatically express his own opinion. My personal conviction is that alcohol is an entirely unnecessary addition to the diet of any individual in health, although it may be needed in sickness. Of the three classes of foodstuffs it may be said that excessive protein consumers are more apt to develop arteriosclerosis comparatively early in life. The harmful effect of over-indulgence in fats and carbohydrates is the extra work that is put on the heart by formation of many new blood vessels in the adipose tissue derived therefrom. For patients who have any form of arterial disease an excess of fluid is harmful as it results in a condition of plethora, which necessarily reacts injuriously on the heart and circulation.

With regard to the use of medicines in arteriosclerosis it has long been thought that iodides of potassium and sodium have a favorable effect. It is difficult to obtain exact knowledge on this subject. Romberg and others believe that iodide has its favorable effect not upon the vessels, but upon the blood viscosity, which in nine out of eleven men was reduced. Other observers have been unable to corroborate these findings.[5] It is possible that the iodides owe their reputation in this disease to their influence upon syphilitic arteritis. Thyroid extract in very mild doses, grain one-third, morning and evening, has been found to lower blood pressure, possibly on account of its iodine content. Sodium nitrite and erythrol tetranitrate may benefit some cases, but are uncertain in their action. The effect of nitroglycerin is transient unless given every hour, as it is believed that its elimination is accomplished in 30 minutes. No dogmatic rule for dosage can be laid down with regard to the individual reaction of these drugs. I have given 10 drops of the 1 per cent. solution of nitroglycerin every hour before a manifest effect was secured. The nitrites have decided value but they have their limitations. In angina pectoris or in attacks of cardiac asthma inhalation of amyl-nitrite may be useful. A drug much in use in my wards in Bellevue Hospital, for the reduction of high blood pressure, when this

is not compensatory, is tincture of aconite. But the most important measure for the relief of acute high tension is absolute rest in bed with limitation of the diet, as in the Karell cure. In milder cases, the patient should spend from 10 to 14 hours daily in bed, and the urinary output should be measured and compared with the liquid intake. Venesection is used by us in threatening eclampsia, and with marked benefit. Hot packs or sweat baths assuredly do reduce the pressure in many cases. The function of the skin should be stimulated by frequent baths in all cases. The Nauheim method equalizes the circulation, besides assisting cutaneous elimination. In the attacks of dyspnea, which occur in the late stages of arteriosclerosis, morphine is invaluable; it relieves spasm, quiets the cerebral centers, and is an actual heart stimulant under such conditions.

With the use of the Trunecek serum I have had no experience, as I was not convinced by the early favorable reports. Digitalis cannot be expected to act on the diseased myocardium, which is a secondary result of arteriosclerosis, with the same benefit as occurs in the dilated heart consequent upon valvular lesion. Radium and the high frequency current of electricity have been enthusiastically praised by those who administer them. I have had no experience with either and can neither commend nor condemn.

How can we defer the advent of old age?

We cannot live without the heart beat, and the prevention of arteriosclerosis compels us to remember Herbert Spencer's definition of life, *i.e.* that it is "the continuous adjustment of internal relations to external relations." In this adjustment of our lives to our environment we must strive to get the maximum of work accomplished with the minimum amount of wear and tear on the blood vesesls. Competition in every profession is now so exceedingly acute that to rise to prominence in any branch requires exceptional powers of mind and body. We live rapidly, burning the candle at both ends, and it is not strange that so many comparatively young men and women grow old prematurely. It is not the work, but the worry, that leads to arterial degeneration. Hard work in these competitive times is a thing but few can avoid, but, fortunately, it need not be shunned through fear of harmful effects, for, if taken up with a cheerful, contented mind, it will strengthen and develop rather than weaken the bodily forces. But the secret of successful hard work is happiness; not pleasure, for pleasure is only the gratification of our animal nature, and pleasure depends upon the possession of things, but things decay; not joy, for joy is the satisfaction of our social nature, and joy depends upon the possession of friends, but friends die. Real happiness is the fulfillment of our spiritual desires, and depends upon the possession of character, and character is immortal. He, who, in the prime of life, has learned this secret of happiness, can bid defiance to the enemies of advancing years. He can accept prosperity with equanimity, and he can fight adversity with courage. He knows that prosperity does not *bind*, it merely *assembles* people—at dinners and dances; it is adversity that *binds*, and that draws around one the real friends that enable him to meet it. In addition to the development of character we should endeavor to have a diversification of interests. Hobbies are sometimes the salvation of men. Moderation in all the duties and pleasures of life is the keynote of the prevention of arteriosclerosis. This does not mean that a man must nurse himself into neurasthenia for fear that something will happen to him, nor deny himself the legitimate pleasures of the social table or the healthful dance. As one grows in years exercise should not be violent, and food should be taken in smaller quantities. Of the forms of exercise for middle or advancing years, walking and golf are beneficial, particularly the latter, provided that the 19th hole be not played too often.

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42 EAST TWENTY-NINTH STREET.

A PRACTICAL SCHEME TO IMPROVE THE PHYSIQUE OF AMERICANS.

BY RICHARD COLE NEWTON, M.D.,

MONTCLAIR, N. J.

LATE PRESIDENT NEW JERSEY STATE BOARD OF HEALTH; CONSULTING PHYSICIAN TO THE MOUNTAINSIDE HOSPITAL, MONTCLAIR.

HUMBOLDT declared that "Whatever virtue men would have appear in society must be taught in the schools." It is upon these nurseries of civilization that we must rely to reawaken the physical conscience, and to show to future generations that, by taking thought, they can not only free themselves from disease, but can attain a vigor of intellect and a strength and beauty of body not seen on earth since the days of the ancient Greeks.

The following plan is proposed as a direct and efficient method of teaching the masses what the body beautiful should be, and what steps are necessary to secure this great desideratum.

The number of teachers and experts necessary to carry it out will be no greater than the extra teachers now employed in our public schools to distract the children's minds from the fundamental studies of the curriculum by inculcating in a vague way a smattering of various more or less immaterial subjects. Teachers, parents, and everyone else at this writing, acknowledge that health comes first, and that the whole system of education must be made to conform to this axiom in very deed, even as it now professedly conforms to it in theory.

To begin with, we must fain acknowledge that there is no question that much of the present drive to conserve and improve the health of school children begins too late. It is in the improper treatment of the little children that most of the seeds of future trouble are sown. If small scholars were carefully watched, and each one minutely studied for any congenital defects, as well as for any fault of environment, there might result an enormous saving to the State by reason of the diminution in the numbers of dipsomaniacs, neurasthenics, insane, and incompetent people. Starting the education of numbers of congenitally defective children in

our public schools, and pushing them along, until their condition is made worse and harder to remedy, is an error which we are learning to avoid. But we are not so careful to avoid and not so successful in combating injury not alone to the delicate, under-developed, and under-nourished children, but even to the normally healthy ones, by improper physical conditions in the schools.

The principal reason for this failure, which is so far-reaching, and so general that its importance cannot be overestimated, is that we neglect the physical status of the young scholar until more or less harm has been done. We are trying to make bricks without straw by pushing all the young scholars along the road of education just so many feet every year, all the while neglecting the two essential features, first, whether the child has the normal equipment, physical and mental, for the work, and second, whether the work is in any way injurious to him.

School teachers have a notion that so long as the child keeps up with his grade, and no complaints of ill health are made, he is doing well enough and there is nothing to worry about. There are a great many rules and tables to determine what the mental status of a child should be at a certain age, and for that matter, there are enough rules to show what the average child's physical development should be at a given age. Unfortunately, however, the teachers do not know the latter rules, however well they may be acquainted with the former; nor are there any tests of the physical status of the scholars in the regular school work that are as easily applied and as efficient as the tests of their mental work, always at hand in their marks for their recitations and their periodical examinations.

Consequently the average teacher is not at present capable of judging whether the child is being injured by the school work, or whether the child has the normal physical development for his age. The medical inspector of the school is not engaged to do this essential work, so it is not done.

There is, therefore, not only the danger of a lasting injury to the child by allowing him to live under improper conditions, both in and out of school; there is also, the further unfortunate circumstance that his physical development is neglected. From both of these causes the average school child suffers injuries that are most vital, both in their immediate and remote results. "As the twig is bent, the tree is inclined." Our interference with present conditions must not be solely of a negative character; we must take positive steps to assure the best mental and bodily development if we wish to give every scholar a fair chance to grow up to the full measure of his potential abilities. As an incentive to everyone directly interested in this vital question, the parents, the teachers, and especially the child, the following simple plan is proposed: To begin with, there should be careful physical examination at least monthly, of every scholar by qualified inspectors under the control of the medical inspector of the school. The teachers could easily learn to assist the medical officer and should perform most of the detail work necessary for the proper examination and rating of their own scholars. This aspect of the matter will be taken up again further along in this paper.

Cards should be made out in duplicate, scoring the child, as dairies are now scored. Height, weight, lung capacity, strength, etc., etc., should be recorded and compared to the normal for the scholar's age. The condition of the eyes, teeth, tonsils, throat, hands, feet, and genital organs should be noted. Special examination should be made for rupture, undescended testicle, scoliosis, enlarged veins, enlarged thymus and thyroid glands and abnormal conditions of the lymphatic glands, spleen, and liver. The state of the tongue, conjunctivæ, complexion and skin generally, should be noted. Also the care of the body, whether clean or dirty, whether the finger and toe nails are clean and well trimmed, whether hair and scalp are clean and properly cared for. Bow-legs, knock-knees, enlarged joints, flat feet, or any malformation or disease of the bones should also be especially noted. Credit should be given for everything normal, and extra marks might be allowed for especially good points, like a perfect denture, marked cleanliness of body, etc., while certain specified reductions in the marks should be made for congenital malformations such as club-foot, flat-chest, strabismus, hunch-back, etc.

One of the aforementioned cards should be sent to the parent or guardian and one filed in a card-index to be consulted at the next examination. Stooping shoulders, spinal curvature, corns, eruptions, ringworm, itch, decayed teeth, pediculosis, spongy gums, coated tongue, and other remedial conditions should be reported and, if reasonable efforts are not made to correct them, the child should be debarred from a rating at the next examination. This would endanger his chances in competing for the health and beauty prize, to be hereafter described. If especially good corrective work has been done, extra marks might be allowed.

This monthly rating should be continued until the child graduates from the primary or grammar school and at the close of each school year there should be an accounting. If the marks for physical rating for the year fall below a certain minimum the pupil should be debarred from promotion to the next grade in the school. If, however, the aggregate of credits exceeds the minimum, a medal for good physical condition should be presented to the child, and if the total credits reach a specified height, extra credits should be granted. The medal may be of some ordinary metal, as copper, or brass, but pretty enough to be attractive. Absence from school for sickness or otherwise should be noted in the summing up of the marks, and might affect the rating. The minimum in the lower grades, at least, should not be placed so high as to debar an average child, whose parents or guardians will make a serious effort to correct the defects noted.

A certificate should be awarded to each scholar who has received the required number of credit marks, and special note should be taken of all scholars whose record shows great improvement in physical conditions since the marking began. All the scholars who receive these certificates, and who are otherwise eligible, may enter the competition for the health prizes. These prizes shall be sufficient in number so that one may be given every year to that boy and that girl in the graduating class of every primary and grammar school in the city or town, where this plan shall be adopted, who shall pass the best physical examination and who shall present the best series of marks for physical rating for their entire course in the school. The grammar school prizes shall be $500 each in money, and a handsome medal (or certificate). One

shall be given to a boy and the other to a girl. Under the same conditions, two prizes of $50 each, shall be given to two primary school graduates.

Before a graduate of the grammar of primary school may compete for one of the health prizes certain conditions must be fulfilled: (1) Their marks for health and physical excellence must, in the aggregate, reach a high percentage, say eighty or ninety per centum, for their whole course in the primary or grammar school. (2) The candidate must have a mark in all the studies of the school course above the average marks given the entire school. (3) There must be nothing known against the candidate's habits or character either in or out of school. The boys must never have been detected in any flagrant violation of the rules of the school, or in any form of lying or deceit, or in the use of liquor, tobacco, or profane language, and the girl candidates must not have been reprimanded for any infraction of the rules of the school, for impertinence, nor any impropriety of conduct, wearing improper clothes, or treating their parents or teachers disrespectfully, or for deceit or idleness. In short, before permitting a scholar to compete for the prize each applicant must furnish a certificate from the principal of the school or schools, which he or she has attended, covering all the points mentioned.

The examination should be conducted as follows: Each candidate must be a member of the graduating class of the year in which the prize is given, and must show the health cards awarded him or her for every year of their entire course in the primary or grammar school. If part of this course was spent in any other school in the same town, and where the same rules are observed for marking the physical condition, a scholar who has changed from one primary or grammar school to another may present the cards and certificate awarded him in the school he first attended, and may be eligible for the prize to be awarded in the school where he graduates. He must have presented a request to be examined for the health prize at least a month before graduation.

There shall be for the town or city, appointed each year by the Superintendent of Education, the President of the Board of Education, and the Commissioner of Health, or the President of the Board of Health, an examining board, to be composed of the Superintendent of the Schools, the President of the Board of Education, and the Health Commissioner of the town or city, or in cities where there is no Health Commissioner, the President of the Board of Health; these shall be members of the board ex officio. Besides these there shall be at least eight members of the board. Of these three shall be men and three women, who shall be experts in physical training, and at least one of them shall be a male and one a female physician. In addition, there shall be two artists or sculptors of reputation members of the Board, one of whom shall be a man and one a woman.

Of the appointed members of the Board, at least two men and two women shall be non-residents of the town or city in which the examinations are to be held. All the appointed members shall be liberally paid for their services out of the school funds of the city or town.

The President of the Board of Education shall be the Chairman of the Board of Examiners. The Board shall select a clerk not one of their own members, and the Board of Education shall pay the clerk for his or her whole time, or as much thereof as the Board may require.

The Board shall submit the candidates properly certified to be eligible to a strict physical examination, not omitting the slightest detail. A crooked toe, or a broken tooth shall count against the applicant. The applicants of both sexes must give evidence of strength and endurance. They shall have their lung capacity, eyesight, hearing and sense of touch tested. They will be required to run, jump, lift weights, "chin" themselves, etc., care being taken to limit the tests to such as will not be injurious to children or young people of the age of those examined. In preparing for this examination the candidates for the prizes should be warned that in the bodily tests, grace, agility and precision of movement will be marked higher than mere physical strength. The boys and girls shall have entirely separate physical examinations by examiners of their own sex, who may be aided by extra examiners (to be called in if required), and plenty of time shall be taken for a careful and complete examination in every case. One-half of the marks necessary to win the prize shall be awarded to the scholar having the highest aggregate of health marks for the entire course in the schools which give the prize, and one-half for the highest mark as the result of the final physical test. In case two or more competitors shall come out exactly even, additional tests may be required before the prize shall be assigned, or if in the judgment of the Board it shall be advisable to do so, the prize may be divided. At the conclusion of the physical examination, a report on each applicant shall be submitted to the full Board of Examiners, who shall be prepared to name the successful competitors. A majority vote of the entire Board shall determine the prize winners. In awarding the prizes, the decision of the Board shall be final, and not subject to appeal. But the reasons for selecting or rejecting any applicant shall be recorded and may be divulged to the applicant or to his or her parents or guardian upon request.

The teachers themselves should all be required to undergo a severe physical examination before their appointment to teach and at least annually thereafter. For schools in the vicinity of New York City the recently established Life Extension Institute would no doubt gladly undertake the periodical examination of the public school teachers, and would recommend to them any alterations in their mode of life that might be necessary to conserve their health and efficiency. So far as known, Dr. Greenwood's plan as carried out in Blackburn, England (of which city Dr. Greenwood was, and probably is yet, health commissioner, as we would call him in New York), for enlisting the teachers actively in the health work of the public schools has never been tried in America. He however gave it a good trial in the Blackburn Schools, and speaks highly of the result. The plan was essentially to make "the teachers our first line of defence," especially those teaching in the lower grades. He established a course of lectures on personal and school hygiene for the teachers and gave an examination at the conclusion of the course. I believe that only those who wished to do so took the examination. But those who passed it creditably received a certificate that they were competent to teach the rudiments of school and personal hygiene and were allowed an increase in their salaries. According to Dr. Greenwood, their work in this direction was

satisfactory to him and a great source of satisfaction to the teachers themselves. Their school tasks were more interesting, and their own and their scholars' health was benefited by this innovation and by the simple sanitary regulations which they inaugurated for their own and their scholar's benefit.

Of course this scheme will probably fail in execution unless a full time medical director is engaged in every school. He or she must be an enthusiast for the combined physical and mental education of children and must be a specialist in that line of work. He must have control of, and be responsible for, the hygiene of the school-houses and of the school-rooms. He must prevent over-crowding and over-heating of the rooms and over-working of the scholars. He must superintend the examinations of the latter called for in the foregoing plan and must be responsible for the proper filing and accuracy of the score cards, and must know that the children and their parents are given proper directions for conserving their health, and for correcting and remedying any remedial defects noted in any of the cases. He must also be competent to supervise and superintend all the athletic sports and exercises of the scholars and must be particularly alert to prevent any injury to any pupil for improper or too strenuous exercises. He must see that every teacher and scholar gets the requisite exercise, and must instruct the former in the simple rules of personal and school hygiene and must see that these are enforced. In short, he must have such authority as is now given in civilized countries to naval and military surgeons, whose word in hygienic and sanitary matters can be contravened only by the commander-in-chief.

There is no reason why this plan should not be put in practice in any city. It would soon be followed by a decided improvement in the present rather anemic character of much of the teaching in the lower grades. Teachers would learn to look upon their small pupils as human beings with minds and bodies to cultivate—and not merely as receptacles into which "learning" is to be introduced. Furthermore, the teachers would find themselves so much stronger and better in body and mind that they would begin to feel more respect for themselves, and a more vital interest in their work.

Naturally this plan will take time for its development, and will doubtless meet with considerable opposition. Yet, I believe that it, or some modification of it, will prove entirely workable.

By the adoption of these health and physical excellence prizes, by instructing the teachers in the elements of school hygiene, and by enlisting everyone in the health and physical well-being contest, a great step toward better general health conditions will have been taken. Everybody interested in the school will be perforce drawn into the movement. The parents could scarcely fail to be deeply interested. Small leaflets should be printed and distributed throughout the town at the beginning and the close of each school year, calling attention to the prizes and the rules of the contest, and the child's monthly health card should be in every case transmitted to the parent promptly and attention called to any remedial defects in the child's health or habits. Health lectures to parents, with special reference to the winning of the health prizes, should be instituted and given by the school medical inspectors at least monthly through the school year.

The expense of the movement need not be great. Even if it were, the reward in the greatly increased interest in everything connected with health, hygiene and the bringing up of children would be of incalculable benefit to the schools, and to the community at large. If it did increase the taxes somewhat, the resulting benefit would be so obvious that no thoughtful person would think of finding fault with the scheme. The extra expense would be saved to the State many times over, by the resulting decrease in criminals, degenerates and imbeciles, and by the development of a higher and finer and more efficient average citizen and voter.

42 Church Street.

THE METHOD OF TRANSFUSION OF BLOOD TREATED WITH SODIUM CITRATE.

By G. A. RUECK, M.D.,

NEW YORK.

THE method of transfusion of citrated blood was first published by Hustin[1] of Brussels in April, 1914. R. Weil[2] of New York read his article on "Sodium Citrate in the Transfusion of Blood" before the New York Academy of Medicine December 17, 1914, in which he made no mention of Hustin's work.

In January, 1915, R. Lewisohn[3] of New York reported on a new method of blood transfusion, claiming the transfusion of blood treated with sodium citrate as his invention, but giving some credit to Hustin and Weil.

I myself[4] have claimed priority in an article in the MEDICAL RECORD, February 27, 1915, and at the meeting of the Bronx County Medical Association, March 17, 1915.

I owe it to myself and to the profession to recapitulate the reasons for my claim and to publish this paper as a continuation of my preliminary report. The impetus to my experiments was given by a case of purpura hæmorrhagica in a woman referred to me December 12, 1913, by Dr. Clarence H. Smith. I treated this patient with hypodermic injections of human blood serum obtained from her husband and some male friends. December 31, 1913, and January 2, 1914, she received each time a transfusion of one quart of her mother's blood by Dr. F. L. Lindeman. His method, which is a modification of Von Ziemssen's method, made a great impression upon me, but it seemed to me beyond the reach of the general practitioner on account of its difficult technique and great expense.

Since 1912 I had used in my work as assistant pathologist and bacteriologist to St. Francis Hospital a 2 per cent. solution of sodium citrate to keep the red blood cells in their normal condition and to prevent coagulation of the sheep's blood which I got from the slaughter house for the Wassermann test. From my experience with this I conceived the idea of keeping the blood of a human donor liquid by means of a sodium citrate solution and to inject this mixture intravenously into a recipient. My experiments were the following:

EXPERIMENT I.—January 5, 1914. A gray female rabbit, weighing 2,053 grams and lying head downward on an inclined warming stage devised by me was bled from the post-auricular vein, 40 c.c. of its blood being collected in 10 c.c. of normal saline solution to which 2 per cent. of sodium citrate had been added. This blood was kept in the ice box. Then the jugular vein was resected. A small cannula connected by means of rubber tubing to a glass funnel tube was introduced into the jugu-

lar vein. The rabbit was now in a horizontal position on the warming stage. Into the slightly raised funnel tube 40 c.c. of sodium citrate blood of another rabbit was poured. This second rabbit, "the donor," had been killed 48 hours ago. Its blood had been kept in the ice box 48 hours and was warmed on a water bath to 37½° C. before the transfusion was started. The rabbit died 6 days after the transfusion.

EXPERIMENT II.—January 6, 1914. A fox colored female rabbit, weighing 2,038 grams was bled from the post-auricular vein, 40 c.c. of its blood being collected in 10 c.c. of a normal saline solution containing 2 per cent. sodium citrate and was kept in the ice box for later use. Then the rabbit received a transfusion into the jugular vein of 40 c.c. of the sodium citrate blood obtained from rabbit No. I which had been in the ice box for 24 hours. The rabbit lived.

EXPERIMENT III.—January 7, 1914. A gray male rabbit weighing 1,850 grams, was put on the warming stage, and bled from the left post-auricular vein, 40 c.c. of its blood being collected in 10 c.c. of 2 per cent. sodium citrate in normal saline solution. Then the rabbit received into the right post-auricular vein by means of a large syringe an injection of 30 c.c. of blood obtained from rabbit II which had been kept in the ice box 18 hours. The rabbit lived. These experiments were encouraging.

Rabbits are sensitive animals, and when I saw they could be transfused with a large quantity of blood taken from another member of the same species and treated with sodium citrate I was sure that the same operation could be done on the human being. This fact I had determined through my animal experiments in January, 1914. I related my findings to members of the medical and surgical staff of St. Francis Hospital in January and spring of 1914; that is to say, before any publication of the sodium citrate method was made, and that is the reason why I claim priority for my work. If, however, the priority of work is only determined by the date on which an article appears in a medical journal, or by the date on which an article is received for publication or presented to a medical society keeping a record of its proceedings, the priority of the method of transfusion of blood treated with sodium citrate belongs only to Hustin of Brussels, who injected into dogs and into one man homogeneous blood treated with a solution of glucose and sodium citrate.

This method of transfusion of citrated blood is still in its infancy and its value must be demonstrated repeatedly through the report of cases treated by it in order to improve the method if necessary and to make its application general in whatever cases it is indicated. That is the reason for the report of the following cases and of the method used by me:

CASE I.—*Septicemia Complicating Acute Otitis Media in a Seventeen Months Old Child.* This case was reported upon, from the standpoint of an otologist, by Dr. C. H. Smith[5] to the Bronx County Medical Society, October 22, 1915. Frank R., 17 months old, bottle fed, had been ill since May 22, 1915, with influenza, bronchopneumonia, tonsilitis, and double acute otitis media. A myringotomy on each ear had been performed on May 28, since which time the discharge from the ears had steadily diminished. The great toe of his right foot showed an abscess on June 1. On June 11, an abscess formed on the outer aspect of the left elbow. The temperature between May 27 and June 16 varied from 101° to 105° F. June 16 the temperature was 103° F., the pulse 148 and hardly perceptible, the respiration 68, and the child looked extremely ill. The child was admitted to the Bronx Eye and Ear Infirmary and June 17, a simple mastoid operation was performed on the left side by Dr. C. H. Smith. The mastoid showed "no pathological changes." The abscess over the left elbow was opened and drained. The child had a septic temperature and over a dozen superficial abscesses in various parts of the body during the next couple days. During a second operation the left sigmoid sinus was exposed and incised and a large organized blood clot with flakes of pus throughout was found and curetted out. The clot extended into the lateral sinus and was curetted out for a distance of 2½ inches. No hemorrhage occurred. The condition of the child became desperate and the operation was discontinued. The next day the left internal jugular vein was exposed and ligated above the facial branch, and several enlarged and infected glands were removed at the same time. June 20, 1915, I was called by Dr. Smith to do a blood transfusion on the patient. I found the little boy awake, but listless. He was very pale and had a septic appearance and odor. His pulse was imperceptible and his respiration rapid and shallow. The child was, according to my opinion, in a hopeless condition and a blood transfusion at such a late date seemed to me useless. Dr. Smith acknowledged too that there was no hope for the boy unless a miracle might save him and that this miracle might be brought about through a transfusion of blood. I collected 200 c.c. of the blood of the child's father into an Erlenmeyer flask containing 50 c.c. of N_2 saline solution and 1 per cent. sodium citrate and mixed it thoroughly. Then I resected the right cephalic vein of the boy and transfused him with 200 c.c. of the medicated blood. The pulse improved during and after the transfusion, the red color returned to his lips and cheeks, his respiration became slow and quiet and he grabbed eagerly for the bottle with milk and oatmeal jelly which the nurse brought him. After the blood transfusion he slept 7 hours and after his sleep he took 6 to 8 ounces of milk regularly every 3 hours. His condition was improving continuously. June 22 I gave him a second transfusion of 220 c.c. of citrated blood from the father into the same vein. The little boy got well and I ascribe his recovery entirely to the transfusion.

CASE II.—Lillian D., 24 years old, single, born in U. S., of Irish parents, clerk. Used to sleep in one bed with a sister who suffered with pulmonary tuberculosis. Diagnosis of her family physician was: Tuberculous ulcers of ileum near cecum, causing intestinal hemorrhage. After having treated the patient for some time with hypodermic injections of horse serum, Dr. F. called me July 10, 1915, to do a blood transfusion on this patient. He thought the patient would not live longer than six hours. She had lost 15 pounds in weight within two weeks. On July 10 the stools were tarry. The temperature was normal, the pulse 150, the respiration 40 to 50. She was very anemic, had air hunger, nausea, several attacks of syncope, and a slight pain in the abdomen, especially in the region of the ileocecal valve.

I drew from a 29 year old brother of the patient 750 c.c. and from a 20 year old brother 400 c.c. of blood, mixed each blood separately with a solution of 1 per cent. sodium citrate and 0.4 per cent. sodium chloride in distilled water in the proportion of 4 parts of blood to 1 part of solution. Into the resected right median basilic vein of the patient I injected in all 1,150 c.c. citrated blood. After the transfusion the pulse was 92 and regular, the temperature normal, the respirations quiet, deep, and at the rate of 22 per minute. The red color returned to cheeks and lips. She felt cold and had to be warmed by hot water bottles and warm blankets. The following night and the next 2 days her condition was excellent. The third day she felt again "sick in her stomach" and looked pale. It was planned to give a second blood transfusion in the morning of the fourth day, but before this operation could be performed the patient had a profuse hemmorrhage from the bowels and died.

This case illustrates that a blood transfusion is the best means of arresting intestinal hemorrhage and that it should be repeated early if symptoms of hemorrhage reappear, as there is hope that the hemorrhage might be arrested if the lesion is not too extensive.

CASE III.—Emilie K., 16 years old, born in U. S., of German descent, single, a shipping clerk. She had whooping cough at 3, diphtheria at 6, measles at 3 and

7, tonsillitis every year, bronchitis at 7. Menstruation began at 14½, regular and normal. For the last 3 weeks patient has had pain in the throat on swallowing, especially in the morning, and a frontal, dull, continuous headache lasting all day and occurring once or twice a week. Appetite and sleep good. Patient is anemic with flabby muscles. Heart and lungs negative. Tonsils fibrous, hard. Adenoids present. She weighs 108 lbs. Hemoglobin and coagulation time of the blood were not determined.

July 27, 1915, at 9 o'clock A.M., under general anesthesia in my office, resection of both tonsils by the snare method and adenectomy were performed. Duration of anesthesia and operation 30 minutes. The patient seemed to be in a good condition after the operation, but there was a constant oozing of blood from the denuded surfaces. My attention was called to this by the second vomitus of blood which was rather abundant. Towels saturated with ice-cold water were applied to face and neck. Gauze saturated with adrenalin chloride, 1:1000 sol., was pressed continuously with two sponge-holders against both tonsillar beds. The bleeding stopped for only about half an hour. The bleeding from the roof of the pharynx was also alarming and could not be controlled by a gauze packing held in position by heavy silk strands which were pulled through the nares by means of a catheter. The pulse was at noon 102, at 3 P.M. 114, at 4 P.M. 120 and at 5 p. m. 130. At this time the pulse was very weak and hardly perceptible. The face was ghastly pale and the eyes glassy. The patient got drowsy, could not hear well, and was nauseated. The bleeding became more profuse. The vomitus (blood and gastric juice) measured in all nearly 2 quarts. The patient was now in a most dangerous condition. The last resort to save the girl seemed to me a blood transfusion and the mother, who had watched all my endeavors to control the hemorrhage, was willing to give her own blood for her daughter. I collected of the mother's blood 350 c.c. into each of 2 Erlenmeyer flasks containing each 100 c.c. of a 2 per cent. sodium citrate solution. Into the resected left basilic vein of the patient I injected these 900 c.c. of citrated maternal blood and in addition 225 c.c. of pure 2 per cent. sodium citrate solution. During the process of transfusion the patient's cheeks and lips turned gradually red, the pulse became slower, 104 per minute, was regular and of good volume and tension; *the bleeding stopped.* After the transfusion was completed the patient "felt fine" and walked without help to her bed. There was no bleeding during the night and no hematuria. At 8 o'clock the next morning the pulse was 100, the temperature normal, the respiration 20. The patient ate a hearty breakfast and went home with her mother. September 17, 1915. Patient weighed 114 pounds. Her mucous membranes looked normal, the muscular tone had wonderfully improved and the girl was well. January 20, 1916, patient weighed 117 pounds; March 19, 125 pounds.

CASE IV.—Mrs. B. W. J., 25 years old, German, in U. S. 10 years, married. Family history negative. She had scarlatina and diphtheria at 7; measles, whooping cough, and mumps at 4, a second attack of mumps lasting two months at 22. Three attacks of sore throat in 1909 and 1910, each attack lasting 10 to 14 days. Peritonsillar abscess in 1909. May, 1915, acute purulent otitis media; myringotomy; duration one week. Seven attacks of appendicitis between the ages of 9 and 14. The seventh attack was very severe and was complicated by a local peritonitis; yet there was no operation performed and the patient made apparently a complete recovery. Menstruation began at 15½ and was always normal when present. The woman had had 3 pregnancies with 2 normal labors and 1 abortion in the third month. First child died at the age of 7 weeks; second child living and well and 14 months old.

On August 14, 1911, patient gave birth to her first child. A few days after her confinement she began to have an attack of hay-fever which lasted until the first week in October. It was at first like a cold in her head. She sneezed frequently and had sore and itching eyes. The eyelids were swollen in the morning. Three weeks after the onset of this illness her throat began to be dry and hoarse. She had a heavy feeling in the chest. Breathing became difficult and was accompanied by a wheezing and rattling in the upper part of the chest. Quite often she had to gasp for breath, to sit down when outdoors or to run to the open window when indoors. In the middle of September she started to cough and to expectorate much mucus, which sometimes was blood-streaked. The cough lasted until October. It seemed to be the finishing up of the hay-fever and was the worst part of it. The coughing spells lasted 10 to 15 minutes with about 5 minutes interval. The nose was always clogged up and the sleep was disturbed through the cough. Patient had chills and fever and a cold perspiration. The tongue was dry and swollen. There was loss of taste and appetite with loss of weight and strength. Patient lived on kumys, zoolak, milk and raw eggs. In 1912 the attack of hay-fever lasted from August 14 to October 1. Patient was on an ocean yacht. Every 1 to 2 weeks she went ashore for 2 to 3 days. When on land she had a bad attack of hay-fever which gradually improved after returning to the yacht. The year 1913 was the worst of all. The patient was in Spring Lake. Her attack of hay-fever lasted from the middle of August until the frost came in November. Next to the patient's cottage was a field of golden rod. The fever became most severe when the golden rod began to blossom. Then the field was mowed down, but the hay-fever kept on just the same. Four doctors in town and one doctor in New York City tried their art on the patient without much success. In 1914 the patient was in Belle Harbor from June 6 to Labor Day and afterwards in New York City. The attack of hay-fever lasted from August 15 to October 15. The cough started in the middle of September, lasted 4 weeks and was very severe. In 1915 the patient stayed in New York City. The hay-fever started August 20 and cough and asthma were very severe from the start. Her chest was a regular music box. She did not respond to menthol sprays, belladonna vapors, hot baths and a regulated diet, and was anemic.

September 9, 1915, I performed a blood transfusion on the patient in my office and was assisted by Dr. M. B. S. The patient was so nervous that I had to apply general anesthesia in order to introduce the needle. I injected 500 c.c. of blood from her sister mixed with a 2 per cent. sodium citrate solution into the median cephalic vein of her right arm. She stayed in my house and coughed much during the night. The windows were open and the west wind blowing over fields of golden rod produced severe attacks of asthma. September 10 at 2 o'clock A. M., the patient received ½ gr. of codeine phosphate hypodermically and slept until 6 A. M. Then she had another coughing spell. She received a second dose of ½ gr. of codeine phosphate and 1/100 gr. of atropine sulphate. In the afternoon, the chest was perfectly clear from râles. In the evening she ate a heavy beefsteak supper and felt better after it. On September 11, there was no cough except one slight attack in the afternoon. The urine was dark in the morning and light and clear in the afternoon. The chest was perfectly clear from rattles and the patient had no difficulty in breathing. She stayed in bed all day. The following day there was a few light coughing spells in the morning when getting up, none when in bed. Patient was free from cough and asthma afterwards.

I wished to do a second blood transfusion on this patient, but was unable to procure the necessary blood for her. Nevertheless the result of the transfusion was very gratifying. It arrested the hay-fever, and 24 hours after the transfusion the patient was practically cured, the disease having been shortened 5½ weeks to judge from the average duration of the previous attacks. This is, as far as I know, the first case of hay-fever successfully treated by this new method. I should have waited with its publication until next fall, until I had convinced myself that there would be no relapse, but this early report may stimulate others to apply this method next fall in their cases of hay-fever and may save many unfortunates a great deal of suffering. Therefore it is reported at this time.

Preparation of the Sodium Citrate Solution. 1.—In my animal experiments and in the transfusion of one man' I used a normal saline solution containing 2 per cent. sodium citrate.

2.—In order to determine experimentally the least amount of sodium citrate necessary to keep the blood liquid I put into each of three ½ pint

fruit jars which I sent repeatedly to the slaughter house a certain quantity of a solution containing a certain percentage of sodium chloride and sodium citrate and had the jars filled with freshly drawn sheep's blood. I found that 1 part of a solution of 0.4 per cent. NaCl and 1 per cent. sodium citrate when mixed with 4 parts of blood would keep the blood liquid. I have used this solution in my first blood transfusions on man.

3.—In order to be safe and not to get a clot, even if the blood is not much shaken when drawn, I have returned to the 2 per cent. sodium citrate solution, omitting the sodium chloride entirely.

I have always several papers (at least 10), each containing 20 grams of sodium citrate, in my office and keep them in a glass-stoppered bottle. To prepare the sodium citrate solution I put the contents of one paper, 20 grams of sodium citrate, into a Florence flask of a capacity of 1000 c.c. and fill the body of the flask with distilled water, shaking the flask well when half filled and again when completely filled. Then I divide the sodium citrate solution into Erlenmeyer flasks. Into each flask I pour of the sodium citrate solution 1/5 of the capacity of the flask. Into an Erlenmeyer flask of a capacity of 100 c.c. I pour 20 c.c. of the sodium citrate solution; into one of 250 c.c. I pour 50 c.c. of the solution; and into one of 500 c.c. I pour 100 c.c. of the solution. The Erlenmeyer flasks containing the sodium citrate solution are closed by cotton stoppers and sterilized in an autoclave at 15 lb. pressure for 30 minutes, or in an Arnold sterilizer on 3 successive days, each time for 30 minutes. I have always 2 or 3 extra Florence flasks with a sterile 2 per cent. sodium citrate solution ready for emergency.

Method of Taking the Blood.—The arm of the donor is gently massaged upwards at the place where the selected vein, usually the median basilic or the median cephalic vein, is situated. Through massage the veins become more prominent. Then the arm is painted with tincture of iodine. After 5 minutes the tincture of iodine stain is removed by a mixture of 3 parts of ethyl alcohol and 1 part of strong ammonia water. A tourniquet is applied to the arm, 4 to 5 inches above the place where the vein shall be tapped. It stays on as long as the blood is drawn. I use a small trochar (gage 12½) instead of a needle in order to shorten the process of taking the blood and in order to avoid too long a shaking of the blood in the sodium citrate solution, which procedure would be necessary in case a small needle or cannula would be used. I select the size of the Erlenmeyer flasks containing sodium citrate solution according to the amount of blood I am going to take. Suppose I need 200 c.c. of citrated blood for a transfusion, then I use 2 to 3 Erlenmeyer flasks of a capacity of 100 c.c. In case of hemorrhage, when I expect to transfuse 1,000 c.c., I collect the blood into 2 flasks, each of 500 c.c. and if possible into a third one of 250 c.c. capacity. The free end of the trochar is held into the mouth of the flask. The flask is constantly shaken in order to bring all the blood into contact with the sodium citrate solution and to avoid its coagulation. It is kept on a slant as long as the blood flows into it in order to avoid the falling of bacteria into the flask from above. There is no danger that bacteria will enter the mouth of the flask from the direction of the trochar, as the blood in the flask is rising and driving the air out of the flask. There is a stream of air out of but not into the flask. Since no air enters the flask no dust and bacteria can be carried into it by a current of air. As soon as the flask is filled with blood it is replaced by an empty one. It is stoppered and shaken from side to side, not up and down. The flasks with the blood are kept at room temperature for immediate use or put into the ice box when the transfusion is going to be done later, in which case the citrated blood has to be warmed to 37.5° C. before the transfusion.

It is essential to be sure that there is no clot in the blood mixture. Should there be a small clot, it must be removed from the blood mixture by decanting the blood into an empty flask. If a large clot forms, as it happened to me once with a 250 c.c. Erlenmeyer flask when I collected blood into a 1 per cent. sodium citrate and 0.4 per cent. sodium chloride solution which was not sufficiently shaken by the assisting nurse, the flask of blood must be discarded.

The Recipient.—It is best to keep the patient or recipient in another room when the blood is taken from the donor in order to save the patient from excitement and shock. He is in bed or on the operating table and in a recumbent position. The arm is prepared like that of the donor. A tourniquet is applied to the arm before the needle is introduced.

The apparatus which I use for transfusion is a Kaliski apparatus. One of its cylinders is filled with citrated blood, the other with 2 per cent. sodium citrate water. The sodium citrate water is used for testing the working of the apparatus and for driving the blood contained in the rubber tubes into the vein at the end of the transfusion. The open ends of the cylinders are covered with pieces of sterile gauze. A Kaliski needle is introduced into the vein and connected with the tubing of the apparatus as soon as it is shown by the flow of blood from the needle that the needle is correctly introduced into the vein. In case the vein is difficult to find through the skin I make after one unsuccessful attempt to puncture it a small incision into the arm, lay the vein bare, put an artery clamp under it, push the needle into the vein just where it is supported by the artery clamp, connect the properly introduced needle with the tubing of the apparatus and have the tourniquet removed.

The blood flows slowly into the vein, the graduation of the cylinder showing the amount. The transfusion has to be discontinued (1) when the patient tells you that he "feels to be full," or (2) when in the absence of this remark the patient's pulse returns to its normal rate, volume, and tension.

The transfusion being completed, the needle is extracted and the arm bandaged. In case of resection of the vein the needle is withdrawn from the vein, the supporting clamp removed, the skin sutured and the arm bandaged. The patient stays in bed, is covered warm and receives a warming bottle to his feet.

The addition of sodium citrate to the blood seems to be objectionable to many otherwise progressive physicians. "What is the use of introducing into the blood system a mixture of sodium citrate solution and blood when we want pure blood?" they say. The answer to that is, "If you can do it, transfuse pure blood, if you cannot, transfuse your patient with citrated blood." The sodium citrate method is in my estimation not an inferior substitute to the cannula method but is equal to it in its results and superior to it in the

readiness with which it can be applied. The sodium citrate solution mixed with human blood in the proportion of 1:4 or even 1:3, does not bring about an alteration of the red and white cells and of the serum. The protecting forces of the blood are not diminished. Of course changes occur in the mixture of sodium citrate solution and blood if it is kept too long in the ice box (several days). I prefer to perform the transfusion as soon as possible after the blood has been drawn, avoiding timid haste.

For a second and third transfusion I prefer to draw and prepare the blood freshly. The quantity of sodium citrate used for transfusion is not large enough to be toxic. The danger of contamination is nil if the same precautions are taken which a bacteriologist has to observe when he makes blood cultures. The temporary polyuria occurring in some patients after the transfusion with citrated blood is in my opinion no objectionable symptom.

The determination of hemoglobin before the transfusion and at certain intervals after it is important in chronic anemias, demonstrating a gradual improvement or, after an improvement, a return to the old condition, being thus an indicator for the repetition of a transfusion. It can be omitted in emergency cases and in cases of acute infections.

The Donor.—I have used the nearest relatives for giving the blood for my transfusions, the father giving the blood to the son, the brothers to the sister, the mother to the daughter, the sister to the sister. These donors were healthy individuals. There was no time for making tests for hemolysis, agglutination and Wassermann reaction and for examining the blood for malaria. The results were nevertheless good.

Naturally, when strangers are used as donors, they should be healthy and vigorous individuals and their blood should be examined for malaria and tested as to its compatibility with that of the recipient. The Wassermann test is very important and should be made with the donor's blood if there is any doubt in case of relatives. It should always be made in case the donor is a stranger.

Conclusion.—A physician should try to acquire the technique of the Von Ziemssen indirect syringe cannula method as modified by Lindeman and others and apply it when possible and indicated, especially when he intends to make a specialty of blood transfusion.

For the general practitioner, however, the sodium citrate method, being simpler, is the method of choice.

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Medical Preparedness in War. — Lieutenant-Colonel Fisher gives as an example of this the fact that when a division was ordered to concentrate at San Antonio in 1911, the full equipment for 20,000 men was in the railroad yards at San Antonio within less than eight days after the instructions for the shipment were telegraphed from the surgeon general's office.—*The Military Surgeon.*

POLYCYTHEMIA VERA.

BY G. A. FRIEDMAN, M.D.,

NEW YORK.

ATTENDING PHYSICIAN IN DIGESTIVE DISEASES, VANDERBILT CLINIC; GASTROENTEROLOGIST, GOUVERNEUR HOSPITAL.

POLYCYTHEMIA or erythremia is a peculiar and a distinctive symptom-complex which first became known in 1892 (Vaquez[1]). However, the importance of this condition was not realized until 1903, when Osler[2] collected and summarized the details of nine cases.

Polycythemia vera, commonly called Vaquez-Osler's disease, is marked by a persistent increase of erythrocytes, of an increased percentage of hemoglobin, of splenomegaly, and of redness or cyanosis of the face. The affection is further characterized by headache, vertigo, attacks of vomiting, and slight albuminuria with casts. Blood may occasionally be present in the sputum, vomitus, or stools. The malady occurs in both sexes and shows its preference for individuals in the fifth decade of life.

The average duration of the illness according to Osler[3] is from six to eight years. The disease does not respond to therapeutic measures, although it is said by some that good temporary results have been obtained by the application of Roentgen rays to the spleen and to the long bones.

There are in all about twenty-three necropsy reports. In the majority of these cases no deviation from the normal histology of the spleen could be detected; in three cases, however, splenic tuberculosis was found, and in two cases vascularity and congestion of the spleen. But the most constant findings at these autopsies were, first, true plethora (since all parts of the body were engorged), and, secondly, the transformation of bone marrow from the yellow fatty to the vivid purple variety, with erythroblastic and leucoblastic hyperplasia. It is believed by Widal (Osler[3]) that through the loss of splenic function the bone marrow becomes abnormally stimulated so that hyperplasia and polycythemia result.

Notwithstanding the fact that the disease in question in its typical form is characterized by a definite group of findings: polycythemia, splenic enlargement, and cyanosis of the face, yet the affection, as I have become convinced lately, is not recognized by the practitioner at large. It seems to me, therefore, that the report of an additional case may be of value.

Mrs. D. M., Russian Jewess, forty-six, was first seen by me April 22, 1915, at the Vanderbilt Clinic, to which she was referred by Dr. Reigrod.

Past History: Denies ordinary diseases of childhood, but definitely remembers having had typhoid fever when very young. Since then has been in perfect health until about four years ago when she fell from a wagon and struck her left side. Immediately after the accident and for several weeks thereafter the patient experienced pain in left lumbar region. When the pain disappeared, she became extremely nervous and then sought the advice of a physician. He curetted the uterus, though she had not suffered at any time from uterine hemorrhages or painful menstruation. Patient has three healthy children. Never had any miscarriages and denies syphilis by name and symptoms.

On the third month following the operation she began to complain of extreme weakness, palpitation of the heart, and dizziness, these symptoms being especially marked during her menstrual flow so that she was compelled to stay in bed during her periods. But the menstruation itself was characterized neither by a profuse bloody discharge nor by pain. During the menses her hands would become blue and if she attempted to sit she felt as if "her heart were going to pieces."

Family history is negative. Appetite good. Bowels somewhat constipated. She uses tea and coffee moderately, but takes no liquors. Micturition normal.

Present Illness: The above symptoms have recently become aggravated, but the patient noticed several months ago that the dizziness and palpitation of the heart were relieved temporarily by partaking of food. This relief, which follows almost immediately, has caused an increase in her intake of food, though her appetite has actually decreased. During the last few months she has become obstinately constipated. Her face becomes frequently flushed and especially so when she has not had a bowel movement for several days. Vomits occasionally but has never noticed blood in the vomitus. Lately has had continuous frontal and occipital headaches, which she could not relieve by any measure. She also has a constant sensation of pressure in the left hypochondrium and a sticking pain in the lower extremities. Has chilly sensations, but no fever or sweats. She has lost 38 pounds during past four years.

Findings on physical examination: Patient is well developed and well nourished. The face, especially the nose and cheeks, is of a brick red color. The lips are decidedly blue. The skin over the rest of the body is dry. The pharynx is red. Hands and feet are cold. Superficial lymphnodes are not palpable. Eyes normal, except for a slight dilatation of retinal veins. Lungs normal. Heart sounds clear, no dilatation to right or left. Pulse, 84. Blood pressure, 130 mm.hg. Temperature, 98.8° F. Liver border not palpable. Spleen palpable and extends 4 inches below the costal margin, reaching almost the level of the navel; its surface is smooth and not tender. The uterus is slightly retroverted, adnexa normal; no leucorrhea. Urine examined repeatedly showed the same findings; namely, traces of albumin, excess in indican; sugar, bile, urobilin absent. In the sediment there are a few hyaline casts.

Gastric analysis one hour after test breakfast: 60c.c. of well digested food obtained; free MCl, 54; total acidity, 82. No residue of food on morning after test supper.

Date	Hemoglobin, Per Cent	Erythrocytes	Leucocytes	Polynuclears Per Cent	Lymphocytes, Per Cent	Large Mononuclears, Per Cent	Eosinophiles, Per Cent	Basophiles, Per Cent	Transitional Lymphocytes, Per Cent
April 23	134	9,410,000	7,000	84	10	1	2	1 5	1 5
April 24....	138	10,240,000	23,000	85.5	10 5	0 5	2	1 0	1.5
May 29 .	135	10,400,000	19,000	88	8	0.5	1	1	1 5

No abnormal cells, no *Plasmodium malariæ*. The determination of hemoglobin was made by the Sahli method. For blood films the Jenner stain was used. In the differentiation of the leucocytes 400 cells were counted. The relative increase of polymorphonuclears was marked even on the day when the absolute number of leucocytes was normal.

Diagnosis: The persistent findings of polycythemia, of splenic enlargement, and of marked redness of the face with cyanosis of the lips made the diagnosis of Vaquez-Osler's disease certain.

Treatment: Treatment was begun with arsenic (Turck[4]), but was soon discontinued for patient began to complain of an increase in her dizziness. Thyroid tablets (0.1) (Münzer[5]) twice daily were stopped after five days on account of vertigo, an increase in the palpitation of heart, and restlessness. Patient refused to enter a hospital and therefore venesection could not be tried. Carlsbad salt before breakfast has relieved the patient somewhat, perhaps by counteracting the hyperchlorhydria. In May and in June *x*-ray treatment was given (Dr. S. Hirsch).

The following table gives the results of blood examinations made while under *x*-ray treatment.

Date	Hemoglobin, Per Cent	Erythrocytes	Leucocytes	Polynuclear, Per Cent	Lymphocytes, Per Cent	Large Mononuclear, Per Cent	Eosinophiles, Per Cent	Basophiles, Per Cent	Transitional, Per Cent
May 16	120	10,000,000	16,200	90.5	6	0	2	0	1.5
May 27.....	118	9,880,000	13,000	89.5	12.5	0 5	1 5	0	1
June 25.....	124	10,800,000	13,200	86	10	0.5	1	0 5	2

From the later bloodfindings it is evident that there was no change during the application of Roentgen rays. However, the determination of the hemoglobin showed lower values. The spleen did not diminish in size. But one must admit that the general condition has markedly improved: dizziness and vertigo have almost entirely disappeared and the appetite has somewhat improved. From the end of July no further observations were made as the patient did not report.

Aldrich and Crumer[6] tried *x*-ray treatment in one case with very good results. Lucas[7] refers to two cases in which the application of Roentgen rays to the spleen was of benefit. In six other cases, however, this treatment, he points out, was unsuccessful.

It is not necessary for me to analyze the cases in the literature, as the paper of Engelbach and Brown[8] contains an excellent bibliography on this subject up to 1906. Lucas in his monograph gives an analysis of 149 cases from 1892 to 1912. He rightly states that polycythemia vera is not by any means as uncommon as it was at first supposed.

The etiology is still unknown. There is a distinct history of trauma in this case. It will be remembered that the patient fell from a wagon and definitely dates the onset from this fall. Whether injury was an inciting factor or not is doubtful. Watson[9] refers to two cases of polycythemia vera where trauma to the bones was present.

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123 East Ninety-fifth Street.

THE SIGNIFICANCE OF HEMORRHOIDS.

By ARNOLD H. MAY, M.D.,

BUFFALO, N. Y.

In view of the modern conception of disease it is no longer feasible to look upon hemorrhoids as a local condition. Viewed from the prophylactic side of medicine, hemorrhoids must assume a more important position, as they are seen to be important factors in the etiology of disease. Ascribing this importance to them will tend to prevent a host of diseases for which they may be responsible.

A glance at the anatomy of the anorectal region will show the venous drainage to be accomplished by the superior hemorrhoidal vein, which is a branch of the inferior mesenteric vein, finally draining into the portal system, and by the middle and inferior hemorrhoidal veins which drain into the systemic circulation. Anatomically, then, the veins from this area drain into both the visceral and systemic circulation, thus bringing the liver into relationship with this area. The lymphatics of the rectum drain into the preaortic nodes.

Hemorrhoids are dilatations of the hemorrhoidal veins produced by a variety of causes. Anatomically they are divided into external and internal. They are covered by epithelium. Because of their position they are constantly subjected to irritation from advancing feces, and excoriation of epithelium may occur. Local hemorrhages are frequent, and through such factors a prolapse, thrombosis, infection, ulceration, or even gangrene may occur. Thus by this process vascular channels and the lymph spaces are opened, and in contact with more or less putrid feces may be the source of an infection.

In disease of the area, where there is much epithelial denudation as where ulceration or gangrene has occurred, the bacteria present may gain entrance into either the visceral or the systemic venous circulation. The bacteria present in this region are numerous; even more abundant here than in the buccal cavity, and in as great variety. Diseases of the oral cavity such as alveolar abscess, pyorrhea alveolaris, as well as tonsillar disease have been looked upon as prolific sources of disease elsewhere, such as cardiac disease, etc. Similarly bacteria in the anorectal region, in diseased conditions of this area where the epithelial barriers are destroyed, and the resistance of the individual lowered, may reasonably, upon entrance to the system, excite a pathology characteristic of the specific infection. Especially is this possible in hemorrhoids when it is remembered that a depletion of the system often occurs by severe hemorrhages, giving rise to a secondary anemia, with a consequent diminution in resistance. It is manifest that feces in contact with abraded, bleeding surfaces presents the elements essential for possible infection. Animals inoculated with bacteria from the anal region, undergo the disease process characteristic of the specific injection. Autoinoculation in humans may occur in the same manner. Fistula in ano and other anorectal conditions have long been considered etiological factors in disease. Surgical interference in the former, when of tuberculous origin, may give rise to tuberculous infection or when already existing to an accentuation of the process. Frequency of infection following hemorrhoids must depend upon individual variations in resistance. Obviously many individuals suffering from hemorrhoids will not acquire a general infection, just as we see that cardiac disease will not invariably follow a tonsillar abscess.

What diseases then may owe their origin to hemorrhoids? Anatomically it has been shown a direct condition exists between the anovertal region and the liver. Particularly in the case of internal hemorrhoids injection may pass, when the superior hemorrhoidal radicles are affected, through the inferior mesenteric vein to the portal system, and hence to the liver. The organisms gaining entrance to the biliary system may excite inflammation of the biliary ducts, cholangitis; and the infected bile likewise in the gall bladder may produce a cholycystitis. Cholelithiasis may also occur, the bacteria acting as nuclei, or causing a lithogenous catarrh. Appendicitis, intestinal toxemia, or any primary intestinal lesion may operate in the same manner. Streptococci-staphylococci, pneumococci, colon and typhoid bacilli have been frequently found in the bile. The typhoid bacillus is a common source of biliary infection in typhoid fever. In fact the bile seems a peculiarly favorable habitat for microorganisms. The infected bile is discharged into the duodenum, and here may excite a duodenitis or an ulcer. La Rocque believes that the bacteria responsible for duodenal ulcer reach the duodenum from some pathological area of the abdomen drained by the portal veins. Hemorrhoids may possibly be such a source. Again the organisms from this source reaching the systemic circulation may give rise to a variety of conditions dependent upon embolic phenomena. Endocarditis and its sequelæ are only one of the possibilities. Organisms from this area may, like organisms from the buccal cavity, be potent factors in disease production.

A recent case which illustrated the possibility of hemorrhoids playing an important rôle in the etiology of disease was presented by a female patient who suffered from hemorrhoids and at the same time was subject to periodic attacks of jaundice, fever, and gastric symptoms. Since obtaining relief from the hemorrhoids she has had but one mild gastric attack. An interrelationship between the two conditions seems very possible. In the campaign of prophylaxis in medicine the same significance should be attached to foci of disease in the anal and rectal regions as to those in the buccal cavity. Treatment of hemorrhoids should be undertaken with a view to ameliorating and curing the local condition, and eradicating a possible source of severe infection. The physician then must understand that in combating them he is not only caring for a more or less severe local manifestation, but is also obliterating a nidus, the possible source of severe infection.

177 WALNUT STREET

DILATED HEART AS A SIGN OF EARLY APICAL PULMONARY TUBERCULOSIS.

By MAX GROSSMAN, M.D.,

BROOKLYN, N. Y.

PULMONARY tuberculosis, long before physical signs of same appear in lungs, often shows its effect on the heart. One of the earliest conditions noticed is pulmonic accentuation. This means that the pulmonic second sound is louder at the second left pulmonic interspace than at the second right aortic interspace. This is abnormal in adults, and when obtained is of value, of course, in connection with other signs.

The writer, however, has observed a sign which it seems to him has not been emphasized, and which it would appear in his experience to be of great value, taken in conjunction with other signs, in the diagnosis of early apical pulmonary tuberculosis.

One of the earliest effects of the tubercle bacilli, long before physical signs may show in the apices, is dilatation of the heart. Even patients themselves in incipient tuberculosis very often do not complain of cough, loss of weight, etc., but the first thing noticed is "pain under the heart," a general weakness of the precordium.

Dr. Robert Abrahams showed convincingly some time ago that acromial breathing, on auscultation of the acromial processes of the clavicles, will show early tuberculous signs long before they appear in the lungs. The writer has noticed, however, that slight dilatation of the heart, diffuseness of the apex beat seen or felt at the fifth left intercostal interspace appears very often simultaneously with, or even precedes, the earliest physical signs of incipient pulmonary tuberculosis.

It would seem, therefore, that in incipent cases of apical pulmonary tuberculosis, which in the adult number probably about 499 out of every 500 cases

observed, one of the earliest effects of the tubercle bacilli is its effect on the heart. Of course, it may be argued that the reason the pulmonary tuberculosis follows dilated heart is that dilated heart might show a general run-down condition and tuberculosis would naturally follow on this weakened physical condition. The writer has, however, noticed in apparently strong, able-bodied individuals, where there was as yet no sign of the general physical condition being below par, that one of the earliest signs, in many cases long before the lungs showed the onset of apical pulmonary tuberculosis, was a diffuseness of the apex beat, meaning commencing dilatation of the heart.

This dilatation of the heart may, under proper hygienic and tonic treatment, become so improved as to be almost absent in arrested first stage conditions. Here it would show the tubercle bacilli were not active or had been gotten under the control. But no sooner does the tuberculous process become active again than dilatation of the heart becomes apparent once more, and continues throughout the case.

124 Lee Avenue.

Medicolegal Notes.

Liability for Direction to Employees Not to Employ Designated Physician.—A railway employee's beneficial association organized to furnish medical and surgical aid to its members retained physicians at various points, and its rules required members needing medical or surgical aid at the association's expense to call the nearest authorized physician, except that in sudden emergencies other services for first attention might be procured. Though any deficit in the funds of the association was made up by the railway company, it had a separate entity. Its president wrote the general superintendent of the railway, calling attention to the expense caused by the disposition of certain employees to call in a certain Dr. P., who was not one of the association's physicians. The superintendent wrote to division superintendents, stating the president's grievance, and said the practice mentioned might not be resorted to except in emergency cases. One of the division superintendents issued a circular quoting the association's rules and expressing the hope that it would not be necessary again to call attention to the embarrassment of the railway company and the association through failure to comply with instructions. He also verbally told a yardmaster that it was his desire to have the company physician called in all cases in preference to Dr. P. or any other doctor. By the yardmaster's direction the following notice was posted: "In case of accident to an employee where medical attention is needed at once, do not in any case call Dr. P. If company doctor cannot be located, order ambulance and have party sent to hospital." Dr. P. sued the railway, its general and division superintendents, the yardmaster and his assistant, alleging that the notice was maliciously intended to and did injure him in his business. It was held that, while the association could, under proper circumstances, have lawfully signified to its members by any proper means its indisposition to have any dealings whatever with the plaintiff, the notice was a departure from the president's letter and unauthorized by the association. The general superintendent and the division superintendent were not liable to the plaintiff, as what was written or said by them was within the range of the president's request and constituted no order to the yardmaster to go beyond what the rules of the association required. The yardmaster was liable, notwithstanding his alleged want of actual malice, as he was not directed to publish a notice that under no circumstances should Dr. P. be called. His action was wrongful and malice might be implied. The railway company was also liable, it being within the general scope of the yardmaster's employment to publish suitable notices to such of the company's employees as were under his direction, since, in permitting its channels to become the medium through which the association should speak to its employees, it undertook to answer for wrongs committed in that process. The plaintiff sued for the loss of such emergency practice, chargeable to the association as would have come to him but for the notice, but his testimony touched only his entire activities among yard employees and no figures were given or circumstances stated from which it could be determined what portion of the whole loss came within the class of emergency cases for which liability was claimed. It was held that there was a failure of proof, and he could recover nominal damages only.—Peek v. Northern Pac. Ry. Co., Montana Supreme Court, 152 Pac. 421.

Privileged Communications.—The Wisconsin statute of 1911, section 4075, as amended by Laws 1913, chapter 349, provides that no physician or surgeon shall be permitted to disclose information acquired by him in attending any patient in a professional capacity and which was necessary to enable him to prescribe for the patient or do any act for him as a surgeon. In an action for personal injuries sustained in a slight collision between two street cars, in one of which the plaintiff was a passenger, her evidence tended to show that she suffered from inguinal hernia resulting from the accident. The defendant called as a witness the physician who treated the plaintiff after the injury, and asked him whether he treated her for hernia and whether the plaintiff complained to him of hernia. It was held that the trial court properly refused to permit the physician to answer the questions. "If," the court said, "the questions propounded to the physician in the present case were answered either way, the statute would be set at naught. It was the physician's duty to treat the patient for whatever disease or infirmity the diagnosis of the case showed that she had. If, therefore, he answered that he treated her for hernia, the necessary inference of fact would be that the statements or symptoms of the patient or the physician's examination tended to show that she was suffering from hernia; if he answered that he did not treat her for hernia, the inference of fact must be that such statements, symptoms, or examination tended to show that she was not suffering from hernia, but from some other difficulty. In either case the effect would be to disclose a part of the information which the statute says shall not be disclosed."—Dreyfus v. Milwaukee Electric Ry. & Light Co., Wisconsin Supreme Court, 154 N. W. 840.

Death Certificate as Evidence.—In an action against a fraternal benefit insurance association the death certificate of the physician who attended the deceased in her last illness, after stating that the death was caused by peritonitis, went on to state that the contributory cause thereof was abortion. It was held that that part of the certificate was not inadmissible as hearsay, but the remainder of the certificate, reading, "said by decedent to have been performed by Dr. ———," was properly excluded, since a fair interpretation of the certificate was that the contributing cause of death was primarily within the knowledge of the physician, and was not hearsay.—Gilchrist v. Mystic Workers of the World, Michigan Supreme Court, 154 N. W. 575.

Waiver of Privileged Communications.—A plaintiff recovered judgment for $8,000 damages and costs on account of a personal injury. He swore to the facts of the injury and his condition, and called physicians who had attended him, who swore minutely as to his condition. Some of them took, or assisted in taking, x-rays of the organs and parts of the body claimed to be injured. The testimony of the plaintiff's physicians put before the jury, with great minuteness and circumstance, his physical condition, especially at the time when he was at the Samaritan Hospital. The defendant called Dr. Harvie, a surgeon connected with the Samaritan Hospital, who had examined the plaintiff there at his request, and he was asked: "What did you find the man was suffering from?" The plaintiff objected, as incompetent and inadmissible under the New York Code. The objection was sustained, and the defendant excepted. The plaintiff put his person before the jury as a basis for damages, and had it described by his physicians, and the Appellate Division held that he thereby waived any privilege, not only of the physicians he called, but of other physicians, who examined him about the same time. It did not appear that Dr. Harvie made his examination at the same time that the other physicians made theirs, but it did not seem that that fact was controlling. The examination was at the same time the doctor was treating him for the same trouble. It seemed unfair that he could call certain of his physicians and refuse to permit others to testify on the ground of professional privilege. Judgment for the plaintiff was reversed and a new trial ordered.—Dewey v. Cohoes & L. Bridge Co., 155 N. Y. Supp. 887.

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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PRACTICAL APPLICATIONS OF THE SCHICK REACTION.

OF all the immunological reactions that have been introduced in recent years the Shick reaction seems to have the broadest field for application and perhaps the greatest practical value as well. It will be remembered that the reaction consists in the intracutaneous injection of one-fiftieth of the minimum lethal dose for the guinea-pig of diphtheria toxin. A positive reaction consists of the appearance within twenty-four to forty-eight hours of an area of redness and slight infiltration about the point of injection. On fading this area shows superficial scaling and a persistent brownish pigmentation. The amount of fluid injected, as advised by Schick, was 0.1 c.c., but the Department of Health has preferred to recommend a dose of 0.2 c.c. in order to avoid the fairly severe local reactions which were occasionally seen after the use of the more concentrated fluid.

Zingher has recently published (*N. Y. State Jour. Med.*, 1916, XVI, 118) a report of some extensive investigations into the treatment and prophylaxis of diphtheria by means of the Schick test which have produced results so interesting that they demand mention in these columns. Schick showed that a negative reaction occurred in patients whose blood contained one-thirtieth of a unit of antitoxin per cubic centimeter and that this amount was sufficient to protect the individual against the development of the disease. A positive Schick test means diminished antitoxin content and therefore a susceptibility to diphtheria. Pseudo-reactions occur, but disappear more rapidly and never show the superficial scaling which is characteristic of the true reaction. In the first place Zingher found a tendency for members of one family to react in a similar fashion to the test, showing the presence, possibly of some hereditary factor. In tests devised to show the relative value of different methods for the administration of antitoxin he found that when given subcutaneously, twenty times the amount was needed to produce the same effect upon the reaction as was produced by intravenous injection. The duration of a passive immunity resulting from the injection of 1,000 units of antitoxin was found to vary between 21 and 25 days, as a rule, while a second injection given at the end of this period will protect for only five to eight days. He was also able to detect a number of patients who suffered with mild tonsillar diphtheria and who recovered without antitoxin and yet who at all times gave a strongly positive Schick reaction. They evidently had developed no antitoxic immunity and must have recovered as a result of the development of a bactericidal immunity only. The author studied a large number of such cases and comes to the conclusion that diphtheria patients develop as a rule an antibacterial immunity, which is associated in only about one-third of the cases with an antitoxic immunity. Efforts to produce an active immunity by means of mixture of toxin and antitoxin were unsuccessful in about 75 per cent. of those patients who, at the outset, had no natural immunity. The use of vaccines of the Klebs-Loeffler bacillus was without favorable results.

From a study of over 1200 cases Zingher is convinced that the test is absolutely reliable in showing the presence or absence of antitoxic immunity and that a negative test indicates that the individual is protected, probably indefinitely, against the disease. The test is also of value in clearing up the diagnosis of clinically doubtful cases, since a negative reaction excludes diphtheria although the patient may still be a carrier. Carriers who give a positive reaction should be immunized before the institution of any operative procedures upon the nose or throat, since the operation may result in the breaking down of the local immunity which had protected them. Further, the use of the reaction will result in a great saving of antitoxin and avoid the needless sensitization of individuals already immune. Such broad scientific and practical applications are found in few other immunological procedures and justify the great popularity which this test already enjoys. The Department of Health, in whose laboratories and hospitals this work was done, has done everything in its power to further the use of the test and it is to be hoped that the general practitioner will heartily cooperate in their endeavors.

WOMEN AS MEDICAL MISSIONARIES.

THERE is a wide field for the employment of women as medical missionaries. In some lands into which missionaries go to look after the spiritual and physical welfare of the inhabitants men are not allowed to treat the native women medically. In India, for instance, the custom of a large part of the population forbids that men doctors should attend patients of the female sex. In consequence, disease is spread, and sickness and mortality are greater by far than would be the case were efficient medical services available. On the other hand, the services of female physicians are eagerly sought, and there is, therefore, almost unlimited scope for the exercise of their knowledge and skill in some of the Far Eastern countries. At the Conference on the Training of Medical Missionaries, held in New York on April 5 and 6, 1916, various phases of the matter were discussed. Among the papers read was one by Dr. Belle Allen on the preparation of women for medical mission work and how it should be differentiated, if at all, from that of men. This paper dealt with the subject matter in a very able way, and suggested in a particularly

clear manner the lines along which women medical students preparing for mission work should be trained. However, although, of course, the question of proper training is an all-important one and the paper contained very useful hints in this direction, the difficulty now is in procuring candidates. The demand is greater than the supply by far. Dr. Sanders, the secretary of the Board of Missionary Preparation, stated that a considerably smaller number of women enter medical schools to train as missionaries than ten years ago. This decrease in numbers is not due to the fact that female medical missionaries are not needed; they are needed more than ever before. It does not seem to be due to distaste for or indifference to the work. The life of a medical missionary undoubtedly appeals strongly to many earnest women; it appeals from the point of view of being of assistance spiritually and physically, and to a woman nothing exerts a stronger claim on her humanity and pity than of being a help to someone. The life of a medical missionary, too, offers something of adventure, an inducement of no mean value to the energetic self-respecting woman who often feels that her brains and capacity for work and for doing good have too little scope for exercise at home. It would seem as though numbers of young women would hail with enthusiasm the opportunity for launching on the career of a woman missionary.

The explanation of the inadequate supply of women medical missionary students appears to be found in the lack of opportunity. In the first place, many of the best medical schools in the country do not yet open their doors to women, and it must be borne in mind that those responsible for the management of the Medical Missionary Society in this country desire only those who have qualified in such schools. It is true that several of the best schools receive women students, and others expect in the near future to do the same, but the fact remains that the majority of the high standard medical schools of the country deny to women the right to study for a medical degree. There is yet another obstacle in the way of procuring an adequate supply of women medical missionaries, and that is the expense attached to the period of training. The women who are most likely to take up the career of medical missionaries and who are best fitted for the work are not plentifully endowed with this world's goods. They do not belong to the leisure class, but are born of workers who frequently have to strain every nerve to make both ends meet. By inheritance and environment they are workers and are of the stamp that would make ideal medical missionaries, if only opportunity came their way. The lack of money is the great stumbling block to the ambitions of many girls who are peculiarly well adapted by their heredity and bringing up to render service to God and man in the medical missionary field. Perhaps one or other of our multi-millionaire philanthropists will some day provide a fund sufficient to aid the passage of enough would-be women missionaries through a first class medical school, and thus solve a problem which is greatly exercising the minds of the directors and leaders of missionary enterprise.

POINTS ON PREPAREDNESS.

WHETHER we have a standing army of fifty thousand men or five million, whether our navy consists of a half a dozen prehistoric butter-boats or a vast fleet of the latest word in leviathans, it behooves us of the medical profession to turn our thoughts toward the duties which may reasonably be expected of us in case of war. There seems no doubt but that the majority of the physicians in his country would then find themselves facing a problem in which their previous experience would afford them little or no help. Since the late unpleasantness between the latitudinal sections of our country surgery has taken strides comparable only with the evolution of the stage coach into the aeroplane, and the general practitioner who confines his surgical efforts to circumcisions, ingrowing toe-nails, and the incision of abscesses would find himself on a terra incognita when dealing with the devastating effects of hand grenades.

One who wishes to obtain some idea of surgery in modern warfare would do well to read carefully the "Report on Medico-Military Aspects of the European War" by Surgeon A. M. Fauntleroy, U. S. N., to which we have referred before. Dr. Fauntleroy was sent by the Navy Department in April, 1915, to France to study and report on the medical aspects of the war; he served on the surgical service at the American Ambulance Hospital in Paris for two months and with Dr. Alexis Carrel he visited all the field hospitals in the regions between Compiègne and Soissons.

Dr. Fauntleroy's observations are too replete with important matter to lend themselves to any adequate abstract, but a few points may be quoted here. He was particularly impressed with the difficult problem presented in hospital organization by a rapidly retreating army such as the French army in the first months of the war. The rapid advance of the well-prepared German army and the constant retreating of the French and English did not permit of any permanent hospital organization. He says, "There was nothing to do but apply as many first aid dressings as practicable to the wounded in the immediate neighborhood of a surgical unit, and then leave them on the field to care for themselves, where those who survived necessarily became prisoners."

An exhaustive study of the nature of the wounds commonly seen was made. He did not find that bullets were mutilated or shaped in any way to obtain especially explosive effects, but these latter seemed to be the rule either at very close range or at very long range. Why this should be the case has never been satisfactorily explained, although several theories are offered to account for it. Owing to the unique nature of present-day warfare special forms of wounds predominate. Cutting and thrusting wounds, such as those inflicted by saber, bayonet, and lance, are about 5 per cent. of the total number as contrasted with the Franco-Prussian War of 1870 when they were only 6/10 of 1 per cent. Pistol wounds are extremely rare in this war. The wounds from hand grenades are very frequent on account of the nature of the trench warfare which renders rifle shooting in-

effective. These grenades, in addition to the regular forms, are improvised from empty cans and filled with any available odds and ends of metal which might damage a foe; the wounds inflicted cause great mutilation and are always infected. It is this variety of wound which has given opportunity for the surgeons at the American Ambulance Hospital to perform some really marvellous plastic surgery. One must see "before and after" pictures in Dr. Fauntleroy's book to appreciate the results. A special form of wound which certainly appears for the first time on earth with this war is caused by steel darts from above. These are let loose in bundles of a thousand at a time by aviators at great heights, are weighted to stay point downward, and acquire tremendous momentum by the time they reach the earth. The wounds inflicted by them are clean-cut, punctured ones.

The great interest this book has for the profession in this country lies, of course, in the fact that we should face similar conditions in the event of war with a European country and must be ready to cope with the peculiarities of trench warfare, explosive wounds, poisonous gases, and attacks from above.

Blood Pressure in Typhoid Fever.

Blood pressure falls below normal in typhoid fever, remains low until convalescence is established, when it slowly returns to normal. Investigations by numerous observers seem to demonstrate that typhoid fever lowers the blood pressure more than any other acute disease. Moreover, there does not appear to be any direct relation between the gravity of the attack and the fall of blood pressure, very low readings being found in quite mild cases. When, however, typhoid perforation occurs, hypertension, according to Crile, is the rule and is of value in the diagnosis of the condition. H. D. Rolleston in the *Medical Press*, March 15, 1915, gives the results of investigations made by him with respect to blood pressure in typhoid fever. He says that while of interest, it cannot be said to afford much guidance in diagnosis, prognosis, or treatment. He summarizes as follows: (1) In a series of cases of typhoid fever the blood pressure was found to be subnormal in 93.8 per cent., the extent and duration of the depression being, as a rule, in direct relation to the severity of the attack. (2) The blood pressure of the female patients showed a decided tendency to keep at a lower level than that of the males. (3) A considerable percentage (48.8) of the patients who were discharged at periods ranging from the fifth to the twenty-third weeks of disease never regained the normal blood pressure for their age during their stay in hospital. (4) In the great majority of cases the blood pressure fell below 100 mm. at some period of the disease. (5) In the majority of cases the blood pressure was higher in convalescence than in the acute stage. (6) In 93.1 per cent. of the convalescent cases the readings in the recumbent and erect positions were the same, or the recumbent was higher than the vertical record until convalescence was firmly established, this "hypotension of effort" in some cases persisting until the patient's discharge. (7) The only complications which affected the blood pressure were intestinal hemorrhage and myocarditis, which caused a considerable fall, and cholecystitis and pleurisy, which were accompanied by a transient rise. (8) Though not essential to the successful management of a case, sphygmomanometry furnished interesting illustrations of the profound effect produced on the cardiovascular system by the toxin of typhoid fever.

The Polychromatous Physician.

We all know, of course, from dabblings in psychology that colors have an effect on our moods, a saffron tie makes us languorous, while a purple one inspires us to noble deeds. Green produces a state of tranquillity, while blue depresses us. And so on. But now the chromatic scheme of things entire has invaded the operating room, that hitherto domain of the strictly practical. Last September Dr. Berkeley Moynihan wrote to the *Lancet* stating that for two and a half years he had been using green sheets and towels instead of white ones in the operating room, as they were more restful to the eye; he had also painted his walls green and covered the floor with green material. This suggestion was copied by some American journals. In the next number of the *Lancet* Dr. Milligan expresses himself as being in favor of such a scheme, but Dr. Whiteford is much more enthusiastic. His operating room he has done tastefully in light French blue, the surgeons are dressed in white, the nurses blue, and the onlookers red. In the next issue a Dr. Jeans states that he is doing his operating rooms in blue this year. And so the chromatic chirurgeons contribute their impressionistic ideas of operating rooms. In time let us hope we will have the perfect polychromatous physician; he will bewilder us with some such display as this: The anesthetic room will be in rainbow colors, signifying hope; the operating room will be in red, meaning danger, the new assistant will be green, the patient's relatives will look blue, and the future will appear black. Seriously, however, it is time that some such restful shade to the eyes as light green should supplant the glaring white of many hospitals, the dazzling operating room, the cheerless corridors, and the monotonous patients' rooms.

The Mechanical Factor in the Genesis of Sciatica.

Let us suppose the case of a man unused to the sitting posture and without much adipose tissue who is compelled to sit for hours daily upon a hard bench. Does any one doubt that such behavior would manifest itself in some manner on the sciatic nerve? The phenomenon of the "leg going to sleep" is a very familiar effect of such nerve compression, but this is transitory and occurs in most subjects without real predisposition; it merely shows that the sciatic nerve is quite readily compressed. Turning now to the ordinary notions of the nature of sciatica—that it is a neuritis or neuralgia or is associated with muscular rheumatism—it is readily seen that such conceptions of the disease are far from satisfactory. Sciatica is almost always unilateral. Were it a mere metastasis or local expression of a general blood state, there would seem to be no warrant for a one-sided incidence. If, however, there is a predominant mechanical factor, the unilateral incidence is intelligible, because one-sided compression of the nerve results from an improper sitting posture, such as is also apparent

when one leg "goes asleep." In the *Deutsche medizinische Wochenschrift* for December 23, Csiky goes to great pains to develop this theory that the phenomenon of sciatica is caused by mechanical compression of the sciatic nerve of one side by improper seating. Other factors are naturally in evidence, and of these there are not a few; but clinical sciatica, he thinks, could hardly develop in the absence of this mechanical component.

News of the Week.

Death Rate in New York.—The death rate in New York City for the week ending April 1 continued low, being 15.40 per 1,000 of population, as compared with 17.47 for the corresponding week of 1915. The total number of deaths during the week was 1,649, while for the corresponding week of last year 1,831 deaths were recorded. The decrease in the mortality was marked in the infectious diseases, as well as in cancer, heart disease, influenza, lobar pneumonia, bronchopneumonia, and pulmonary tuberculosis. For the first fourteen weeks of 1916 the death rate was 15.65, as compared with 15.29 for the same period of last year.

Chicago Death Rate.—For the week ending April 1, the death rate in Chicago was 15.4 per 1,000, or exactly the same as in New York, the actual number of deaths being 736. For the corresponding week of last year the rate in Chicago was 16.5, and the total number of deaths 772. The decrease extended through all the principal causes of death, with the exception of diarrhea and enteritis among children under two years of age, in which group there was a considerable increase.

Protest Sale of Stray Dogs.—The action of the Board of Commissioners of Ridgefield Park, N. J., in arranging to sell to a medical institution in New York all stray dogs picked up in the village has aroused a storm of protest. The sentimentalists refer to the "ghastly tortures of vivisection" and "the unspeakable horror" of the experiments, while the utilitarians point to the fact that the village will receive one dollar for each dog and will in addition be spared the expense of asphyxiating and burying the animals, besides, perhaps as an afterthought, aiding in the war of scientific treatment.

Navy Medical Corps.—An examination for admission into the Medical Corps of the Navy will be held on or about June 15, 1916, in various navy yards throughout the country. Applicants must be between 21 and 30 years of age, graduates of a reputable school of medicine, and citizens of the United States. Full details of the examination and of the requirements can be obtained by applying to the Surgeon General of the Navy, Navy Department, Washington. Successful candidates are appointed assistant surgeons in the Medical Reserve Corps, and if so recommended are subsequently assigned to duty, with full pay and allowances, in attendance upon a course of instruction at the Naval Medical School, Washington. Upon completion of this course, the student officers are given their final examination, and, if found qualified, are commissioned as assistant surgeons in the regular Medical Corps of the Navy. The pay of an assistant surgeon is $2,000 per year on shore duty and $2,200 at sea, with quarters or their equivalent. After three years' service assistant surgeons are eligible for examination for promotion to the grade of passed assistant surgeon. Promotions to still higher grades are made in the order of seniority to fill vacancies as they occur.

Public Health Service.—Candidates for admission to the grade of assistant surgeon in the United States Public Health Service will be examined on May 31, 1916, at the Bureau of Public Health Service in Washington and at a number of the marine hospitals of the service. Candidates must be between 23 and 32 years of age, and graduates of a reputable medical college, and have had at least one year's hospital experience or two years' professional work. The examinations are: 1, physical; 2, oral; 3, written; 4, clinical, and usually cover a period of ten days. Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order; they will receive early appointments. Assistant surgeons receive $2,000 a year, and after four years' service are entitled to examination for promotion to the grade of passed assistant surgeon, at a salary of $3,000. Full details and invitation to appear before the board of examiners can be obtained upon application to the Surgeon General, Public Health Service, Washington, D. C.

Honor Dr. Comfort.—The trustees of the New York Medical College and Hospital for Women gave a luncheon at Delmonico's on April 8 in honor of the fiftieth anniversary of the graduation of Dr. Anna Manning Comfort, the only surviving member of the first class graduated from the college. Dr. Comfort and Mr. Jefferson Levy, one of the incorporators of the institution, were the guests of honor. At the commencement exercises of this first class addresses were made by Henry Ward Beecher, Peter Cooper, Horace Greeley, Lucretia Mott, Elizabeth Cady Stanton, and Dr. Lozier, dean of the college. The endowment of a scholarship at the college, to be known as the Anna Manning Comfort scholarship, was announced at the luncheon.

Dental Hygienists.—Because of the great need for increased attention to the condition of the teeth of school children in New York, of whom, it is asserted, at least ninety per cent. require dental treatment, the committee on child hygiene of the advisory council of the Health Department recently appointed a sub-committee to study and report on the desirability of using dental hygienists in the schools. The sub-committee has recommended that a trial of the surface cleaning of children's teeth be made as soon as possible in one or more centers, preferably public schools, and that at the same time the children be given instruction in oral hygiene. In order that the work may be legally safeguarded, there has been passed by the Legislature and signed by the Governor a bill which provides that any dental dispensary or infirmary legally incorporated and maintaining a proper standard and equipment may establish for women students a course of study in oral hygiene. Such students shall present evidence of one year's attendance at high school, and after one year may be graduated as dental hygienists, upon complying with the preliminary requirements to examination. After satisfactorily passing the examination these students shall be registered and licensed as dental hygienists by the Regents, under such rules as the Regents may prescribe. Any licensed dentist, public institution, or school authorities may employ such dental hygienists, who may remove lime deposits, accretions, and stains from the exposed surfaces of the teeth, but shall not perform any other operation on the teeth or tissues of the mouth. The

law follows the enactment of similar ones in Massachusetts and Connecticut, and it is expected that with the preventive steps made possible by the employment of such workers the condition of the teeth of the coming generation may be greatly improved.

Free Radium Clinic.—Through the generosity of Col. George Fabyan of Geneva, Ill., the Colonial Hospital, Geneva, has been given the use of 100 milligrams of radium for the treatment of cases of cancer and diseases of the skin. This is said to be the largest amount owned by any individual in Illinois.

New Typhus Serum.—Newspaper dispatches from Paris state that Dr. Pierre Roux, director of the Pasteur Institute, on April 4, announced to the Academy of Sciences the discovery of a serum for the treatment and prevention of typhus fever. The discovery is said to be the result of the work of Dr. Nicole, director of the Pasteur Institute in Tunis.

Defends Pay Clinic.—Dr. S. S. Goldwater, superintendent of Mt. Sinai Hospital, has replied to the adverse criticisms from some medical societies and some individual members of the medical profession on the plan of establishing at the hospital a night pay clinic. Dr. Goldwater said that the plan was not yet complete and, therefore, could not be considered thoroughly from a professional standpoint. "Experience has shown," continued Dr. Goldwater, "that persons of moderate means who are in need of the services of high-grade specialists have the greatest difficulty in obtaining them, for such physicians, either in their private offices or in the field, do not give their services for nominal fees. This problem, it is universally conceded, must be solved, and a great many patients are forced to solve that problem in their own way by going to free dispensaries. In fact, many such patients are referred to the dispensaries by general practitioners, who send cases to the dispensaries for diagnosis. This is especially the case when the making of diagnoses requires the use of special apparatus and equipment and the cooperation of a number of physicians. There is a large number of patients who certainly could not be put in the pauper class who cannot afford to go to the specialists. The question before us is how to solve the problem, and to this the trustees have been devoting much attention. There is no reason why there should be anything hostile to the profession in this plan, for we seek the cooperation of the medical profession in developing it. There have for several years been evidences of the need of such a plan."

Death of Mrs. Juilliard.—Mrs. Helen Cossitt Juilliard of New York, who had for years been a generous benefactor to medical charities, died at her home last week after a long illness. More than twenty years ago Mrs. Juilliard gave to St. John's Guild its first floating hospital and only last February a new hospital ship, the joint gift of herself and her husband, was launched at Wilmington, Del. Mrs. Juilliard had been also for many years a manager of the Lincoln Hospital and Home, and with her sister, the late Mrs. Dodge, had given to the New York Orthopedic Dispensary and Hospital funds for the erection of a portion of the new building in East Fifty-ninth Street. Of her time and interest she had also given freely and her death will be deeply felt.

Appeal for Blinded Soldiers.—Constructive relief work among the blinded British, French, and Belgian soldiers is to be coordinated and enlarged by the B. F. B. Permanent Blind Relief War Fund for Soldiers and Sailors, recently organized in New York, and a nation-wide appeal for the support of the movement was issued last week. It is said that six months' training is sufficient to educate the thousands of now useless blind men in trades in which they can support themselves and at least partially support their families.

Personals.—Dr. AMOS O. SQUIRE of Ossining was appointed acting physician and surgeon at Sing Sing prison on April 6, succeeding Dr. C. W. Farr, resigned. Dr. Squire has treated a number of inmates of the prison with radium furnished for the purpose by Mr. Frank A. Vanderlip, and has also served for two terms as coroner of Westchester County. It is said that the appointment will soon be made a permanent one.

Dr. NELLIS B. FOSTER, assistant professor of medicine at Cornell University Medical School, has accepted the appointment of professor of medicine at the University of Michigan, Ann Arbor.

Dr. MALCOLM SEYMOUR of Boston has been appointed State medical director to fill the place made vacant by the resignation of Dr. Horace D. Arnold. Dr. Seymour was graduated from the Harvard Medical School in 1904, and for several years past has served as medical examiner for Saving Bank Life Insurance in Boston and vicinity.

Dr. J. B. FREUND of Butte, Mont., has been appointed physician of Silverbow County, filling the vacancy caused by the death of Dr. Joseph A. Tremblay.

Gift to Medical School.—By the will of the late Col. E. A. Knox of this city, the New York Medical College and Hospital for Women receives a bequest of $5,000.

Spring Medical Meetings.—The annual meeting of the Medical Society of New Jersey will be held at Asbury Park on June 20 to 22, instead of at Spring Lake, as previously announced. It is believed that the large number of delegates expected can be cared for more comfortably at Asbury Park than at the smaller place.

The Medical Association of the State of Alabama will hold its annual meeting at Mobile from April 18 to 22, inclusive. On the second day a large public meeting will be held.

The eighteenth annual meeting of the American Proctologic Society will be held at the Hotel Statler, Detroit, on June 12 and 13, 1916, under the presidency of Dr. T. Chittenden Hill of Boston. The secretary is Dr. Alfred J. Zobel, 518 Stevens Building, San Francisco. The preliminary program contains a list of twenty-four titles, promising a full and interesting meeting.

New Medical Society.—The Chicago Society of Medical Research was organized recently with forty-one physicians as charter members. The society has for its purpose the study and investigation of disease and the advancement of the science of medicine. The following officers have been elected: *President*, Dr. Charles J. Lewis; *First Vice-President*, Dr. M. E. Simmons; *Second Vice-President*, Dr. E. J. Danek; *Secretary-Treasurer*, Dr. Edwin S. Antisdale.

Williamsburg County (S. C.) Medical Society.—The annual meeting of this society was held at Hemingway on March 23, when officers for the ensuing year were elected as follows: *President*, Dr. A. G. Eaddy, Johnsonville; *Vice-President*, Dr. T. S. Hemingway, Kingstree; *Secretary-Treasurer*, Dr. Elbert A. Simmons, Hemingway.

Obituary Notes.—Dr. WALTER C. HANSCOM of Minneapolis, Minn., a graduate of Rush Medical College, Chicago, in 1884, and a member of the Minnesota State Medical Association and the Hennepin County Medical Society, died at his home, after a long illness, on March 23, aged 61 years.

Dr. JOHN SPECHT of Superior, Wis., a graduate of the College of Physicians and Surgeons, Keokuk, Ia., in 1883, and a member of the State Medical Society of Wisconsin and the Douglas County Medical Society, of which he was president, died in the Eitel Hospital, Minneapolis, from appendicitis, on March 8, aged 56 years.

Dr. AXEL F. SWANSON of Southampton, Mass., a graduate of the Albany Medical College in 1913, and a member of the Medical Society of the State of New York, the Albany County Medical Society, and the Massachusetts Medical Society, died at his home on March 19, aged 25 years.

Dr. FREDERICK H. BANGS of San Jose, Cal., a graduate of the Cleveland University of Medicine and Surgery, Cleveland, Ohio, in 1880, and a member of the American Medical Association, the Medical Society of the State of California, and the Santa Clara County Medical Society, died at his home on March 13, aged 58 years.

Dr. LEWIS C. SHUTT of Oliver, Ind., a graduate of the Eclectic Medical College, Cincinnati, in 1889, died from Bright's disease and pneumonia at the Deaconess Hospital, St. Louis, on March 17, aged 60 years.

Dr. REUEL STEWART of Philadelphia, Pa., a graduate of the University of Pennsylvania, Department of Medicine, Philadelphia, in 1870, and a member of the Obstetrical Society of Philadelphia, died at his home on March 28, aged 86 years.

Dr. JOSEPH JONES of Stockbridge, Mass., a graduate of the Eclectic Medical College of Pennsylvania, Philadelphia, in 1896, died at his home from Bright's disease on March 20, aged 76 years.

Dr. W. E. HEADEN of Morehead City, N. C., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1891, and a member of the American Medical Association, the Medical Society of the State of North Carolina, and the Cartaret County Medical Society, died at his home on March 19, aged 49 years.

Dr. W. W. BARNES of Louisville, Ky., died at his home on March 18, aged 64 years.

Dr. IRVING S. BALCOM of New York, a graduate of New York University Medical College in 1887, and a member of the Bronx Medical Society, died at his home, from heart disease, on March 30, aged 53 years.

Dr. HENRY BERLIN of Chattanooga, Tenn., a graduate of the University of Tennessee, Medical Department, Memphis, in 1885, and a member of the American Medical Association, the Tennessee State Medical Association, and the Hamilton County Medical Society, died at his home, after a long illness, on April 1, aged 65 years.

Dr. JOHN GORDON RENNIE of Petersburg, Va., a graduate of the University College of Medicine, Richmond, Va., in 1899, and a member of the American Medical Association, the Medical Society of Virginia, and the Petersburg Medical Faculty, died in a New York hospital on March 30, aged 42 years.

Dr. THOMAS HUGH O'CONNOR of Boston, Mass., a graduate of the College of Physicians and Surgeons, Baltimore, in 1893, and a member of the American Medical Association, the Massachusetts Medical Society, and the District Medical Society, died at his home on March 30, from injuries received in a fall on March 20, aged 50 years.

Dr. GEORGE A. FAGAN of North Adams, Mass., a graduate of McGill University Medical Faculty, Montreal, in 1898, died in the Samaritan Hospital, Troy, N. Y., on April 1, aged 45 years.

Dr. KENNETH GUNSOLUS of Detroit, Mich., a graduate of Queen's University Medical Faculty, Kingston, Ontario, in 1871, and a member of the Michigan State Medical Society and the Wayne County Medical Society, died, after a brief illness, on March 24.

Dr. JOHN B. FINDLEY of Des Moines, Iowa, died suddenly at his home, on March 26, aged 67 years.

Dr. W. P. MCGOVERN of Cedarburg, Wis., a graduate of the Rush Medical College, Chicago, in 1882, died at his home after a long illness, on March 23, aged 58 years.

Dr. THEODORE B. SACHS, a graduate of the University of Illinois, College of Medicine, Chicago, in 1895, and a member of the American Medical Association, the Illinois State Medical Society, and the Cook County Medical Society, and formerly head of the Chicago municipal sanatorium for tuberculosis, died suddenly at the Edward Sanatorium, Napierville, Ill., on April 2, aged 48 years.

Dr. CHARLES A. JESSUP of St. Louis, Mo., a graduate of the Missouri Medical College, St. Louis, in 1877, died at his home on March 26, aged 65 years.

Dr. ELIHU L. COOK of Harlan, Iowa, a graduate of the College of Physicians and Surgeons, Keokuk, in 1876, died suddenly at his home, on March 28, aged 77 years.

Dr. OTHO MAGRUDER MUNCASTER of Washington, D. C., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1866, and a member of the Medical Society of the District of Columbia, died at his home, after a short illness, on April 1, aged 72 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

DISTRICT NURSING—REPORT OF THE CENTRAL COUNCIL—RULES FOR NURSES—EFFECT OF THE WAR ON NURSING.

LONDON, March 7, 1916.

THE Central Council for District Nursing in London has adopted the first annual report of its executive committee endorsing the work in relation to measles, German measles, and whooping-cough, which it was hoped would have great influence in diminishing the mortality from these diseases. It is undeniable that the greater the care bestowed on cases from their commencement the less will be their mortality and the fewer their complications. But it is a common observation that the public regards these diseases as slight ailments which the majority of children must pass through, and hardly ever serious. They are, therefore, quite commonly left to the care of the nurse, who too often neglects to ask for medical advice until too late.

Notification should be of great value in restricting the diffusion of the infection and, therefore, public authorities may well give further attention to the means of carrying it out. In some districts the authorities have entered into contracts with the local associations for nursing, and the arrangements seem to have answered

fairly well, especially where care has been taken to ensure efficient training and special instruction of the nurses under regulations which prevent them from assuming to interfere with directions which they should be required most strictly to obey.

For the central council Dr. F. F. Caiger has drawn up indications for the guidance of a nurse in reporting cases of measles to the medical officer of health, any attack of which in a child under five years old should be regarded as serious. In older persons the patient's condition is denoted by the severity of the attack or by the development of complications, the most frequent of which is bronchitis or bronchopneumonia. The severity may be gauged by the temperature and pulse-rate. Complications will be noted by rising respiration, reaching sometimes 50 to 60 per minute, with frequent cough, fretfulness, dusky lips, and a temperature of 101° to 103° or more. Occasionally in a severe case the temperature does not rise, though rapid breathing, 60 or more, listlessness, and prostration indicate the dangerous state of the patient. Otitis, ophthalmia, and diarrhea are other complications.

The council requires the district nurses to observe strictly the rules it has laid down when nursing measles or whooping-cough, as in both the infection is by the breath and secretions of nose and mouth. They are to be specially careful as to the disposal of anything contaminated by them. A separate apron is to be worn when attending each infectious case, to be kept at the patient's home, put on when entering the room, the sleeves being previously turned up; when possible every cup, spoon, fork, etc., used by the patient is to be kept for his separate use; when impossible, the article should be boiled after each time of using it. All rags, lint, cotton, wool used for discharges must be burned at once or placed in a dressing-tray or on paper until it can be. Damp swabs are better than dry, and should be wrung out of a liquid disinfectant. The nurse must avoid as far as possible bringing into close proximity to the patient any article of equipment which is not actually required at the time. These and other obvious details if conscientiously observed will enable the nurse in most instances to reduce to the minimum the risk of conveying the infection to other patients.

The effect of the war on the nursing associations has been that many of their staffs have left for the front, the vacancies having been filled up to a considerable extent by the engagement of temporary substitutes. But the work has been heavier on those who have remained. It has further increased because some of the metropolitan infirmaries have been closed. The report admits that the doctors have been so pressed that a great deal more work than usual has been left to the nurses. Some attempt to explain this is made, but the council would do better to take measures for preventing it. It is true that many doctors and nurses, too, have gone to the front, but there are many remaining at home who could supply their places. In some districts a decrease of work is reported and attributed partially to the prosperity of the people from abundance of occupation. The council is to be congratulated on its remarkable financial position; it has been able to restrict expenditure to the bare cost of printing and stationery.

Progress of Medical Science.

Boston Medical and Surgical Journal.

March 30, 1916.

1. Cesarean Section: A Consideration of Indications, Technique and Time of Operating. Charles M. Green.
2. Modern Indications for Cesarean Section. John T. Williams.
3. Cesarean Section—Overdone. Foster S. Kellogg.
4. Anesthesia in Obstetrics. Austin Brant.
5. Nitrous Oxide in Obstetrics. Frederick C. Irving.
6. A Second Statement Regarding the Respiratory Mechanism in Pneumonia. W. L. Newburgh, J. H. Means, and W. T. Porter.
7. Recent Progress in Psychiatry. Henry R. Stedman.

1. Cesarean Section: Indications, Technique, and Time of Operating.—Charles M. Green draws his inferences and conclusions on this subject not only from the results of a previous series published in 1907 but from the work of the past eight years, covering above three hundred cesarean sections. In regard to the time of operating, except in rare cases such as cardiac, toxemic, and placenta previa conditions, it is generally best not to operate until the parturient has been in labor for a certain number of hours, and he states the advantages of such procedure as follows: (1) It is certain that the pregnancy has reached full term. Abdominal cesarean section is done largely in the interest of the baby in elective operations, and it is a pity to deprive the baby of the last two or three weeks of intrauterine development. (2) There is greater certainty that in the convalescence the uterus will have free drainage. Labor continues naturally until the cervix is taken up and the os uteri expanded an inch or two allows for free drainage, and risks of lochial retention are avoided. (3) There is less bleeding from the placental site. (4) The uterine scar is stronger. Sutures applied to a wall thickened by several hours of uterine activity allow for a scar as strong as, if not stronger than, the remainder of the uterus. (5) It is more certain that abdominal delivery is really necessary in the interest of mother and baby, or both, in the so-called borderline cases. Humility is good for mortals, and it may be as well acknowledged that no man can say with certainty what any given woman may do in labor. Green outlines twenty cases and says that out of this number only one mother died—from embolism—and that there was no fetal loss. From his present knowledge and experience he draws definite conclusions, part of which are given here: (1) Every pregnant woman should receive the best of antepartum study and care in order that the obstetrician may understand the conditions presented. (2) Except under special conditions, labor should be allowed to progress for a number of hours. (3) During the observation of labor vaginal examinations should be avoided, and progress noted by external and rectal palpation. (4) Except when easy access to the pelvis is necessary, the supraumbilical incision is preferable. (5) There is no reason for eventration of the undelivered uterus. (6) Time should be taken for a triple-layer suture of the abdominal wall, especial care being used with the fascia, which is best closed with overlapping and mattress stitch. (7) The uterine wall, thickened by some hours of muscular contraction, should be closed carefully with deep and seroserus absorbable sutures. (8) The uterus was created a movable organ; it should be allowed to remain so, at least in all married women, until after the climacteric.

3. Cesarean Section—Overdone.—Foster S. Kellogg states that this operation is the most overdone one in Boston at present, under the idea or delusion that it is an absolutely safe procedure, and the reason it is considered safe is because it is simple. That does not follow. He quotes Dr. Lee in showing the general per-

centage of mortality, and states that in regard to the statistics gathered around Boston and elsewhere, figures and conditions can be juggled to mean almost anything desired. He asks on what indications is it being advised in this community, and gives the honest answer as "almost anything that keeps a baby from flopping into the world itself." He states the clearly indicated reasons for doing cesarean section, and then gives the following ones in which it is advised usually unwisely: (1) Primary cesarean section for women with unfit nervous systems and general makeup. (2) Cesarean section for primiparous breech, where the presentation is not due to a manifestly small baby in relation to the pelvis. (3) Cesarean section on the pelvic indication. (4) After attempted high forceps in which the head could not be made to enter the superior strait; cesarean section has been done for prolapsed cord in a young primipara, three-fourths dilated, transverse, with true conjugate 3¼ in. and fair sized baby. (5) Cesarean section in toxemia of pregnancy, without convulsions, and with eclampsia. (6) Cesarean section for breaking or broken cardiacs. (7) Cesarean section performed any time in labor and under all conditions. (8) Cesarean section by general surgeons untrained in obstetrics. (9) Cesarean section has been done in some instances for personal advertisement or for commercial reasons on account of the poor fee for poor work that is often paid for ordinary deliveries. These cases are rare, but do exist. Kellogg states in conclusion that the old attitude of many general men toward cesarean section persists—they still believe it is the saving operation of last resort. It is usually stated that the mortality of cesarean babies is zero. Men with good cesarean experience consider that their patients are all well afterward, but Kellogg regards this as an extremely optimistic view, as a large number of women are very well aware in consequence of scar pain, adhesions, bowel irregularity, or nervous knowledge. The author says that his object in presenting the subject under this aspect is to show that here, as elsewhere, a good thing exploited is apt to go bad.

6. A Second Statement Regarding the Respiratory Mechanism in Pneumonia.—Newburgh, Means, and Porter in a former communication presented evidence that in cats with pneumonia the reaction of the respiratory mechanism to carbon dioxide is greatly impaired. This reaction is also impaired in dogs with the same disease. They cite examples of some of their experiments and state that in atmospheric air these pneumonia dogs and these normal dogs breathed the same number of cubic centimeters per minute. Additional evidence is as follows: (1) As the disease advances the carbon dioxide reaction diminishes; so may the initial ventilation. (2) If the failure to react were due to the loss of respiratory space from hepatization of the lung, large consolidations should be accompanied by a large reduction in the carbon dioxide reaction, and small consolidations by small reductions. Such is not the case; there is no parallel between the area of consolidation and the amount of the reaction. (3) The impairment of the respiratory mechanism increases progressively, while the area of consolidation may remain unchanged. By experiments they have been able to show that the failure of the respiratory mechanism in pneumonia may be prevented by section of the vagus nerves. The authors of this paper have worked out the following conclusions: (1) The reaction of the respiratory mechanism to carbon dioxide is greatly diminished in pneumonia. (2) The graver the disease the less is the reaction. (3) The section of the vagus nerves may prevent this depression of the respiratory mechanism.

New York Medical Journal.

April 1, 1916.

1. Our Duty to Mental Defectives in the Present Generation. C. E. de M. Sajous.
2. Colon Bacillus Infection of the Bladder. Robert T. Morris.
3. The Treatment of Persistent Occipitoposterior Positions. George L. Brodhead.
4. Medicine of the Future. A. L. Benedict.
5. Forestry and the Public Health. Henry Reed Hopkins.
6. The Causes of Prolonged Disability from Fractures. S. Bernard Rosenzweig.
7. Relapsing Fever in Serbia. J. Rudis-Jicinsky.
8. An Eye Case with Unusual Complications. F. P. Hoover.
9. Sodium Bicarbonate. W. P. Herrick.

1. Our Duty to Mental Defectives of the Present Generation.—Sajous states that eugenics aims, as we know, to improve mankind through heredity, but that it will require a long time for the mass of people to be influenced to any material degree. Laws fail because they will not be enforced, and then will be shelved. He quotes M. W. Barr of Elwyn, that there are 350,000 avowed mental defectives in the United States, and that 328,000 of these are at large "perpetuating unrestrained the defilement of the race." Basing its estimate on a study of the schools of thirty-one American cities, the Russell Sage Foundation has shown that over one-fifth of all the children in the public schools of the United States belong to the retarded class—to say nothing of those who do not attend school. How could this evil be stemmed? How could we, physicians, protect the child of today, and the unborn but doomed of tomorrow, for whose welfare we are, more than any one else in the world, responsible? Sajous says that we have means for the salvation of a large proportion of the infants of our day from feeblemindedness, and precocious insanity in older children, through an adequate conception of the meaning of the ductless glands in the morbid process. In the functional disorders of these organs we have the underlying cause of several of the most common mental diseases. Also that any disease capable of injuring the ductless glands sufficiently to inhibit their functional activity impairs correspondingly the development and functional activity of the brain by reducing the supply of secretions this organ requires to carry on these physiological processes. The main underlying cause of defective mentality in both parent and offspring is inherited deficient activity of the ductless glands. Summarizing his foregoing statements, Sajous concludes: (1) The ductless glands, owing to their controlling influence over nutrition and development of the body, including the brain, supply the means to this end in respect to the mental defectives represented by the various grades of idiocy and dementia præcox. (2) The mental and physical state of all pregnant women as regards the functional efficiency of their ductless glands should invariably be established. If deficient, organotherapy should be used to protect them against renal disorders and convulsions through toxemia, also their offspring against imperfect development and mental deficiency. (3) The development of all infants should be watched by the family physician, especially if the family history be tainted, and if symptoms arise in the child, organotherapy should be instituted. Twenty thousand cases of dementia præcox are admitted to the insane asylums each year. By organotherapy this could be arrested.

5. Forestry and the Public Health.—Henry Reed Hopkins says that to Americans no subject is of more vital importance than that of forestry. Without our forests the fertility of our soil, the profits of our farms and gardens, the building, the operating, the profits of our railroads, mines of coal and iron, and the maintenance of our homes, in fact, our civilization disappears, and what the traveler sees abroad in many countries will be seen on the plains of America. During the last twenty years the problems of forestry have been en-

thusiastically studied in our country. The forests are the kings, the royal family of that kingdom which includes all varieties of beautiful plants and flowers, fruits and grains. We should not overlook the important biological fact of man's intimate dependence upon the food, oxygen, and that man is constantly producing large quantities of carbonic acid, which is poisonous and in a certain proportion in the air makes the same unfit to breathe; and we may recall that our forests exhale vast quantities of oxygen and generously absorb like quantities of carbonic acid. The rivers of America break into devastating floods of increasing frequency and severity, producing an annual waste of over $237,000,000, and which will increase until care of our forests and reforestration again provides our hills and mountains and watersheds with that protection which was theirs by Nature's provision and which alone prevents floods. Denudation or the washing away of the soil itself produces enormous losses. Added to this the relation of forests to every side of civilized life must be considered, especially to the existence of human life, the perfection of mankind, the prevention of disease; this is the more important side to the physician. This dogmatic statement is based upon a consideration of the rôle played by forests in the production of climate—air, light, humidity, and temperature, the environment of man, the factor of supreme importance in man's existence and welfare.

Journal of the American Medical Association.

April 1, 1916.

1. The Etiology and Treatment of Rat-Bite Fever. Wilder Tileston.
2. The Cause of Gastric Ulcer. W. E. Burge and E. L. Burge.
3. Discussion and Adjustment of an Intrauterine Stem Versus Dilatation to Overcome Stenosis of the Cervical Canal. H. J. Boldt.
4. Bullet Lesion of Cauda Equina. G. B. Hassin, K. L. Johnstone, and A. M. Carr.
5. Public Health Measures in Relation to Venereal Diseases. William F. Snow.
6. The Effects of Tethelin: Acceleration in the Recovery of Weight Lost During Inanition and in the Healing of Wounds. T. Brailsford Robertson.
7. Chronic Urethritis in Women: A New Method of Diagnosis and Treatment in Obscure Urethral Pain. W. F. Shallenberger.
8. Theories of the Etiology of Pernicious Anemia. Karl M. Vogel.
9. After-Results of Tonsillectomy: A Study of Five Hundred and Seventy-One Cases. John C. Simpson.
10. Hydrops Tubae Profluens: Report of a Case. Thomas H. Llewellyn, and Frank Benton Block.
11. Interlobar Empyema Treated by Artificial Pneumothorax: Report of a Case. Alvis E. Greer.
12. A Case of Mercurial Poisoning with Recovery. Jacob Cohen and Adolph Bernhard.
13. Purpura Hæmorrhagica Treated with Normal Horse Serum. Lawrence Schlenker.
14. The Management of a Case of Cut Throat. Ben D. Baird.
15. Treatment of Pruritus. Priestley Lipscomb.

1. The Etiology and Treatment of Rat-Bite Fever.—Wilder Tileston states that rat-bite fever is an infectious disease following the bite of a rat, or more rarely the bite of some animal having contact with rats (weasel, ferret, cat). There is an incubation period averaging about two weeks, which is followed by one or more febrile attacks, accompanied by a characteristic rash. These paroxysms tend to recur with remarkable regularity at intervals of from five to ten days, and the duration of the attack averages from two to three days. The temperature rises gradually, to attain the maximum on the second day, and falls by crisis with profuse sweating. Severe muscular pains and dysphagia are often prominent symptoms. In the interval between the attacks the patient feels almost well. The mortality of the reported cases, of which there are about eighty, is ten per cent. The prophylaxis is simple. Immediate cauterization of the wound either by strong carbolic acid, or the actual cautery, has proved a sure preventive. Hata has reported eight cases treated with salvarsan, in which the results were striking, five out of the eight patients being cured by a single injection. Tileston's cases bring the total of those treated up to twelve, with cure in ten, or eighty-three per cent. The dosage is the same as for syphilis. He summarizes the results of his work as follows: (1) In a typical case of rat-bite fever, organisms were found in the blood, closely resembling the *Streptothrix muris ratti* of Schotmüller and Blake. They were present in each febrile paroxysm and absent in the intervals. They were readily demonstrated by dark-field illumination, but with difficulty by staining methods, probably on account of a strong tendency to fragmentation. Blood cultures and inoculations of animals with the blood were negative. (2) The administration of salvarsan was followed by immediate cessation of the paroxysms. (3) An abortive case of rat-bite fever is reported.

2. The Cause of Gastric Ulcer.—W. E. Burge and E. L. Burge report the results of their experiments done at the physiological laboratory of the University of Illinois, and state that a great many theories have been advanced concerning the cause of gastric ulcer, the main feature of which is that there is a decreased resistance of limited areas of the gastric wall followed by the digestion of these areas by the unrestricted action of the pepsin. Their investigation is concerned with the cause of this diminished resistance. In view of the fact that pepsin is easily destroyed by oxidation, that the cells of the mucosa possess oxidative properties, and that these cells become easily digested when these properties are decreased, the hypothesis is advanced that the mucosa is not digested under normal conditions because the pepsin immediately in contact with the wall of the stomach is rendered inert by the oxidative processes of the cells. This theory assumes that normally a balance exists between the oxidative processes of the cells of the mucosa and the digestive action of the pepsin in the stomach, and if this balance be destroyed, thereby decreasing the oxidative processes of the area, this area should be digested by the pepsin with the production of ulcer. They carried out their experiments on dogs and formulated the following conclusions: The decreased resistance of a circumscribed area of the stomach to the digestive action of gastric juice is due to a decrease in the oxidative processes of the cells of the area. Gastric ulcer is due to the subsequent digestion of the area by pepsin. The resistance of unicellular organisms (paramecium) to the digestive action of the proteolytic enzymes can be increased or decreased by increasing or decreasing the intensity of the oxidative processes of the organisms, the greater the intensity of the oxidative processes the greater the resistance, and vice versa.

6. The Effects of Tethelin.—T. Brailsford Robertson announces that as the result of his work in the Rudolph Spreckels Physiological Laboratory of the University of California he has succeeded in isolating the growth-controlling principle from the anterior lobe of the pituitary body. He gives the method employed for isolating this substance which he calls tethelin. Tethelin probably contains an iminazolyl group, and to this extent may be regarded as being related to the physiologically active substances of the posterior lobe of the pituitary body, but it is not possessed of the same characteristic physiological activity of these substances. The average yield from 300 ox pituitaries is found to be from 2.6 to 3 gm.; each anterior lobe, therefore, may yield about 10 mg. of tethelin. The action of tethelin in doses of 4 mg. per diem administered by mouth to mice between four and sixty weeks of age consists in a marked retardation of the early (preadolescent) growth in weight, and an equally marked acceleration of postadolescent growth. Mice which have received tethelin are much more compactly and firmly built than normal animals of the same age. Weight for weight, the tethelin-fed animals are smaller than normal, and, size for

size, they are heavier. The favorable effect on the nutrition of the skin is exceedingly marked; the coats of adult males which have been tethelin-fed, even at fourteen months of age, retain the glossy, silky appearance of the coats of young animals. Robertson also investigated in order to discover whether there was an acceleration of that species of internal growth which consists in the replacement of tissue lost through excessive tissue waste consequent on any circumstance leading to an increase in nitrogen output, as fevers, or a curtailment of nitrogen input, as inanition. Ten male and ten female mice were used for the experiments, and were deprived of food, but allowed free access to water for a period of twenty-four hours. They were weighed at the beginning of the fast, and at regular intervals thereafter, and at the end of six hours there was a break in the curve of the chart together with an acceleration of the rate of loss of weight. This probably indicates that at the end of six hours' fasting the alimentary canal is completely emptied of its contents; the subsequent loss of weight may be attributed largely if not wholly to loss of tissue substance. At the end of twenty-four hours the animals were enfeebled and the weight lost was from ten to eleven per cent. of the original weight. The animals were then divided into four groups of four or five, and one batch of males and one of females were given tethelin hypodermically; the other two batches were used as controls and received no tethelin, and they were all given simultaneously an abundant supply of food. This experiment was carried out for seventy-two hours and the animals were regularly weighed. At the end of thirty-six hours the percentage of loss regained in the male controls was 91, and in the treated 104, this being the greatest percentage of gain, and in the female controls at the end of the same time it was 104, and in the treated 117. Robertson also experimented with tissue repair in the healing of wounds and found at the end of six days the wounds in two of the control animals were still filled with granulation tissue, while in the animals which had been given tethelin the granulation tissue had been replaced by scar tissue. He summarizes as follows: Experimental results indicate that tethelin, the growth-controlling principle isolated from the anterior lobe of the pituitary body, exerts, when administered hypodermically to mice, a remarkably stimulating action on tissue repair, as expressed in the replacement of tissue lost during a preceding period of inanition or in the healing of granulating wounds.

12. **A Case of Mercurial Poisoning with Recovery.**—Cohen and Bernard give an account of a patient, a woman aged 28, who was admitted to the German Hospital on November 28, 1915, in a semicomatose condition and very irrational, with the diagnosis of acute mercuric chloride poisoning. Five days previous to admission she had swallowed half a tumblerful of water in which two tablets of mercuric chloride had been dissolved. There was almost complete suppression of urine at least twenty-four hours previous to admission. The following treatment suggested by Lambert and Patterson was administered on admission: (1) Colonic irrigation, gastric lavage, and hot packs twice daily; (2) continuous Murphy drips containing potassium acetate, one dram to one pint of water. The patient was given by mouth eight ounces of the following solution every hour, alternating with the same quantity of milk: Potassium bitartrate, one dram; sucrose, one dram; lactose, one-half ounce; lemon juice, one ounce; boiled water, sixteen ounces. They state that during the first five days the patient's condition seemed somewhat improved after treatment was instituted. Urine elimination varied from 200 to 700 c.c. daily. All the excretions and stomach washings gave positive tests for mercury; the blood showed a marked retention of nonprotein nitrogenous and low phenolsulphonephthalein elimexcretions showed the absence of mercury; there was increased urine and phenolsuphonephthalein elimination. The nonprotein nitrogen and urea in the blood were markedly decreased. The remainder of her stay in the hospital until her discharge was marked by steady improvement in her general condition; the elimination of urine was about normal, and only traces of albumin with occasional hyaline casts were found in it.

Berliner klinische Wochenschrift.

February 28, 1916.

Retronasal Angina.—Blumenthal calls attention to a disease picture which while known to rhinologists is strange enough to the general practitioner. It often has an epidemic incidence and is then confounded with influenza or "one-day fever," according to its course. The condition was seen in its full expression in a ward for scarlet fever convalescents. The patients were all attacked suddenly with temperature rise to 40° C. and over, chills, prostration, and headache, both frontal and occipital. The course of the fever was decidedly septic, ending indifferently in crisis or lysis. The mouth, lungs, and urine gave negative results to examination, although the cervical region contained numerous enlarged glands, which suggested an infectious area. This was found to be the nasopharynx which was either congested throughout or the seat of a lacunar inflammation of the pharynx-tonsil. The course of the disease is somewhat as follows: A man seemingly in excellent health is attacked suddenly with fever and headache and is unable to refer his disagreeable sensations to any one locality. A few only complain of dryness and tickling in the nasopharynx, or of a somewhat stronger mucous discharge than occurs in perfect health. The voice has a nasal tone. Chest sounds are quite normal, while the pharyngeal tonsil is either intact or in rare instances reddened. Anterior rhinoscopy shows nothing anomalous, while the posterior examination may reveal a great number of changes—marked inflammation of the mucosa of the nasopharynx, especially at the vertex, with thick, tenacious, yellowish-green mucus on the upper portion of the choanæ. As a rule, all this picture subsides spontaneously in a few days, leaving no residues. Otitis media is a not infrequent complication. A renal lesion occasionally develops, and symptoms may vary from slight transitory albuminuria to a hemorrhagic nephritis, and the outcome is favorable as far as the author's experience goes. Enlarged cervical lymphnodes have never been seen to suppurate. The offending microorganism appears to be the streptococcus. In a self-limited disease of a few days' duration, not much is to be said under treatment. Menthol gives some relief. In summing up, the author draws attention to the characteristic swelling of the lymphnodes along the posterior border of the sternomastoid as far as the mastoid process.

The Edema Disease in Prison Camps.—Jürgens asks especially if this condition is connected with infectious diseases. The subject is highly involved, because these affections exhibit such startling clinical variations. We may see typhus which presents only an eruption. There is the so-called cholera-typhoid syndrome. The edema disease may be a manifestation of some of these diseases in which the admitted symptoms are latent. This affection has certain points in common with beriberi, and hence might be imputed to lack of vitamins. But its association with certain infectious diseases is unmistakable. It may complicate or follow typhus, and even precede it. It has been seen in connection with dysen-

tery, cholera, malaria, and recurrent fever. With these affections there is a profound disturbance of nutrition. The soldiers have often undergone extreme hardships. When first captured, their general condition is often wretched. After slight detention they are placed in the working camps. They bring with them the factors for infection with typhus and relapsing fever. The camps have not been ready to receive them. Conditions are ripe for epidemics among the cachectic patients. The author's studies lead to the conclusion that the edema disease has no necessary connection with infectious diseases despite the various intimate associations with the latter. It would doubtless develop to some extent if no epidemics appeared. Naturally it could figure in a vicious circle.

Münchener medizinische Wochenschrift.

February 29, 1916.

Roseola Typhosa and Paratyphosa—Eugen Fraenkel states that fifteen years ago he succeeded in showing the presence of Eberth's bacillus in the typhoid roseola and at the same time of peculiar histological changes. The skin occupied by the roseola was not merely hyperemic, but was the seat of an inflammatory process due to the metastatic deposit of the bacillus in the lymph-spaces. Foci of necrosis were even seen at times in the papillary layer. All the papillæ in a roseola are never involved, and in some of the spots only a single one. His researches at that period were limited to five cases of typhoid and the findings were quite uniform, and those in old, paled-out spots agreed fully with the picture presented by the recent lesions. The blood capillaries at no time contained any of the organisms. From a case studied on the eleventh day of the roseola, it appeared that the degree of damage inflicted on the skin is not in a direct ratio to the number of bacilli present. The true age of a roseolous lesion cannot be told from the naked eye appearances. But despite the quite individualized histological character of the lesions one could hardly make a diagnosis of typhoid in the absence of bacilli. As is well known, paratyphoid may present a roseola, and the latter has never been studied definitely from the standpoints of histology and bacteriology. The author selected a case of paratyphoid in a young child completely covered with a roseolous rash. Sections of a lesion showed the accumulation of paratyphoid-B bacillus in the lymph spaces, the blood capillaries of the papillæ being free from them. Whether differences exist between the lesions of the two diseases cannot yet be determined. It is possible that in the typhoid form there may be a greater participation of the fixed connective cells.

Endemic Goiter.—Weichardt and Wolff are continuing their work on the incidence of goiter in Bavaria, in the course of which they are keeping in touch with the reports newly published in other countries on the same subject. The experiences of Chagas of Brazil in the study of the parastic thyreoditides of that country, together with those of Gaylord in connection with endemic goiter in fishes, lead to the same inference as the findings of the authors, to wit: that the exciting cause of goiter may be a microorganism. Incidentally it may be shown that soil is not the determining factor. In a so-called goiter spring which has for years stood in close relation to the development of the disease in men and dogs, practically no bacterial life was present, and this is true of a number of other such springs. But little calcium is found in these waters. Studies were carried out by the authors in the domain of biological reactions. Animals treated with goiter water develop an antiserum which yields reactions to the said water. This could be interpreted of course as due to fouling of the water in transport. It is a fact of significance that in goiter localities young children, notably those of school age, are prone to suffer from the disease, but appear to acquire immunity in after years as a result. The same phenomenon is seen in malaria in malarious countries. Yet boiling goiter water does not make it goiter free, so that the disease is not strictly water-borne. In America the cause of fish goiter is associated with the slime at the bottom of the tanks in which the diseased fishes had been kept. Warm-blooded animals could be infected from this source. The authors are looking forward to a laboratory to be erected close to a goiter spring, so that water may be studied before it can become contaminated. Such water will be studied for biological reactions and with reference to physical chemistry.

Malt Soup Indications.—Graeme Mitchell says that babies under four months, premature babies, vomiting cases, or those with diarrhea and much mucus in stools do not as a rule do well on malt soup. The indications for its use are that it is a perfectly rational food and to be given in cases of weight disturbance.—*Archives of Pediatrics.*

Paralysis of Vocal Cord from Bullet Wound of Neck.—Dan McKenzie reports the case of a patient, an officer, who had received his wound in May in Gallipoli. Immediately after, he found that he could speak only in a whisper. The wound healed in three weeks and the voice returned, so that he could converse easily, although shouting soon tired it. Laryngoscopy showed the left cord to be paralyzed. The direction of the path of the bullet indicated that the left vagus was severed, without any apparent injury to the large blood-vessels and the sympathetic cord. The important question is, what is the prognosis as regards the strength of the voice after the onset of paralysis of one vocal cord? Will the condition admit of the patient using his voice in court when he again resumes his practice of law in civil life? It has been proposed that the vagus should be cut down upon and reunited.—*Proceedings of the Royal Society of Medicine.*

Conservation of Infant Life.—Edward A. Ayers lays stress upon education as the one great fundamental fact in carrying on the work of infant welfare. Beginning with wise instruction of school girls; instruction to pregnant women who come to the dispensaries, and to those after confinement; carrying instruction further to medical students, physicians, nurses, and midwives; and all assisted by general public instruction through press, lecture work, and magazines; improvement in the development of laws, both of health and labor, through the cooperation of State, city, borough, and county. The handling of this problem with absolute efficiency would quickly result in the saving of from 3,000 to 4,000 first-year infants per annum, and add from 30,000 to 60,000 citizens to our native-born population in twenty-one years.—*Journal of the Medical Society of New Jersey.*

The Effect of the War on the Medical Profession.—Charles M. Benson generously acknowledges that the war has had the effect already of leveling many prejudices, and not the least among them is that against the women physicians many of whom have been successful candidates for appointments hitherto not open to them. Dr. Louisa Garrett Anderson was the first to organize and work a Red Cross hospital, completely staffed by women physicians. Her success was so great in Paris that she was requested to organize and take charge of a hospital of 550 beds in London.—*Medical Press and Circular.*

Insurance Medicine.

Syphilis of the Nervous System in Relation to Life Assurance.—Theodore Thompson begins his argument by stating that the main result of the recent research upon syphilis of the nervous system is the demonstration of the microorganism of syphilis, not only in the acute lesion of the late secondary stage, but also in the spinal cord in locomotor ataxia and in the brain in general paralysis. The various forms of syphilis of the nervous system are the results of the differences in reaction of the body tissues to the poison of the microorganim, depending upon the number and virulence of the spirochete present, and of the power of resistance of the individual. The result is the death of the highly organized cells and fibers as the result of a circulating toxin, and another factor comes into play—the effect of strain or injury. Those fibers and nerve cells upon which most strain has been placed will be more likely to die from the toxin than those on which there is less strain placed.

Only approximate data as to the prevalence of syphilis are available. Bramwell thinks that thirteen per cent. is a fair estimate of the number of proposers for insurance who have had syphilis, and that the expectation of life in these cases may be shortened by about ten years, while Blaschko and Erb give twenty per cent. of well-to-do patients such as may become insurers. Diseases of the nervous system as the result of syphilis tend to develop early in the disease, and may be divided into cerebral syphilis, giving rise to hemiplegia and affections of the spinal cord, of which acute myelitis is most common. Fournier states that two-thirds of these cases occur in the first six years of the disease, after which there is a steady drop in the number of cases occurring. In general paralysis, however, there is a condition which is of the utmost importance in reference to insurance. This condition reaches its maximum between the sixth and twelfth year after infection. The risk is a very definite and expensive one for life insurance companies as the proposers are usually dead in the fourth decade of life. Tabes dorsalis is of less importance because it becomes chronic, and the patients may live for many years, finally dying from an intercurrent complication.

In consideration of the treatment of syphilis, Thompson says that there seems to be no doubt that a thorough treatment with mercury has a marked effect in preventing the onset of nervous complications, but there is also no doubt that syphilitic nervous disease can develop in cases that have been treated very thoroughly for a long period with mercury. A two years' mercuric treatment by no means insures the non-development of syphilis of the nervous system. It has been stated that eighty per cent. of syphilitics who develop general paralysis have been insufficiently treated. The treatment with salvarsan has not been of sufficient period of time to judge of results. Thompson has seen at least five cases of development of nervous syphilis that have received the salvarsan treatment. While the Wassermann reaction may play an important rôle with regard to syphilis, from the insurance point of view the fact that a proposer who has had syphilis has a negative Wassermann is of very little value, nor need the fact that he has a positive Wassermann reaction make him absolutely uninsurable, since treatment influences the result of the Wassermann reaction. It is certainly safer not to insure a patient who has had syphilis until at least five years after the date of infection, and the age at which the proposer contracts this disease is most important, as those who contract it after the age of forty develop a much more serious manifestation of the condition, and if acquired in the usual way it would seem to show that the proposer is governed by irregular habits in the latter part of life, therefore less suitable for insurance. Various observers have endeavored to estimate the mortality from syphilis, not only of the nervous system, and in all cases syphilitic lives prove to be bad ones on an average, and a very serious risk to the life insurance companies. Most insurance companies now ask the definite question as to the state of the pupil reflexes and knee-jerks. Recognition of nervous syphilis in the acute stage in the early years after infection is difficult and may be overlooked in the physical examination. The presence of nocturnal headaches and hyperesthesia in root areas should disqualify the proposer.

Thompson gives the following conclusions as to the treatment of the lives giving a history of syphilis: (1) No syphilitic proposer should be accepted unless he can bring forward satisfactory evidence of having undergone treatment for at least two years. (2) No syphilitic proposer should be accepted until there has been an interval of five years from the date of infection, and no secondary or tertiary symptoms have developed in this period. This conclusion is rather more stringent than that ordinarily accepted which ordains a three years' interval with a year's freedom from symptoms, but the very large mortality in early years, as shown by the American offices, leads to the increase of the interval after infection before which a proposal can be entertained. (3) No proposer acquiring syphilis after forty years of age should be accepted. (4) The only syphilitic cases who should be accepted are those who are perfectly satisfactory in their present physical condition, family history, and habits, and even in these cases an addition should certainly be made; for example, five years extra in a proposer of thirty-five years of age.—*The Assurance Medical Society.*

Suicide in Prussia, According to Frequency, Age, and Sex During the Year 1913.—The total number of suicides in Prussia during 1913 was 9,214 (of which number 6,831 were males). The figure for the preceding year was 8,723, an increase of 491. The average number during the periods 1909-1913, inclusive, was 21-22 per 100,000 living (the proportion of male to female amounting to 3 to 1). Individual States show wide departures from the grand average for both sexes. In women the proportion of suicides to female inhabitants may go as high as 21-22 per 100,000, while in males this ratio may be as high as 53-54 per 100,000. Suicide practically begins at the age of 10 years and increases in frequency with age, especially after the age of 40, when the increase is unbroken.—*Blätter für Vertrauensärzte der Lebensversicherung,* September-October, 1915.

Accident Insurance.—A policy insuring against injuries effected through external, violent, and accidental means alone is held in Smith v. Travelers' Ins. Co. L.R.A. 1915B, 872, not to cover death from meningitis resulting from a violent snuffing of a nasal douche, which caused infection to pass into the middle ear and thence through the mastoid into the brain, where the snuffing was no harder than was intended.

Book Reviews.

THE AMERICAN YEAR BOOK. A Record of Events and Progress, 1915. Edited by FRANCIS G. WICKWARE, B.A., B.Sc. With Cooperation of a Supervisory Board Representing National Learned Societies. New York and London: D. Appleton and Company, 1916.

THIS is the sixth issue of the American Year Book, which is intended for the needs of writers and searchers of every kind. The editor and his collaborators well act up to the intention, and have succeeded in compiling each year a book of ready reference of the greatest value. In particular it should be of use to scientific and medical men, as chemistry and physics, the biological sciences, anthropology and ethnology, psychology, and philosophy, and the medical sciences are all discussed briefly but adequately by authorities in the various departments. That part dealing with vital statistics is of especial value. The book supplies an excellent means of ready reference and should be on the desk of every writer.

AN INDEX OF TREATMENT, by Various Writers. Edited by ROBERT HUTCHISON, M.D., F.R.C.P., Physician to the London Hospital, and JAMES SHERREN, F.R.C.S., Surgeon to the London Hospital. Revised to Conform with American Usage by WARREN COLEMAN, M.D., Professor of Clinical Medicine and Applied Pharmacology, Cornell University Medical College. Seventh Edition. Price, $7.00 net. New York: William Wood & Company, 1916.

IT is a sufficient proof of the popularity and usefulness of a work of this character to state that it has reached its seventh edition. The authors are all prominent members of the English medical profession, many with an international reputation. It is obviously impossible to present a detailed review of any work of this size, but it may be said that the great majority of the articles are eminently satisfactory, and in only a very few instances the more recent advances have failed of mention. Such omissions are that of the Baccelli treatment of tetanus and the intraspinous methods of medication in syphilis of the nervous system. The warning against the use of thyroid in the treatment of obesity seems inadequate. On the other hand, most of the articles are fully up to date and the book is provided with an extensive index which enhances its value considerably.

CONSUMPTION AND ITS CURE BY PHYSICAL EXERCISES. By FILIP SYLVAN, M.D. Price, $1.25 net. New York: E. P. Dutton & Co., 1915.

THIS book, with two prefaces, one evidently intended for the public and the other in the form of an address "to medical men," contains a strange mixture of truths, misstatements, and dangerous advice. As an example we may quote the following from the general preface: "There is no getting away from the ugly fact that the majority of patients in the present sanatoria in practice actually become worse instead of better." In his preface "to medical men" the author makes the following modest statement: "We have to find out which gymnastic exercises can be performed by consumptives in various stages of the disease without causing any overstrain. This is what I claim to have discovered, and my results show that my claim is justified."

The first chapter is devoted to historical remarks and quotations from the works of Hutchinson, Villemin, Koch, Walters, and Bandelier. The rest of the book is mainly devoted to Ling's gymnastic system, which the author considers the best preventative of tuberculosis and recommends also as the best treatment for pulmonary tuberculosis in all stages. Concerning tuberculin he makes the following statement: "The use of tuberculin ought to be prohibited altogether, because even in cases where tuberculin seems to reduce the tubercle bacilli it is of very little value, if any at all, and frequently does the patient actual harm." "The temperature as a guide for any treatment should be dispensed with." The author is opposed to rest treatment in bed in all cases of pulmonary tuberculosis in no matter what stage.

In the hands of a conscientious and discriminating physician the book might be of some value because of the instructive and interesting remarks on hydrotherapy and the descriptions of the various gymnastic movements. These are well worth considering as prophylactic means. In the hands of an untrained patient the book is likely to produce great harm. The author commits the serious error of treating the tuberculous disease and the predisposition to it in the same manner. He forgets that the former is a pathological entity, the latter a physiological poverty.

THE WORK OF OUR HANDS. A Study of Occupations for Invalids. By HERBERT J. HALL, M.D., and MERTICE M. C. BUCK. Price, $1.50 net. New York: Moffat, Yard & Company, 1915.

"A WAR that goes on year after year between the machine and the man, between disease and the man, keeps our ambulances busy and taxes our charities in no uncertain way. The hospitals do their best, our charitable organizations are very efficient, but there are thousands of men and women in every great city doomed to idleness and dependence because of injury or some illness that makes ordinary work out of the question." In this paragraph from the introduction to their book the authors aptly summarize the economic problem with respect to idleness enforced by disease or injury. In a series of most entertaining chapters they show that this problem is being attacked vigorously and with no uncertain results. The present struggle in Europe is bringing into sharp focus the necessity of adapting the crippled individual to some useful and congenial occupation, a necessity that has been met in isolated instances for many years past and during peaceful times. This necessity has existed, however, on a large scale in the case of those invalided, but not disabled by heart disease, tuberculosis, insanity or other nervous disease, etc. In modern institutions for the care and treatment of patients suffering from these conditions the teaching of suitable occupations and keeping the patients engaged in them for definite periods every day, is an important item in the regular routine. But the subject is not merely one of economic importance. It is also one of profound therapeutic significance. Both aspects are discussed in this book by the authors, whose knowledge of their subject matter has been obtained at first hand and by actual experience in teaching new occupations to physically or mentally handicapped individuals. In Chapter I of the first part of the book they describe the workshops that have been established in general hospitals, notably in the Massachusetts General Hospital and in the recently erected Burke Foundation Convalescent Home at White Plains, N. Y. The succeeding chapters deal with the following subjects: manual work for patients in state and county hospitals; sanatorium treatment for people of small means; teacher and pupil; the trained nurse and the work cure; the well-to-do patient at work; the industrial problem of the "tubercular" (the word should be "tuberculous"); and handicapped labor and the law. Part II discusses the more technical aspects of occupational instruction for the handicapped, and the special application of this instruction in definite diseases. The following topics are dealt with: teaching of the handicapped, methods of teaching, readjustment, organic nervous diseases, hysteria, epilepsy, chorea, mental diseases, borderline cases, work with the aged, neurasthenia, psychasthenia, and work with cripples. The authors have written a volume that may be regarded as the first of its kind, at any rate in the English language, a volume that cannot fail to be of eminently practical value to both sociologist and physician.

THE CLINICS OF JOHN B. MURPHY, M.D., AT MERCY HOSPITAL, CHICAGO. Volume IV, Number 5. October, 1915. Octavo of 229 pages with 58 illustrations. Published bi-monthly. Price per year, paper, $8.00 net; cloth, $12.00 net. Philadelphia and London: W. B. Saunders Company, 1915.

THIS number is largely taken up by discussions based on clinical cases representing various types of bone lesions such as fractures, luxations, metastatic arthritis, tuberculosis of the knee-joint, painful stumps after amputations and contracture following joint infection. There are also several cases of malignant growths, among the most interesting of which is that of sarcoma of the ovary. Another interesting case report incorporated in this number of the Clinics is that of an inoperable recurrent carcinoma of the nasopharynx and other structures treated by mixed toxins with the disappearance of the tumor under five weeks of treatment, this case being reported by Dr. William B. Coley. There are also several cases bringing out points of interest in the surgery of the nerves and a few other topics. This number of the Clinics will appeal to those who are especially interested in bone surgery; to others it is apt to be somewhat disappointing.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held February 4, 1916.

Dr. JOHN DOUGLAS in the Chair.

Cases in Which Nail Extension Was Especially Indicated.—Dr. JOHN C. A. GERSTER presented two cases.

CASE I.—Malunion (Three Inches Shortening) of Six Months' Standing; Reestablishment of Fracture (Open Operation); Nail Extension; Result Nine Months Later. The patient was a boy, thirteen years old, who was admitted to Mount Sinai Hospital six months after a transverse fracture of the femur. Fusion had taken place and there was a shortening of three inches. Reestablishment of the fracture was made by the open method and nail union with extension of seventeen pounds was employed. Upon release the nail union did not shorten up, and the nail holes healed without giving any trouble. The boy now, nine months after the nail extension, had a shortening of only one-third of an inch and he wore an ambulant splint. Dr. Gerster thought that after about six years more of care the boy would have no trouble whatever.

CASE II.—Bilateral Fracture of Femoral Shaft; Extensive Abrasion; Compound Fracture of One Side. This patient was run over by an automobile and had very extensive abrasions from the waist down, involving both extremities, one of the worst cases of the kind Dr. Gerster had ever seen; the child was literally skinned all over. There was no sound skin except below the knees. *X*-ray plates were shown. It was out of the question to attempt to apply a plaster-of-Paris cast or any kind of extension because of these extensive abrasions. The accident occurred April 26, and on May 5 a fracture hematoma was found converted into pus which was incised and drained. On May 7 nail extension was done on both sides. The legs were suspended and kept at right angles to the thighs. May 28 distraction occurred, as shown on the plates. Dr. Gerster was away for two weeks and the extension was not interfered with during his absence, with the result that instead of shortening there was lengthening of about one-half an inch.

Dr. Gerster said he showed these two cases to illustrate the fact that there was a definite field for nail extension, a field in which such a procedure would serve a useful purpose. Previous to the introduction of nail extension not much could have been done with such cases as he had shown. The fractures all healed without sequestration.

Dr. L. MILLER KAHN said they had had at the Lebanon Hospital seventeen cases in which the nail extension was employed. In none of these could they have applied any other method of extension than the nail extension. The nail holes were not infected. In one case they used the nail in a compound fracture of the femur, contrary to the usual advice given. They had one case in which the nail hole persisted for four months.

Dr. LYLE showed pictures of one case of fracture in which there was three and a half inches shortening of three months' standing. In gunshot wounds of the bones nail extension was the method of choice but one should keep out of the diaphysis.

Dr. Gerster said that he had had thirty-five cases of nail extension and he had seen among these but one case of infection. In this instance the dressings were not on firmly enough and the child scratched himself and so carried the infection.

Fracture of Lower End of Radius with Anterior Dislocation of Ulna at the Wrist.—Dr. CHARLES E. FARR presented two cases which were exactly alike, both having fallen, and ordinary force caused the Colles' fractures. The deformity was rather exaggerated in both patients. In one case it required three attempts under nitrous oxid gas to reduce the fracture and it was three months before this patient could resume his work. The *x*-ray pictures were shown of both cases. These cases were supposed to be rare but Dr. Farr doubted it, for many cases were not reported at all.

Cases of Hemophilia, Purpura, and Severe Post-Hemorrhagic Anemia Treated by Blood Transfusion.—Dr. EDWARD W. PETERSON presented these patients.

CASE I.—This patient was a girl, six years of age, with a diagnosis of purpura hemorrhagica fulminans. Her parents were alive and healthy. Her father had a severe nose bleed when a youth. The patient had had whooping cough; otherwise she had always been well until in May, 1913, when she fell, striking her nose. The injury was not severe but was followed by rather profuse epistaxis and ecchymoses on the nose and lower eyelids. After this she had frequent bleeding from the nose, but not requiring any special treatment. On May 21, 1915, there was a profuse epistaxis and vomiting of bright red blood. Dr. O'Connell, who was called in consultation with the family physician, was unable to check the flow. The anemia finally became so acute that the life of the child was threatened. She was sent to the Post-Graduate Hospital and on the way was thought to be dying. This was probably an attack of syncope. Without any preliminary tests, the mother acting as the donor, a transfusion of 325 c.c. was given. The resuscitation was immediate and it was very impressive to note the marked change in the patient's appearance. During the next three weeks there were frequent small hemorrhages from the nose, also from the gums, the left ear, intestines, and vagina. There was also blood in the stools and in the urine. Two more transfusions were necessary before the bleeding tendency was corrected, a foreign donor being selected. The bleeding tendency did not manifest itself then for over a year. At the present time she was showing again a slight tendency to bleed. On December 31, 1915, the bleeding time was prolonged. The platelets were 36,000, the leucocytes 13,000, the plasma coagulation twenty-two minutes, the capillary resistance was XXXX and pressure 130.

CASE II.—This patient was a girl, eleven years of age, with a diagnosis of Henoch's purpura, nephritis, and secondary anemia. She was a patient of Dr. Lorber. Her chief symptoms were abdominal pain and those accompanying post-hemorrhagic anemia. There was blood in the urine and in the stools. There were purpuric spots on the body. She had convulsions and had been ill for two months. Following a transfusion of 270 c.c. of blood, the father being the donor, there was a wonderful hematopoietic stimulation with a cessation of the bleeding. The later results showed the blood picture much improved; there was no further bleeding and recovery had followed.

CASE III.—This patient was a boy, eleven years of age, a patient of Drs. Chace and Barrett. The chief symptoms were abdominal pain, rectal bleeding, purpuric rash, and ecchymotic spots on the limbs. The diagnosis was Henoch's purpura. The treatment consisted in transfusion of 200 c.c. of blood. Forty c.c. were given intramuscularly from a professional donor. This was followed by an immediate improvement, the bleeding stopping. The later observations showed this patient to be in excellent health and with no recurrence of the symptoms.

Treatment of Colles' Fracture Considered from the Standpoint of Muscle Physiology.—Dr. ALFRED J. BROWN read this paper, in which he discussed the basic principles with regard to the causation and retention of deformity on the one hand and the mechanics of reduction and immobilization of fracture on the other, and applied these principles to Colles' fracture. In any fracture, aside from those which were impacted, the position of the fragments was determined in part by the direction of the fracture line, slightly by the direction of the causative force, and much more by the action of overstimulated muscle upon the fragments themselves. In consequence it was of the utmost importance to consider the various movements in all directions which the fragments might execute, the site of the fracture acting as a fulcrum around which the movements took place. At all times the action of the muscles upon the fragments must be carefully studied in the light of the abnormal fulcrum around which motion took place and the final position in which the part was immobilized must be governed entirely by these considerations. The problem of treatment therefore resolved itself into restoring bone continuity by bringing the fractured ends into apposition and placing the limb in such a position that equilibrium would be restored if possible between opposing groups of muscles to the end that the fragments might more readily be restored to the anatomical and physiological norm. In illustration of these points the writer described the mechanics involved in fractures of the greater tuberosity of the humerus, fractures of the radius at the junction of the upper and middle third, and the displacement of the shaft of a bone upon the

head and neck, as in fracture of the neck of the femur. The fracture of the radius, known as Colles' fracture, offered a similar problem and when studied in the light of muscle physiology fell into the class in which the smaller fragment was separated from the shaft and was controlled, for all practical purposes, by one set of muscles only. After referring to the theories in reference to the etiology of Colles' fracture, the essayist said it was very probable that both the *"arrachement"* or tearing through hypertension and the force directed obliquely upward and backward were instrumental in the production of the fracture. In the majority of cases in which displacement was present, the line of fracture ran from below upward and backward, and from within, that was, from the ulnar side of the bone, outward and slightly upward. In addition the continuation of the vertical force impacted the posterior portion of the upper fragment and resulted in a tilting upward and backward of the lower fragment through the transverse axis. The vertical diameter of the anterior portion of the lower fragment was therefore slightly shortened because of the compression of tissue due to the impaction and the same was true of the posterior vertical diameter of the upper fragment, usually to a somewhat greater extent. Upon reduction of the fracture there existed in consequence a gap between the anterior and posterior margins of the bones and the two fractured surfaces were convex and in contact only at their points of greatest curvature. This predisposed the fragments to tilt upon one another, the direction of the tilting being governed by the direction of the pull of the stronger set of muscles governing the fragments. A study of the anatomy and physiology of the muscles of the forearm and wrist showed that the tendency of all muscles passing over the wrist joint was to exert a strain on the lower extremity of the radius which tended to force this portion of the bone backward and toward the radial side of the forearm. When a fracture separating the lower extremity of the bone from the shaft was present, the tendency of the muscles, because of the induced spasm, was to increase the deformity and after reduction of the fragments predisposed to recurrence. As a consequence of the problems presented by fractures of this kind the result of treatment had been unsatisfactory, both from a functional and cosmetic standpoint. The proof of this statement lay in the records of the law courts, for, with the exception of Pott's fracture, Colles' fracture was more commonly the cause of a law suit than any other. Inasmuch as the muscles acting most forcibly on the lower fragment, drawing it backward and rotating it outward on its long axis, were situated upon the dorsal and radial side of the extremity, it seemed that the indication was to shorten these muscles to their physiological limit and thus minimize the upward and backward pull on the fragment and at the same time offer an antagonistic muscle pull through the brachioradialis, which in the position of supination of the forearm became a pronator and thus tended to pull the lower fragment forward, rotating it from behind forward around its vertical axis. To ascertain the amount of shortening obtainable by this posture of the forearm, measurements were made of the forearm of adults who had never had a fracture. As a result of their observations the following method had been adopted during the past eight months at Bellevue Hospital in the treatment of Colles' fractures: The patients had been anesthetized to the stage of primary anesthesia, nitrous oxide gas being used in the majority of cases, and the impaction, if present, had been completely broken up in the following manner: The hand of the operator, the palm of which corresponded to that of the injured wrist, grasped the hand as in shaking hands. The hand and wrist were then hyperextended as far as possible, thus loosening the anterior portion of the fragments and increasing the deformity. The other hand of the operator then grasped the forearm at its lower portion just above the line of fracture. Traction and counter traction were then applied, the hand of the patient being drawn into a position of marked ulnar abduction and at the same time the upper hand of the operator supinated the upper portion of the forearm while the lower hand slightly pronated the lower fragment. It might be necessary at times to assist the pronation by pressure with the thumb upon the lower extremity of the radius. This manipulation was carried out two or three times in order to completely break up impaction and assure complete reduction. At the end of the manipulation the upper forearm was in complete supination with the lower fragment slightly pronated upon it, and in this position with the forearm flexed to 90° upon the arm anteroposterior moulded plaster-of-Paris splints extending from the tip of the fingers to a point half way between the elbow and shoulder were applied. It was essential that the splints include and extend above the elbow, for in this way only could the movements of pronation and supination be interdicted. At the end of one week the splints were removed and the site of the fracture examined, the distal portions of the splint were shortened to the metacarpalphalangeal articulations and movements of the fingers encouraged. At the end of the second week the proximal portions of the splints were removed to a point just distal to the elbow, and at the end of the third week the splints were removed entirely and the forearm carried in a sling during the fourth week, at the end of which time in the majority of cases full function had been established; by the end of the fifth week many patients had been able to return to work. In the hands of the writer this method had afforded better results with less protracted convalescence than any other method heretofore employed.

Result of Section or Irritation of Pneumogastric in Operations about the Neck.—Dr. ASPINWALL JUDD presented this communication in which he stated that he reported these cases because of the conflicting testimony as to the results of section or irritation of the pneumogastric and in the hope of bringing out a discussion that would clear the atmosphere. From a study of the literature and of his own cases he is impressed with the idea that many symptoms recorded as the result of this section or irritation might be incidental, that was, they might be the result of complicating factors caused by the original disease or by the operation. As in practically all the cases reported in the literature the section was the result of an accident occurring during the course of an operation for the relief of some diseased condition, some of the resulting symptoms, differing in the different cases, might have been caused either by the original disease, the anesthetic, shock, hemorrhage, etc., alone or plus the section of the vagus. He was inclined to agree with Park that an immediate fatal result was not to be apprehended, provided proper precautions against shock were taken, that pneumonia was the result of a complication due to faulty anesthesia or failure to prevent aspiration of mucus or blood during the first twenty-four hours after operation, and that the lung complications, except such as were known to be the result of vagus section, were due to the same cause and could be avoided. Dr. Judd reported four cases which, though too few to justify conclusions, emphasize the fact that section or irritation of the vagus seemed to him far less dangerous than they had been led to suppose.

CASE I.—This patient was a man 55 years of age and in excellent condition, operated upon by the writer for carcinoma of the thyroid gland. This patient had been exhibited before the Academy of Medicine on several occasions extending over a period of two years. The operation consisted of an entire extirpation of the thyroid and accompanying glands on the right side. In the course of the operation, in order to remove all the malignant growth it became necessary to resect the pneumogastric. The immediate result was a rise in pulse rate which persisted for several days, and gradually subsided month by month, until at the end of a year it was normal. There was no change in the blood pressure and no symptoms referable to shock were noted at any time. The patient suffered with slight dyspnea for a few days and from a partial aphonia for about three months. He had remained well until he disappeared from the writer's notice more than two years after the operation.

CASE II.—This patient was a young man, 25 years of age, operated upon for an enormous hypertrophic thyroid. Before operation he had all the symptoms of thyroid poisoning. After having been treated in the hospital for four weeks without result, he insisted upon an operation, though told that he would probably die on the operating table. The writer removed the entire thyroid gland, during which operation an artery clamp was fastened to the pneumogastric accidentally and remained in place about three-quarters of an hour. This man collapsed on the table, but was revived by the use of saline infusion and stimulants. The man's pulse remained very rapid for forty-eight hours, but within one week had sunk to 60, where it remained for nearly two weeks, except when influenced by drugs. His aphonia was absolute but gradually improved until, at the present time, while his voice was husky, it was

otherwise unimpaired. He suffered with cough, a moderate amount of dyspnea, and a pneumonia involving the lower lobe of the lung. Evidence of consolidation persisted for several months after his discharge from the hospital. No gastrointestinal symptoms were observed.

CASE III.—This patient, 39 years af age, gave a family history of tuberculosis. He was exceptionally strong. Six years before he was ill for a year from a condition which was finally diagnosed as typhoid fever and which was followed by pyelitis. While he was convalescing his cervical glands on both sides began to enlarge. A diagnosis of tuberculous glandular involvement was made. Treatment with the *x*-ray seemed to help him for a while, but later the glands began to grow again, accompanied by an extension of the process into the chest. Pressure on the trachea and great vessels became so marked that operation was decided upon. In a fairly extensive operation on the right side most of the glands were removed; in attempting the removal of the deep glands on the left side, the internal jugular, the carotid, and the pneumogastric came away *en masse*, the tissues being so friable that it was almost impossible to finally secure them by means of ligature. By efforts at infusion, transfusion, tying off of arms and legs, and stimulants, the patient finally pulled through. Before operation the hemoglobin was 100; after operation, 40 per cent., but it rose within a few months to normal. There was no leucocytosis or lymphocytosis observed in this case at any time. Immediately after operation the patient's pulse rose to 140 and remained so for a number of days, finally dropping to 120, where it remained for over a year. The aphonia, which was partial before operation, became complete. A harsh dry cough with scanty expectoration was very persistent. A year after the first operation a second operation for recurrence was followed by apparently complete recovery. The pulse rate upon exertion remained about 120, but when the patient was quiescent sank into the nineties. The dyspnea on exertion and the cough remained. Two years after the second operation the patient again presented symptoms of recurrence. During this time high frequency electricity to the cervical region resulted in a gradual diminution of his aphonia. He suffered from pain in the chest, muscular weakness, tachycardia, and diarrhea, and began to have a series of attacks accompanied by an alarming increase in blood pressure to 200 or more, rapid pulse to 140, purpling of the skin, and edema of the lungs. These attacks promptly subsided under the influence of atropine 1/100 of a grain, and morphine ¼ of a grain. They were finally controlled by 60 grains of bromide at bedtime. The patient died in a heart attack.

CASE IV.—This patient, 60 years of age, was operated upon for a very extensive carcinoma of the tongue involving all the glands on the left side of the neck. During the operation it was found necessary to resect the internal jugular, the common carotid, and the pneumogastric. The patient collapsed on the table, but was revived by saline infusion and stimulation. The pulse rose to 120, but gradually subsided, until at the present time, ten days after operation, it was 100, respiration 20, and temperature normal. At no time had this patient suffered from dyspnea, and there were no changes in the lung in spite of the fact that the tracheotomy tube was inserted and that he had extreme difficulty in swallowing. In spite of the absence of the tongue, this patient did not suffer from complete aphonia. He had had no gastrointestinal symptoms and in common with three of the four patients had suffered from no muscular weakness.

Dr. EDWIN BEER asked regarding the symptoms that followed the section of the vagus in the cases he reported. So far as symptoms of vagus irritation was concerned, he had seen one instance lately in which the vagus was divided in the chest and there were absolutely no symptoms of vagus irritation or paralysis to be noted.

Dr. JUDD said that two out of the four cases reported developed pneumonia, the other two not showing any signs of pneumonia whatsoever. All had tachycardia which persisted at least one year except one case in which they took out the thyroid. Cough, dyspnea, and acceleration of the heart beat were present in all the cases. Aphonia was present, but tended to disappear on stimulation of the vagus on the opposite side.

Blood Transfusion in the Treatment of Severe Post-Hemorrhagic Anemia and the Hemorrhagic Diseases.—Dr. EDWARD W. PETERSON presented this paper in which he stated that most of the articles on blood transfusion, with a few notable exceptions, dealt largely with the question of the operative technique, gave a wide field of indications, but were lacking in recording the results obtained. The majority of transfusion workers were over-enthusiastic and were using the procedure without proper discrimination as to indications; onlookers, viewing the work in unwisely selected cases, were inclined to underestimate its true worth. As Hartwell had pointed out transfusion of blood from one individual to another should be considered as hemogenous transplantation of living tissue, and not merely as the transfer of a chemical or physical mixture. After a transfusion the patient's blood would show an increase in the number of red cells, a rise in hemoglobin percentage, and a decrease in coagulation time. There was increasing evidence that the whole blood was hemostatic, hemapoietic, and in selected instances, antitoxic and bactericidal. It was indicated then in (1) hemorrhage of various types and degrees, (2) in selected cases of anemia, both primary and secondary, not due to hemorrhage, (3) and in selected toxic and septic conditions. Dr. Peterson stated that at the present time he would consider only the first group, recording the results obtained by blood therapy in 27 cases of simple pathological hemorrhage. Thirty-four transfusions were given in 23 cases in this series; 4 cases were treated by intramusular injections of blood. In acute and chronic post-hemorrhagic anemia, no other remedy would compare in efficiency with whole blood in producing hematapoietic stimulation. In the acute variety (following trauma, labor, operation, or accidental cause, or as complication of ectopic pregnancy, gastric or duodenal ulcer, typhoid fever, etc.) a single large transfusion was indicated, while in the chronic type (that resulting from repeated small losses of blood) better results were obtained by giving serial transfusions of small or moderate amounts of blood. There were seven cases of acute and four of chronic post-hemorrhagic anemia transfused. The histories in most of these cases left no doubt as to the striking effects of the blood transfusion. In discussing pathological hemorrhage the essayist first considered hemophilia. He stated that this condition might often be controlled by the injection of whole blood or serum, but in obstinate and intractable cases the indications were best met by transfusion. While the disease itself was not cured, the alarming and dangerous symptom was controlled and immunity against excessive bleeding was established for a variable period. Prophylactic injections of blood should be administered from time to time, for as age advanced the bleeding tendency diminished, and might cease altogether at maturity. There were five cases of hemophilia in this series, in all of which the transfusion was effective. Hemorrhagia neonatorum probably belonged to the purpuric group, and was dependent upon some form of toxemia. Under all circumstances it was a serious affection with a bad prognosis. The serum treatment of Welch, the intramuscular injection of whole blood, and blood transfusion had been attended by brilliant results and the mortality had been reduced from 50 to 75 per cent. to 5 or 10 per cent. According to the experience of Lespinasse of Chicago and Green of Boston, blood transfusion was the method of choice and would often prove life-saving after the failure of all other methods. The essayist reviewed the case in which the first transfusion for hemorrhagia neonatorum was done, reported in the MEDICAL RECORD, May 30, 1908, by S. W. Lambert, in which the infant apparently in a dying condition passed immediately after transfusion to a state of perfect health with no period of convalescence. His own experience in this condition was limited to one case in which after the hemorrhage started the child became decidedly jaundiced. In this instance the transfusion was followed by an improvement in the general condition of the child and a lessening of the jaundice, but some days after removal from the hospital the infant died. This case was reported simply to show the prompt hemostatic affect of transfusion and to call attention to the fact that the introduction of blood into the superior longitudinal sinus through the anterior fontanelle offered an easy method of transfusion in the newly born. Symptomatic and idiopathic purpura also belonged to the purpuric group. In the symptomatic variety, if the underlying etiological factor could be determined and eliminated, the disease would tend toward a spontaneous and permanent recovery. On the other hand idiopathic purpura or "pseudohemophilia" or "essential thrombopeny" was a clinical entity. Its mortality was fully 25 per cent. To this group belonged

eight cases of the series under consideration. Seven cases were given twelve transfusions. In addition to the transfusions, several were given blood intramuscularly. There were two deaths in the series, one due to acute nephritis occurring several months after the last transfusion, and the second occurring in a woman 63 years of age, who had been ill for months with purpura hemorrhagia. When brought to the hospital during a fulminating exacerbation, she was moribund. In three severe cases a simple transfusion corrected the bleeding tendency and apparently cured the condition, there having been no relapse up to the present time. In two cases in which hemorrhage was active and life was threatened from acute anemia transfusions tided the patients over the emergency period. Secondary hemorrhagic disease probably included all types of pathological hemorrhage, except hemophilia and constitutional purpura, and the term hemorrhagic was merely used for convenience to denote the variety of hemorrhage seen in icterus, sepsis, nephritis, blood diseases, etc. In the management of this form of bleeding it was imperative that, while carrying out measures for the control of the bleeding, the original disease be given proper treatment. The essayist reported two cases belonging to this group, one of chronic nephritis with persistent epistaxis and one of severe anemia aggravated by frequent small nose bleeds. For the most part in this entire series the results of transfusion had been good, in but few cases ineffectual, and in none harmful. In certain instances in which the blood of the donor had proved disappointing the selection of another donor had brought about strikingly brilliant response. The best clinical results in his experience had been obtained in hemorrhagic disease, when a young healthy donor, not fully matured, could be secured. In the future a qualitative as well as a quantitative study of the blood would be the guide in the selection of a donor in a given case. One whose blood was rich in platelets, both qualitatively and quantitatively, should be chosen. In conclusion Dr. Peterson said that the transfusion of blood, intramuscular injections of whole blood, and intravenous or intramuscular injections of homologous serum were the most efficient measures and were of value, in the order named, in the treatment of hemorrhage and hemorrhagic diseases.

Dr. Alfred Fabian Hess said that practically there was no class of diseases about which there was so much confusion as hemorrhagic diseases, and there was a great opportunity for the surgeon to help in studying the conditions presented. Dr. Peterson was one of the first surgeons to study these cases from the laboratory standpoint. Although these cases could not be divided carefully, they could make a larger distinction between hemophilia and purpura. At least these two groups of bleeders could be distinguished. It would be of great advantage if all surgeons who saw these cases would report them. Dr. Hess said that too much stress was laid upon the coagulation time. The coagulation time of the blood was one of the most important things that the surgeon wanted from his standpoint. The coagulation of the blood was only effective in hereditary hemophilia. The surgeon might be led astray if he considered the coagulation time of the blood in purpura because it was so often normal. With regard to treatment, there practically was no treatment for these diseases. Perhaps a small transfusion might be of some value according to the report of Libman and Ottenberg, but Dr. Hess did not think so. This method was an emergency therapeutic measure. In the local treatment thromboplastin, made from brain tissue and the active principle which was a lipoid substance in the brain, made by the Department of Health, was of value. This was particularly efficacious when used in bleeding from the mouth after an extraction of a tooth, or from the rectum, and it was especially valuable in bleeding occurring in myelogenous leucemia. Dr. Hess believed in the local use of thromboplastin, especially in bleeding from parenchymatous tissues. It was also of value in prostatic bleeding and in nasal hemorrhages which occurred in diphtheria, such as were met with so often at the Willard Parker Hospital. It was also efficacious in gastric hemorrhages.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held January 25, 1916.

Dr. Geo. W. Kosmak in the Chair.

Sarcoma of the Ovary Complicating the Puerperium.—Dr. George L. Brodhead reported this case. He said the patient was 18 years of age, and presented herself at the prenatal clinic of the Harlem Hospital on September 9, 1915. The history was negative and nothing abnormal was found in the abdominal examination. On October 25, 1915, she was delivered at term, normally, of a living child. On the day following her delivery her condition was good and temperature 100.5° F. On the second day the temperature was 101.4°, pulse 96, and she made no complaint. On the third day the temperature rose to 102.5°, the pulse was 132, and she complained of pain and tenderness in the abdomen. The left side of the abdomen was soft and slightly tender, but there was marked tenderness and rigidity in the right inguinal and lumbar regions and in the epigastric and upper umbilical regions. The leucocytes were 17,000, the polynuclear count 88 per cent., lymphocytes 12 per cent. On the fourth day, the temperature rose to 103.2°, pulse 130, the tenderness and rigidity increased, and the vaginal examination showed some tenderness in the fornices. For the next week, until the day of operation, the temperature varied from 101° to 103°, and after the operation remained normal. Eight days after delivery a mass could be palpated in the right lower quadrant, tender, elastic, and slightly movable, and a diagnosis of abdominal tumor was made. The blood count then showed leucocytes 21,000, polynuclears 74 per cent. and the urine showed a faint trace of albumen and there was a positive glucose reaction. The patient was transferred to the service of Dr. Haynes, who performed a laparotomy and found a sarcoma of the right ovary measuring 15 x 8 x 6 cm., bluish in color, with greatly dilated veins. The patient made an uninterrupted recovery and left the hospital in good condition. Dr. Gonzales, the pathologist, reported that the specimen was a spindle celled sarcoma.

Cesarean Section for Uterine Inertia and Contracted Pelvis.—Dr. Brodhead reported this case. The patient was 28 years of age, married, and became pregnant for the first time about February 1, 1915. She was a strong, healthy woman. The external measurements were, spines, 23, crests, 27.5 cm.; the transverse at the outlet was 8 cm., and the promontory could not be felt. Labor was estimated for about November 1, 1915. On November 13 labor began at 8 P. M., positive R. O. A., head above the brim. On November 15, at 9 A. M., the cervix was thin and admitted one finger; the pains were irregular, and the vertex was still above the inlet; the cervix admitted two fingers and the patient was discouraged, having had pains for 86 hours. The membranes were intact and the fetal heart was strong. A careful examination showed a moderately large head floating above the brim, and a moderately contracted pelvic inlet. Under the circumstances, the uterine inertia being marked, it was deemed advisable to perform cesarean section. This was done and a living child weighing 7¾ pounds was extracted. The recovery was uneventful, the mother and child leaving the hospital in excellent condition.

Vaginal Cesarean Section for Blighted Ovum.—Dr. Brodhead reported this case. The woman was 19 years old, married since March, 1915, and had her last menstruation on March 27. About July 1, she began to bleed and was treated for threatened abortion. The bleeding continued for about eight weeks, when it ceased. The family physician sent her to Dr. Brodhead on November 19 with the statement that the uterus had not enlarged since July. Upon examination the uterus was apparently enlarged to the size of a three months' pregnancy and the patient was informed that in all probability the pregnancy had proceeded normally until about July 1, when the fetus died and the uterus had been unable to expell the blighted ovum. The patient consented to operation, and a vaginal cesarean section was done. A placenta of about three months' development was removed; the fetal sac was distinct, but no trace of the fetus could be found, absorption having taken place. The condition, while rare, was met with frequently enough to make them guarded in the prognosis of a supposed threatened abortion; for, while bleeding might entirely cease and the patient feel perfectly well again, the uterus would not increase in size, and sooner or later would be emptied of the blighted ovum.

Dr. Henry Dawson Furniss reported the case of a woman who had missed four menstrual periods. On examination the uterus was found to be enlarged to a three months' size. There was no bleeding whatever. She aborted and the placenta was found to be as large as a goose's egg and the fetus less than one inch long and attached by the cord to the placenta.

Dr. Howard C. Taylor asked Dr. Brodhead if there

was no fetus found, was it therefore absorbed? Could a fetus be absorbed in the interior of the uterus?

Dr. BRODHEAD replied that this was his impression as he had seen a number of blighted ova of various periods of development with no trace of the fetus and many of those patients had been very carefully observed. In this instance the sac was intact and there was quite a little fluid present, but the fetus, of course, might have escaped.

Dr. ALFRED M. HELLMAN said that he had a similar case to the last one reported by Dr. Brodhead. The patient had one profuse hemorrhage and complained of cramp-like pains at night. There was no dilatation of the cervix. Although she was six months pregnant, the uterus was the size of a four months' pregnancy. He doubted the history given. She was observed for one week or ten days and then sent home. Ten days later she returned, stating that her pains were worse and that there was a slight discharge slightly stained with blood. He again examined her and found no apparent change and no cervical dilatation and she was sent home for another week. She was watched for five weeks in all and still there was no increase in the size of the uterus, knowing that she was pregnant and that the fetus must be dead, he introduced two rectal bougies and packed the cervix and vagina with gauze for thirty-six hours, when she delivered herself of a good sized placenta undergoing cystic degeneration. The placenta looked like a multitude of small parovarian cysts.

Dr. HERMANN J. BOLDT said he had seen many cases where the ovum had advanced to two or three months and yet he could find no trace of the fetus at all. The size of the placenta corresponded to a two or three months' pregnancy.

Dr. BROOKS H. WELLS said he had seen several cases in which the sac was apparently intact and yet no fetus could be demonstrated, and he took the ground that the fetus had died in the early stages, and "melted away," as it were. One might get an intact sac and yet find no trace of a fetus.

Dr. FRANCIS WARD LANGSTROTH, Jr., of Ridgefield Park, N. J., reported the case of a woman who had the most profuse hemorrhage he had seen in years, the blood filling two or three vessels. He dilated the cervix under general anesthesia. The cervix was closed, not dilated at all, and it did not seem that anything could come away except blood. He found a large amount of placental tissue, but could not find any fetus at all. The miscarriage was at the third month estimation, according to her last period. The very profuse hemorrhage came on suddenly after only a slight show the preceding night.

Dr. GEO. W. KOSMAK said that very often malignant growths in the ovary could not be diagnosed by their symptoms and in most cases the diagnosis was not made until the pathological report of the excised ovary was received. In one of his cases what was believed to be a cystic ovary was removed during the course of a laparotomy and the subsequent pathological examination showed it to be carcinomatous. The patient had been under observation for almost two years and no recurrences had been noted. It had been claimed that in every instance where malignant disease of one ovary was present, the other should be simultaneously removed, even if not apparently involved. Dr. Kosmak believed that in view of his experience he would hesitate to follow this procedure.

Dr. HOWARD C. TAYLOR believed that in such cases, especially where the woman was anxious to have children, she would prefer to take the risk and not sacrifice the other ovary.

Early Results in a Case of Carcinoma of the Cervix Uteri: Presentation of the Patient and Specimen.—Dr. JAMES A. CORSCADEN presented this patient and the results of the operation to which she had been subjected were told by the Committee appointed by the Chairman (see below).

Dr. F. C. HOLDEN said that he had the pleasure and privilege of being one of Dr. John Byrne's House Surgeons and he had become very enthusiastic about his work. He said he was thoroughly in accord with the recent writing of Dr. Boldt to the effect that the only advantage the Percy method had over that of Byrne was in that the abdomen was opened by the former. Dr. Byrne labored under many disadvantages in that his work was done in the pre-antiseptic age when the opening of the abdomen was of a great deal more magnitude than it was today. He was of a very inventive turn of mind and the instruments and batteries used by him were of his own design. The battery was of a liquid type and it was necessary to constantly agitate the fluid while it was being used to insure sufficient heat. Dr. Byrne never used a bright red heat on either the cautery knife or dome, but always worked for a dull red heat. At the Greenpoint Hospital they recently had a case of extensive carcinoma of the cervix which seemed suitable for the Percy operation. Both tubes and ovaries were removed and both the internal iliacs were ligated with heavy silk ligatures. This was followed by a long, slow application of the cautery as advised by Percy. When this case was examined two weeks later it was discovered that there was still carcinomatous tissue remaining. Four weeks after the first operation the abdomen was again opened and it was interesting to note that the iliac arteries were still closed completely below the ligated points. Again slow cautery application was made, and up to the present time this patient had shown a decided improvement in her general condition. Dr. Byrne's work was very frequently followed by extensive hemorrhage at the time of operation, and Dr. Holden felt that inasmuch as the abdomen was opened in conjunction with the Percy method it was advisable always to ligate the internal iliac.

Dr. HERMANN J. BOLDT said that he knew nothing that was superior to the treatment devised by Byrne and he believed that all the credit for this method of treatment of cancer of the uterus was due to Byrne. Percy had given them a method by opening the abdomen, which enabled them, however, to make use of a more thorough procedure. That was true, but to claims of superiority of the low grade over the high grade heat was, in his opinion, a myth. The high grade of heat would penetrate as far as the low grade. When one used the degree of heat Byrne did, the work could be done more rapidly and it was as safe as the low degree of heat if the abdomen was opened, so that the electrode could be controlled.

Report of the Committee on the Patient Presented by Dr. Corscaden.—Dr. HOWARD C. TAYLOR said that the results of the operation to him seemed to be very good. The usual circular scar was present and the parts were soft, with no inundation. On the finger after examination was found a slight amount of blood, showing that probably there was a return of the disease. He felt that if they could always get as good a result in these cases as in the one he just examined, the operation would be a very valuable one. The Percy operation differed from the Byrne operation only in that he opened the abdomen and in the degree of heat employed. Both Byrne and Percy laid great stress upon employing a low grade of heat. Outside of the mere opening the abdomen Dr. Taylor did not think the method of Percy differed from that of Byrne.

Dr. FREDERICK C. HOLDEN asked Dr. Taylor what he would do with such a case now.

Dr. TAYLOR replied that he would let it alone.

Dr. BROOKS H. WELLS said that the patient had a rather smooth funnel-shaped vagina and at the upper end about the small scar was a small area of infiltration, which gave the impression that the carcinoma was still making an extensive progression. Certainly as a palliative measure the operation had been a successful one. The question came up, however, what were they going to do with these patients who began to bleed again? Dr. Wells believed that in this case the bleeding would return in two or three months. In these inoperable cases he said he found acetone applied to the parts gave great relief, stopping the bleeding, partly controlling the sepsis, and destroying the odor. The patients improved greatly, gaining in color and in strength and this improvement lasted over a long period of time.

Dr. GEORGE H. MALLETT said that there were three methods of treating these cases, first, open the abdomen and do as Percy did and apply the heat again; second, use radium, and third, the application of the *x*-ray. By any of these methods the terminal stage would be postponed and the patient have months or years of comfort. Remarkable statistics had been given following the use of radium in these cases.

Dr. CORSCADEN said that the result of Dr. Taylor's examination showed the condition of the woman to be practically the same as it was three weeks after the operation. Whether the condition had really changed very much he was unable to say. She had been given *x*-ray exposures to the abdomen for the affected glands and whether these had anything to do with keeping it quiescent or not, he did not know. He said

he was waiting for any sign of increase in the growth before undertaking further steps.

Mortality Following the Percy Operation, with Report of a Case and the Autopsy Findings.—Dr. FREDERICK W. BANCROFT read this paper. He said that much had been written during the last decade upon the susceptibility of carcinoma and sarcoma to a low degree of heat. In 1912, Percy published his report in regard to carcinoma of the cervix and uterus by low temperature cauterization and he based his operation upon the premises, first, that a low grade of heat, above 45° to 50° C. would kill carcinoma tissue, while living connective tissue and muscular tissue would survive; secondly, that low degree of heat would penetrate much farther than high. His first premise he assumed from a study of the experimental work of Haaland, Clowes, and Loeb. His second premise was deduced from experimental results obtained on pieces of dead beef. Percy found that with a very hot iron carbonization of the surrounding tissues occurred, preventing heat conduction, and that coagulation occurred only for a distance of one-half an inch from the iron. On the other hand, with a low grade of heat, coagulation occurred for a distance of two and a half inches in all directions from the cautery iron. He had devised a cautery which was attached to a rheostat so that he was able to control the heat in the iron. Boldt had published a report of an autopsy of a case that died eight days after the Percy operation, the cause of death being general peritonitis. He stated that there were numerous viable cancerous cells present in the uterine wall. Boldt concluded that there was no evidence that low grades of heat were more efficacious than high temperature cauterization. Dr. Bancroft reported a case in detail. The main facts concerning the findings from the microscopical examination might be summarized as follows: Certain islands of cancer cells showed advanced degenerative changes, reaching in many instances stages of necrosis and dissolution. Others showed milder grades of degeneration, and still others had apparently been affected by the treatment. The intervening structures (the musculature and connective tissue surrounding the islands of cancer cells) had not wholly escaped injury. Dr. Bancroft said that many factors must be considered in the case reported by him, such as (1) the difficulty of determining the viability of the cells by their microscopical appearance; (2) the uncertainty of knowing the exact temperature of the cautery, and (3) the influence exerted by infection must be considered.

The Radical Abdominal Operation for Carcinoma of the Uterus.—Dr. HOWARD CANNING TAYLOR read this paper. He said that if they excepted certain superficial growths of a low degree of malignancy, there was no cure for cancer which was accepted by the profession other than its complete removal by surgical means. Though there had been promising results from the use of other agents, such as radium, *x*-rays, and the cautery, these results were not such that their use would be advised for a limited growth in a patient constitutionally suited for an operation for its removal. Personally he believed there was a distinct value in the use of radium, *x*-rays, and the cautery in cancer of the uterus. Their use was still experimental and sufficient time had not yet elapsed to prove the permanency of the results reported. The number of the cases treated by these agents that would remain cured beyond the five-year limit was uncertain and until more definite clinical statistics were available their use would be largely limited to the inoperable cases, and the earlier cases would be treated by some surgical operation for the removal of the growth. The surgical removal of cancer was a mode of treatment about which they had definite knowledge, and it was not to be abandoned until they had something that was certainly better with which to replace it. There was no doubt that the use of radium and *x*-rays had modified the selection of cases suitable for operation. The abdominal route rather than the vaginal was the first choice of most operators. There were certain cases, however, that were approached more easily through the vagina than through the abdomen on account of the size of the vagina and the thickness of the abdominal wall. A fat abdominal wall added greatly to the difficulty of any abdominal operation and was a contraindication for a radical abdominal hysterectomy. If there was a combination of thick abdominal wall and a wide vaginal with a prolapsed uterus, the vaginal route should be selected. Personally he preferred the abdominal route for all cases except those in which there was a fat abdominal wall and a wide vagina. Dr. Taylor asked what was the difference between a simple and radical abdominal hysterectomy for carcinoma of the uterus. Theoretically there was a great difference, practically one merged into the other. In one operation vessels were ligated close to the uterus and no attempt was made to remove any of the pelvic connective tissue; in the other operation the ureters were exposed, the vessels were ligated outside of the ureters close to the pelvic wall and a large amount of pelvic connective tissue and a large portion of the vagina were removed. In favorable cases the theoretical radical abdominal hysterectomy could be performed and a large amount of pelvic connective tissue and the vagina removed. This added greatly to the chances of a permanent cure of the case. There was no doubt, however, that any series of radical abdominal hysterectomies contained cases that did not differ in the amount of tissue removed from cases in a series of simple hysterectomies by the same operator. The extent of the operation performed for the removal of any malignant growth was limited by two factors, the risk to the life and the amount of mutilation of the patient. In the radical operation there was a distinct risk to the patient. It was a more extensive operation requiring more time, complications during and after the operation were more frequent, and a higher primary mortality was a necessary result. The higher primary mortality of the radical operation was not due entirely to the operation itself. For a simple hysterectomy the growth must practically be limited to the uterus itself, while a considerable involvement of the broad ligaments was not an absolute contraindication to the radical operation. For growth of the same extent in patients in whom the radical operation was not contraindicated because of constitutional disease or a thick abdominal wall, Dr. Taylor believed that the primary operative risk was only moderately greater for the radical than for the simple hysterectomy and was not sufficient to outweigh the advantages of the more extended operation. After the ureters had been isolated the radical operation could often be done with little more difficulty than a simple hysterectomy. In his own cases the primary mortality was about 15 per cent. He believed the mortality would be less in the future with a more careful selection of cases. The injuries to the ureters were accidental division, ligation, and sloughing. He did not believe that the ureters were accidentally divided or ligated as frequently in the radical as in the simple hysterectomy, and it was surely discovered in the former and might not be in the latter. Sloughing or necrosis of the uterus was an accident of the radical operation which never occurred in a simple hysterectomy. In a series of 500 cases of Wertheim's there was sloughing of the ureters in thirty cases; in five it occurred in both ureters. The most frequent result of this accident was a ureterovaginal fistula. The cause of the necrosis of the ureter in most cases was the interference with the blood supply during the operation. Injuries to the bladder more frequently followed the radical than the simple hysterectomy. Paralysis of the bladder requiring catheterization was of frequent occurrence after the radical operation. Kidney infection frequently followed bladder infection, and injection was favored by the condition of the ureters. To the same extent that the lesions of the bladder and ureter were more frequent in the extended operation, the renal complications would be more common. Bleeding most frequently occurred from the radical operation and might be exceedingly difficult to control. The ligation of the anterior trunk of the internal iliac arteries would diminish the amount of the hemorrhage. It was probable that the risk of infection was no greater in the radical than in the simple hysterectomy for a carcinoma of the cervix uteri of the same extent. As to the results, statistical and theoretical evidence favored the radical operation. From the European clinics larger series of cases were reported showing a much higher percentage of permanent cures than had been obtained by any other operation. The more extensive an operation was for a malignant growth, the greater were the chances of a permanent cure if the patient survived the operation. This was true of cancer in the uterus as in other organs. In conclusion Dr. Taylor said that his treatment of carcinoma of the cervix uteri was as follows: (1) For the favorable cases, a patient in a good general condition, an abdominal wall without an excess of fat, no associated pelvic lesion to increase the operative risk, and a limited growth, he advised the radical operation. (2) For a limited growth in a patient who was a bad risk on account of general or local condi-

tions, he advised usually a simple abdominal hysterectomy, occasionally a vaginal hysterectomy. (3) For the so-called inoperable case, he advised radium, *x*-rays, and the cautery. In this class because of the favorable reports that were published following the use of radium, *x*-rays, and the cautery, he included cases that formerly he submitted to operation. If after the use of radium, *x*-rays, or the cautery the case became operable he removed the uterus.

Dr. GEORGE H. MALLETT said that one of the strong points in favor of the Percy operation was its low primary mortality; but since life insurance companies figured an average of 2 per cent. mortality for all abdominal operations, it was not surprising that a death would sometimes follow this procedure in the most skillful hands. Thirty years ago heat was the only operative means used in the treatment of carcinoma of the cervix. In 1892 Byrne reported eighty-one cases where the whole cervix was involved, and upon whom he had operated upon with heat. There was no mortality. Of these thirty-one were lost sight of, eighteen lived over five years. Considering all of the thirteen lost to have died in less than five years after the operation, he would still have 20 per cent. of cures. In 1897 Dr. Mallett assisted Dr. Byrne in operating upon a patient; he used his battery and instruments as described by Dr. Holden. The operation required about two hours for its performance. Thirteen years later this patient was still living. Percy had placed the operation upon a more scientific basis; opening the abdomen was of distinct advantage because it permitted the operator to control the heat when applied to the uterus. Ligation of the blood vessels of the pelvic organs was also an important feature. In many of Dr. Mallett's cases, in addition to the heat, radium was used but not as a routine measure. It would be a wonderful thing, and he hoped that it would be proved to be true, as claimed by Percy, that the heated iron would kill the cancer cells within a radius of from one and a half to two inches. Balfour of Mayo's Clinic had stated that of sixteen cases where the heat had been used and the uterus removed one month later, in thirteen there were found no live cancer cells.

Dr. JAMES A. CORSCADEN said that the treatment of these cases should be excision of the uterus, which not only hoped to get the gross mass out but the microscopical cells as well. When the tumor reached the stage where it could not be so excised then any method which would improve the patient is justifiable. There were two factors to be considered, namely, the local and the general effect upon the growth; whether the heat applied should be of high degree or of low degree, and whether the heat in the instrument would reach further in one method than in the other, this was a matter of exact observation. What had been shown tonight was beautiful in that both pathological processes were presented, first, the greater susceptibility of muscle and second, the greater susceptibility of carcinoma. Another factor that had not been talked upon enough was general immunity; this was one factor that had been proven by direct experiments upon animals, experimental cancer in rats. Murphy had shown what a great factor the lymphocyte was in immunity. Another factor was the fact that whatever serum therapy was used, synthetic chemical, or serum, there was always a high body temperature. Just what produced it as yet they could not tell. The equanimity with which some older surgeons viewed certain infections in carcinoma, and especially after operations upon the breast, might be recalled. Some stated that they had rather have an infected wound than one that was clean. He referred to Coley's work with the streptococci of erysipelas. Percy's treatment he believed was certainly indicated in these cases, but he was not ready as yet to say that this treatment afforded better results than did radium. It produced a leucocytosis and raised the body temperature. There was not only a local leucocytosis, but a general leucocytosis. The polymorphonuclears and the number of lymphocytes were greatly raised at the same time. Radiotherapy was often of great value in these cases.

Dr. BROOKS H. WELLS said that the tendency during the past decade had been to restrict the indications for the radical operation. He felt that if the disease was met with in the early stages, and if they felt sure they could remove it by a radical operation, the radical operation should be done and they would get good results. But, on the other hand, if the disease had progressed to a point where it was certain they could remove but a portion of the diseased area, even though it be a considerable portion, the question then would arise whether the radical operation should be attempted at all. Percy's operation followed by either the *x*-ray or radium often gave excellent results. They must all realize the importance of immunity and this carried much weight in making up the prognosis. However, the most important factor in these instances was the early diagnosis and today it was made earlier than it was fifteen years ago. If the scrapings were more carefully examined they would find many cases of carcinoma that otherwise would be overlooked.

Dr. HERMANN J. BOLDT said that only last week he operated upon a patient who had been sent to him only two weeks ago by a surgeon well known to them all, who said the patient would be entirely well in one week. This patient subsequently saw Dr. Brettauer, who told her that he was in no position to make a diagnosis until an excision had been made and a piece of the tissue submitted for examination. Two days afterward she came to see Dr. Boldt, and he told her the same as did Dr. Brettauer. Neither of them knew that the other had seen this patient. She finally consented to have a piece removed for diagnostic purposes. She had a well marked adenocarcinoma. He did not make a careful recto-vagino-abdominal examination until attempting a radical operation. He then found that the patient was practically inoperable. But, bearing in mind the fact that one did not know when carcinoma was fit for a total ablation or a radical operation or not, he opened the abdomen and did some extensive intra-abdominal work and verified what Dr. Brettauer and he had believed existed. The diagnosis might have been made earlier. Apropos of the radical operation, he thought that Dr. Taylor had struck the keynote in what he had said regarding simple hysterectomy and radical operation. Nineteen out of twenty cases done now and called radical operation were nothing more than simple hysterectomies. To do this work thoroughly was not a simple matter at all; it was a difficult operation. They had not yet had sufficient experience with it. Dr. Boldt went even further than Dr. Mallett, who said the first ten cases should not be counted against the man; twenty-five cases should not be counted against him. It was a dangerous and difficult piece of work. Laying bare the ureters was not so difficult, but in freeing them to the bladder, the difficulty commenced. Free venous bleeding occurred occasionally. Dr. Taylor was correct in saying that there was one class of cases in which the vaginal operation was to be preferred, cases with extreme obesity. If he had to deal with a very obese woman he did not care to try the abdominal route. The methods to be employed in these cases should be studied further and they must have more experience in order to enable them to do the operation properly. In regard to the destruction of the carcinomatous tissue by the cautery, Dr. Mallett had stated that, if one could destroy the cells from one or two inches from the site of the application of the cautery, the results would be excellent, but he placed in the word "if." Whether they used the high degree of heat or the low degree, the carcinomatous cells were destroyed but a short distance from the cautery. Tying the blood vessels was a method which the late Dr. Pryor advocated for the relief of the bleeding, lessening the discharge, and making the patient more comfortable. The cautery operation he believed to be the best, one of the most valuable therapeutic agents that they possessed for the palliative treatment. So far as radium was concerned he did not hesitate to say, judging from reports, that it was of the utmost value. Unquestionably much more could be achieved with the use of radium than many believed. Many patients who were considered inoperable became operable by the use of this agent, as reported by men of unquestionable veracity.

Dr. WILLIAM S. STONE said that he had had the opportunity of observing some of Dr. Mallett's work with the Percy operation. In one case, which he had examined several months after the operation had been performed, there were no gross evidences of carcinoma in the pelvis. He had also seen Dr. Percy himself perform two operations, in both of which, through the courtesy of Dr. Mallett, he had the opportunity of making an examination immediately before and after the operation, and that he was much impressed with the immediate result of the procedure. In one case, for example, in which the left broad ligament was extensively involved, rendering the uterus immovable, this thickening and hardening at the completion of the operation almost completely disappeared, and the uterus moved more freely. The truth was that it was a desiccating

process, taking the water away from the tissues. The examination of these patients immediately after operation might lead one to think they were then suitable for the radical operation. But he was also impressed with the fact that the operation was not a minor affair. As with the radical operation one should hesitate very much before attempting it, unless he had a comprehensive knowledge of the extent of the disease and all the conditions which make it applicable. To be safe and efficient, it required an operator who was well acquainted with the disease and the technique. Dr. Stone expressed his enthusiasm for the possibilities of the use of radium, especially in cases of carcinoma of the corpus uteri, but thought that the so-called Percy operation offered an additional therapeutic resource in certain advanced cases, in which neither the radical operation nor radium could be applied.

Dr. Emily Dunning Barringer said that the use of the cystoscope was very valuable in helping to clear up some of the borderland problems. In certain cases of uterine carcinoma the growth progressed forward into the bladder region out of all proportion to the parametrical involvement. Should these cases have a preliminary cystoscopy they would probably be considered inoperable and thus become a factor in reducing postoperative mortality. The bleeding that occurred from the bladder interested her very much. She questioned whether this might not be due to a rupture of a varicose vein in the bladder wall. In certain cases even if there be no definite carcinoma of the bladder there might be very large varicose veins in the bladder mucosa due to pressure of the adherent carcinoma. The manipulation necessary in removing the growth might have stirred up such a varicosity and started the hemorrhage. Owing to possible pressure of the growth on the ureters in cases of uterine carcinoma, she suggested that a preliminary phenosulphonephthalein test might be of value in estimating a possible case of postoperative renal insufficiency. She asked Dr. Taylor if any of his postoperative mortality was due to this cause.

Dr. Taylor closed the discussion. In answer to Dr. Barringer's inquiry he said he could not recall an instance among his cases in which death was caused by renal insufficiency. He thought that her suggestion regarding rupture of varicosities in the bladder causing the hemorrhage in the case she reported was probably correct; at least it was a reasonable one. With regard to the mortality following the Percy operation, a case that Percy himself did at the Woman's Hospital some two or three years ago died. Percy acknowledged that there was a definite mortality accompanying his operation. It might be better to give the credit of this operation to Byrne; the part added by Percy was that of opening the abdomen enabling one to do more thorough work. The late Dr. Pryor was the first to suggest the ligation of the blood vessels and to do it. In regard to the treatment of carcinoma of the cervix in general, an operation was practically the only means of cure. The mortality of the operation should not be considered too much. If in one series of cases there was a 10 per cent. risk and a 10 per cent. cure, and in another series of cases treated by a different method there was a 40 per cent. risk and a 40 per cent. cure, any of them would prefer the 40 per cent. risk with its 40 per cent. cure.

SECTION ON MEDICINE.

Stated Meeting, Held January 18, 1916.

Dr. Nellis B. Foster in the Chair.

Theories of the Etiology of Pernicious Anemia.—Dr. Karl M. Vogel read this paper in which he said that the etiology of pernicious anemia belonged to that pleasant group of subjects which were always agreeable to discuss because their ignorance concerning them was so extensive that it was very easy to have a great deal to say about them. There was a tendency to adopt certain changes in the conception of the different types of anemias owing to the somewhat clearer insight they were gaining into their nature, and a comprehension of this altered point of view was necessary in order to understand the relation which pernicious anemia was now believed to bear to the other forms. That view of anemias which made the distinction between primary and secondary anemias must be abandoned, for, logically considered, there could be no such thing as a primary anemia, since the blood in itself was not an organ, but was the direct product of the activity of the various hematopoietic organs or systems, and in a sense might more properly be regarded as a secretion than as an organ. It must be conceded that strictly speaking all anemias were secondary. The anemic state in the last analysis was the result of a disturbance of the normal equilibrium between blood destruction and blood production and it was found that in one group of anemias it was chiefly the former process which predominated, while in another it was a deficiency of the latter. Therefore the wholly reasonable attitude was to divide the anemias into two broad classes, one of which embraced those types in which the most conspicuous element was a reduction in the production of blood elements, while in the other group the significant feature was their abnormal destruction. To the former belonged the anemias due to cachexia, wasting diseases, tumors, some of the toxic anemias, aplastic anemia, and osteosclerotic anemia. In the other group came the anemias due to loss of blood through hemorrhage, either acute or chronic, and the entire class of hemolytic anemias, such as those caused by hemolytic poisons of definite nature, like pyrodin, phenylhydrazin, nitrobenzol, toluylenediamine, potassium chlorate, etc., and those of a more vague character, like the toxins of certain intestinal parasites, malarial organisms, or those sometimes produced in pregnancy, syphilis, and carcinoma. Then there were the various types of hemolytic icterus, and finally the progressive pernicious or Biermer's anemia. Chlorosis being a disease *sui generis*, depending most probably on a constitutional anomaly of the internal secretions of the female sexual glands, and differing in fundamental characteristics from the other forms of anemia could hardly be linked with any of them. After reviewing the observations of various investigators with reference to the etiology and pathogenesis of pernicious anemia, Dr. Vogel summed up by saying that pernicious anemia was a symptom complex based fundamentally on a condition of increased hemolysis plus a toxic action on the bone marrow, but the origin of these manifestations was highly involved and depended upon a variety of partial causes which were differently associated in different cases. One of these factors seemed to be an abnormality of splenic function, conveniently termed hypersplenism, while another was the presence of some hemolytic agent. In occasional instances which they had learned to recognize this agent was a toxin produced by the fish tape worm, or by pregnancy, or by syphilis. In the majority of cases, however, it was still quite unknown, though it was probably of endogenous nature, and there was much evidence in favor of the view that it belonged to the rather indeterminate group of ether-soluble substances termed lipoids. Possibly this lipoid substance served only to render some other agent actively hemolytic, or perhaps some action occurred such as had been shown in experimental toluylenediam anemia. Here the hemolysis was not caused directly by the chemical itself, but by a newly formed lipoid produced in the liver as the result of the poisoning. In addition there was probably a disturbance of the lipoid metabolism of the body in general, resulting in a decrease of the antihemolytic properties of the serum. This might reasonably be associated in their speculations with a disturbance of the functions of the ductless glands, notably the adrenals, for studies on the cholesterol content of the adrenal cortex and the blood had shown that an intimate relation existed between the two, while the antihemolytic properties of cholesterol had been well established. Still, though cholesterol protected animals against experimental cobra venom anemia, attempts to use this agent in the treatment of pernicious anemia had been quite fruitless. Furthermore, one was led to believe that there must be some constitutional anomaly, some inherent weakness, either temporary or permanent, which rendered the body susceptible and permitted the other agencies to take effect. No one of these could itself be termed the cause of the disease, for neither the Bothriocephalus, pregnancy, or syphilis, oral sepsis, gastric achylia, nor hypersplenism alone could produce it, and all such entities formed only single links of the etiological chain. In speaking of the treatment the author said that the effects of splenectomy and transfusion, either separately or combined, were encouraging, and that these two measures gave the most hopeful outlook in treatment. From the seven or eight splenectomies that had been performed at St. Luke's Hospital by Dr. Downes they had gained the impression that the subsequent effects of transfusion were more marked and persisted longer than in cases in which the operation had not been done. Greater

care seemed necessary in the choice of donors for transfusion. There were surely more subtle factors at work than had been detected by the relatively coarse tests for hemolysis and agglutination now available, which were perhaps concerned with the colloids of the blood, as suggested by Doerr and Moldovan in connection with anaphylaxis and coagulation phenomena. It was always advisable, if a transfusion was not attended by good results, to select a different donor for the next repetition of the measure. The benefits of the procedure depended more on the stimulation that it gave to the bone marrow than on the mere pouring into the vessels of a large volume of blood, and small transfusions of one to two hundred c.c. frequently repeated were more likely to benefit the patient than massive transfusions given as a last resort when the patient was *in extremis*. In gauging the effects of transfusion and of therapeutic effects in general they had found in their cases that watching the fluctuation of the reticulated cells as brought out by supravital staining was of much interest and definite practical value in measuring the degree of bone marrow reaction. Another very useful guide to the intensity of the hemolytic process and the effects of such measures as splenectomy or transfusion was furnished by a study of the urobilin in the urine and particularly in the stools. In addition to confessing that their efforts to cure the disease were still unavailing, they were obliged to admit that it was distinctly increasing in frequency. This had been noted not only in Europe but also in this country. At St. Luke's Hospital, during the seventeen years from January 1, 1899, to January 1, 1916, they had had 117 cases of pernicious anemia. Of this number twenty-two were admitted during the first five-year period; thirty-two during the second five-year period, and forty during the third period of five years, while during the last two years there had been twenty-four cases, which was at the rate of sixty cases for the coming five-year period.

A Study of von Jaksch's Anemia. — Dr. RALPH G. STILLMAN presented this communication, based upon studies in the pathological department of the New York Hospital. He said that although cases of anemia accompanied by enlargement of the spleen and occurring in children were described clinically by Gretsel as long ago as 1866, and pathologically by Cohnheim in the preceding year, it was not until more than twenty years later, when the examination of the blood began to play a prominent part in clinical investigations, that the various conditions included under this head began to be separated one from the other. In 1889 von Jaksch described a case of leucemia in a child of fourteen months, and in the following year he reported three cases of enlarged spleen in children, a condition which he called anemia pseudoleucemica infantum. This was characterized by a diminution in the hemoglobin and in the number of red cells, marked persistent leucocytosis, sometimes glandular enlargement, slight enlargement of the liver, a marked enlargement of the spleen, which was out of all proportion to the size of the liver, and a tendency to recovery. One patient died and the autopsy revealed no evidences of syphilis or leucemia. After this publication cases were recognized with comparative frequency and there were numerous reports in the literature which dealt with the subject. However, in spite of the comparatively abundant material and the obviously large amount of time which had been devoted to it, they had advanced but a very little way toward a clear understanding of the conditions. Part of this was due, no doubt, to the lack of autopsy material but the greater part was due to the fact that their investigations led them to a blank wall beyond which their present knowledge and methods did not permit them to penetrate. In the study of this condition he said he had nothing very new or startling to present, but would endeavor to clarify one or two points which had been the source of much discussion and record the results of a method of treatment which, though not new, had not as yet been very extensively followed. Three cases of von Jaksch's anemia had recently been under observation in the New York Hospital and formed the basis for the present discussion. Von Jaksch's anemia might be defined as a condition occuring in children and marked by anemia, slight enlargement of the liver, marked enlargement of the spleen, and sometimes an enlargement of the superficial lymph nodes. The blood picture was characterized by a great diminution in the red cells and the hemoglobin, and a persistent leucocytosis. Most of the patients showed a definite tendency to recover. The abnormal blood picture in those who lived might persist for a very long period of time. Von Jaksch's anemia was frequently associated with rickets. In some instances syphilis had been accepted as a causative factor while tuberculosis, gastrointestinal upsets, and infections might at all times play a part. It was logical to conclude that von Jaksch's anemia was due to the action of toxic or infectious agents which might or might not at the same time produce rickets. The source of these toxins was not necessarily in the gastrointestinal tract. The picture in the spleen was connective tissue increase, atrophy of the Malpighian bodies, and myeloid metaplasia. The symptoms of von Jaksch's anemia consisted chiefly of the symptoms of anemia in general, pallor, edema, weakness, dyspnea, etc., a large liver, and a very large spleen, with a characteristic blood picture. The onset was gradual and the patient usually came under observation with a well marked enlargement of the spleen. The symptoms which were due to the anemia itself might be masked by the presence of symptoms due to the accompanying conditions such as syphilis, tuberculosis, or rickets. The blood picture must be depended upon for a diagnosis. Many of these cases did eventually recover. The treatment had been unsatisfactory in the majority of the cases. Since, however, they frequently showed a tendency to recover, almost any treatment might be followed by improvement.

The Broader Aspects of Hematological Diagnosis. — Dr. E. E. BUTTERFIELD spoke quite at length on the pathogenesis of the blood picture in the anemias and of the morphology of the leucocytes. He said it was possible by chemical and physical examination of the blood and blood serum to learn many things. Together these two methods of examination had shown many things and had proved useful in nephritis and diabetes, and by them it was possible to distinguish between edemas of cardiac and those of uremic origin, so that it was not expecting too much to hope that they would enable them to learn more of the different types of hematological disease.

Dr. JAMES EWING said that anyone interested in blood diseases must have had his enthusiasm aroused by the able discussion which they had heard this evening. Although he had been out of blood work for several years it had renewed his old interest. In Dr. Vogel's paper he had been particularly interested in the views expressed as to the relation of hemolysis to pernicious anemia. One recognized that Dr. Vogel believed that pernicious anemia was essentially a hemolytic process and that one must make search for some hemolytic agent to account for it, but it was not enough in seeking the pathogenesis of pernicious anemia to stop here; one must take account also of defective hematogenesis. Loss of blood alone did not account for pernicious anemia. It was recorded that a tuberculous patient in the course of two years had lost an amount of blood equivalent to five times the normal blood volume and still pernicious anemia was not established, while, on the other hand, cases of hemorrhoids with slight bleeding might develop pernicious anemia. The progressive character of pernicious anemia was dependent on the condition of the bone marrow. One must have something to start up the anemia, but it did not progress unless there was a defective hematogenesis. In the discussion of the therapeutics of blood transfusion Dr. Vogel seemed to have recognized this for he spoke of the advantages of the repeated injection of small amounts of blood as being more effective in combating pernicious anemia than single large doses. This was because the small doses stimulated the hematogenetic function of the bone marrow, thus enabling it to combat the hemolytic agent. The factor of congenital predisposition might be emphasized. Only certain individuals were susceptible to the disease. The production of the exact prototype of the disease in animals had not been effected experimentally, because they were not susceptible to the progressive disease. So one could conclude that in human subjects, many of whom were exposed to hemolytic toxins while few developed pernicious anemia, there must be an underlying congenital predisposition, which was an essential factor in the etiology of pernicious anemia. Dr. Vogel should be congratulated for having put emphasis on the etiology of blood diseases, rather than on the morphology of the blood. Some years ago physicians spent all their time developing stains and methods of making the blood count. Happily that era was past and the emphasis was now being placed on the etiological factors and the pathogenesis, and an attempt to get at an

effective therapy based on the fundamental facts of the disease.

With reference to Dr. Stillman's paper on von Jaksch's anemia, very little was known of this condition until within recent years, but clinical and pathological studies indicated that it did not have an etiology different from that of pernicious anemia in the adult, but that the same factors that produced pernicious anemia in the adult produced von Jaksch's anemia in the child. Dr. Ewing said he doubted if pernicious anemia ever occurred in children. He had once made a diagnosis of congenital pernicious anemia in an infant, but he regarded it as diagnostic gymnastics. Anemia in infancy had certain characteristics which differentiated it from pernicious anemia of adults. It had a good prognosis, a tendency to leucocytosis, and a notable activity of the red cells of the bone marrow. Most of the children got well. The relation of rickets to von Jaksch's anemia was of interest. In rickets there was an extreme hyperemia of the bone marrow and interference with blood formation, favoring exodus of the marrow cells into the blood. With some there had been a misunderstanding of the function of the spleen. They found disintegrated red blood corpuscles in the macrophages of the spleen and concluded that it was a dangerous organ and should be removed, whereas it was removing alienated cells from the blood, thus performing a useful function to the organism.

Dr. Butterfield had spoken chiefly of the pathogenesis of the blood picture and it was to be hoped that he would put his remarks into writing so that they would be available. He felt that Dr. Butterfield's attitude was the result of too strong a diet of hematological literature, and that he had been reading a great deal with reference to the morphology of leucocytes and he sympathized with the feeling Dr. Butterfield had expressed when he said that the morphological phase of the subject had been very much overworked. In lymphatic leucemia there was purely an excess of lymphocytes in the nodes and these had nothing to do with the reticulum cells of the lymph follicles. With reference to the transition between red and white cells, these were two separate classes of cells developed very early in embryonal life, the white cells arising from one end of the embryo and the red cells from the other end, and there was little support for the opinion that there was any transition between them. Dr. Ewing said that what he had written years ago in support of the view that there were such transitions he would now retract. The question had been brought up as to whether any of these cell changes were reversions to the embryonal type. It would be better to regard them as degenerative changes. Leucemia, like leucocytosis, must be regarded as a symptom and not as a definite disease. It arose in a great number of conditions and when it had gained a certain momentum it became chronic. It was quite possible that there were five or six pathological conditions in which a leucemic blood picture was present. It was better to pick out the etiological factors and direct attention to them, since leucemia was a symptom and not a disease.

Morphinism a Curable, Physical Disease.—Ernest S. Bishop states that in morphinism *per se* we have one of the most definite and curable diseases in medicine. The desire for morphine in the majority of cases is simply the expression of bodily need, and the fundamental condition is the changed physiology which makes morphine a necessity for organic satisfaction and adequate carrying on of organic function. It is complicated by and complicates other diseases exactly as do other morbid bodily processes; and every case is absolutely individual. Treatment which is based upon the recognition and removal of fundamental conditions as they appear in the individual case will give surprising results. Sufficient understanding of the disease mechanism and its symptomatology, and the ability to estimate accurately the patient's bodily need, the maintaining of him in functional and metabolic addiction-drug balance, and the securing of good tone and nutrition before withdrawal, are of far more importance than any method of morphine withdrawal. With study and education, and this applies to members of the medical profession as well as to the laity, will come a rearrangement of our present attitude toward morphine addiction and the treatment of its victims, and in its place will stand as a part of the ethical, rational practice of medicine, the treatment of a new disease.—*American Medicine.*

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

CHANGES IN THE FOOD SUPPLY AND THEIR RELATION TO NUTRITION. By LAFAYETTE B. MENDEL. Published by the Yale University Press, contains 61 pages. Price, 50 cents.

MEDICAL ALUMNI CATALOGUE. Published by the Alumni Association, contains 97 pages.

BULLETIN OF THE ST. LOUIS UNIVERSITY. Published by the University, with 41 pages.

PROCEEDINGS OF THE MEDICAL ASSOCIATION OF THE ISTHMIAN CANAL ZONE. Published by the Panama Canal Press. For the half-year—April, 1914-October, 1914. 163 pages, with illustrations.

CHIMIE PATHOLOGIQUE TROPICALE DE LA RÉGION ATLANTIQUE. By Dr. G. DELGADO PALACIOS. Published by Lit. y Tip. del Comercio, Caracas; 318 pages, with illustrations.

THE NEW PUBLIC HEALTH. By HIBBERT WINSLOW HILL. Published by The Macmillan Company; 206 pages. Price, $1.25.

TRANSACTIONS OF THE AMERICAN SURGICAL ASS'N. Published by William J. Doran, Philadelphia; 825 pages; with illustrations.

CAMBRIDGE PUBLIC HEALTH SERIES. By MARTIN J. BEATTIE, M.A., M.D. Published by the Cambridge University of England; 231 pages; with illustrations. Price, $3.25.

INTERNATIONAL CLINICS. Published by J. B. Lippincott Co., Philadelphia & London; 326 pages; with illustrations.

THE PRINCIPLES AND PRACTICE OF PERIMETRY. By LUTHER C. PETER, A.M., M.D., F.A.C.S. Published by Lea & Febiger, Philadelphia & New York; 232 pages; with illustrations.

VENEREAL DISEASES. By J. R. HAYDEN, M.D., F.A.C.S. Published by Lea & Febiger, Philadelphia; 365 pages; with illustrations.

ANATOMY AND PHYSIOLOGY FOR NURSES. Fourth edition. By ELIZABETH R. BUNDY, M.D. Published by P. Blakiston's Son & Company; 410 pages; with illustrations. Price, $1.75.

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Original Articles.

A SIMPLE METHOD OF SHORTENING THE ROUND LIGAMENTS OF THE UTERUS FOR THE CURE OF RETROVERSION.

BY J. H. KELLOGG, M.D.,

BATTLE CREEK, MICH.

SINCE Alexander of Liverpool devised a method of shortening the round ligaments for the cure of retroversion of the uterus, more than a score of methods have been proposed for the relief of this most frequent of the visceral displacements peculiar to women. There are few, if any, pelvic lesions for the relief of which so many and so varied surgical procedures have been proposed, and this fact clearly evidences the general recognition of the need of surgical intervention in this condition. The multiplicity of methods brought forward also indicates that none of them have proven altogether satisfactory.

The method which will be described in this article has been in use by the writer for more than twenty-seven years. The first cases were operated upon in the autumn of the year 1888. The method has now been employed by me in more than 1,600 cases, and by other surgeons who have made themselves familiar with the technique of the operation in several hundred more cases.

The essential features of the method were described several years ago in papers read before medical bodies, and published in medical journals and in the *Transactions* of the Michigan State Medical Society; but as some important modifications have been made in recent years, the writer has thought best to comply with the request of a number of physicians who have seen the operation, to prepare this paper in which a more exact and detailed account of the operation will be given.

There appeared some time ago in an English periodical a description of my operation under the name of "The Blunt Hook Method," written by a surgeon who had twice visited the writer's clinic for the purpose of learning the technique of the operation, but without mention of the author's work. The presentation of this paper is also desirable by reason of the fact that the descriptions of the technique of the method which have appeared in text-books and papers by various medical writers have not been such as to give an adequate idea of the several steps essential to the success of the operation.

Preparation of the Patient.—The operation may be performed in a suitable case at any time except during menstruation and a few days before or after. The bowels should be not only well emptied, but should be well regulated so as to move easily two or three times a day. This may be accomplished in cases in which no serious mechanical obstruction exists, by careful control of the diet and the free use of paraffin oil, agar-agar, and bran. This point is of much importance, as straining at stool is especially perilous while the ligaments are softened by the healing process during the first weeks following the operation. Overlying of the uterus by a distended pelvic colon and violent straining at stool are frequent causes of retroversion, and may easily become a cause of relapse. The vagina should be free from infection. Examination should be made to insure freedom from inflammatory disease of the ovaries and tubes and adhesions of the uterus or appendages to the pelvic walls or contiguous viscera.

Adhesions between the left tube and ovary, and the pelvic colon or its mesentery are so frequent that there is a distinct advantage in giving the patient an *x*-ray examination by means of the bismuth meal combined with injection of the colon with bismuth paste. The writer recalls one case of failure in which the cause was an adhesion between the pelvic colon and the uterus, a condition undiscoverable in the very fleshy patient when the colon was empty, as the pelvic loop moved easily with the uterus. When the pelvic colon was filled, however, its weight pulled the uterus backward, and after the operation the continued tension gradually stretched the ligaments and forced the fundus backward. An *x*-ray examination would have revealed the true state of things.

An *x*-ray examination of the alimentary canal, including visualized palpation by the aid of the fluoroscopic screen, may also give highly important information concerning possible adhesions of the pelvic colon or of the terminal ileum, incompetency of the ileocecal valve, gallstones, and other conditions which can be remedied only by surgical intervention.

The preparation of the skin should be as for laparotomy. The pubic hair is removed and the skin well scrubbed the night before, then an application of 2 per cent. iodine solution is made and sterile dressings are left on over night. In the morning a second application of iodine is made and is washed off with alcohol just before the operation.

The Anesthetic.—The writer has for many years employed nitrous oxide and oxygen almost exclusively. In forty or fifty cases the operation has been done with local anesthesia.

Special Instruments Needed.—The special instruments required are two blunt hooks, two retractors, and an aneurysm needle. The blunt hooks are very similar to those used by ophthalmic surgeons in operations for strabismus, but are larger and stronger. The retractors likewise are similar to those used in retracting the eyelids. An ordinary aneurysm needle may be employed, but one specially modified is desirable. (Fig. 1.)

The Operation.—Almost without exception a curettage is required when the uterus has been long retroverted, as a pathological condition of the endometrium is almost invariably present. The curette rarely fails to bring away a considerable quantity of vegetations. These should be always examined for the reason that occasionally evidences of early malignant degeneration are found. If a serious laceration of the cervix exists, it is repaired. A large, heavy cervix which has become a mass of cicatricial tissue should be amputated.

When the pelvic floor is greatly weakened, resulting in rectocele or cystocele, these conditions must be corrected by a plastic operation.

Before or after the curettage the uterus is carefully replaced by bimanual manipulation. Great care must be taken to see that both the uterus and the appendages are brought well forward. When released, the uterus should remain in position. If it falls backward at once, or quickly settles down into a retroverted position, adhesions are probably present. The uterus may not be adherent and yet one or both ovaries or tubes may be attached to the pelvic wall or to a movable viscus, as to the pelvic colon or to a loop of the small intestine. Adhesions to the intestine are not always easily discoverable by the palpating finger, except in cases in which the abdominal walls are very thin. Here an *x*-ray examination may render special service, especially if the roentgenologist is possessed of a high degree of skill in visualized palpation.

When marked anteflexion or retroflexion exists a stem pessary is introduced. A carefully fitted lever pessary is placed to support the fundus, and to prevent all straining upon the ligaments. The pessaries are usually retained for two or three months while the intestines are becoming readjusted and the abdominal walls strengthened. When the patient leaves the hospital, she should be informed of the presence of the pessaries and told to place herself at once under the care of a competent physician, who will attend to their removal at the proper time.

The greatest care must be taken in the technique of this operation to avoid infection of the wound. If bacteria gain access to the wound, suppuration is likely to occur, on account of the unavoidable traumatism to which the ligament is subjected and the interference with the blood circulation in the ligament due to stripping off its peritoneal coverings and its anchorage by weaving into the aponeurosis of the external oblique.

The Incision (Fig. 2).—A separate incision is required for each ligament. Care is taken to make the incisions symmetrical; they generally lie wholly within the area covered by the pubic hair. The length of the incision need not be over three centimeters, and in a thin subject an incision two centimeters in length is often sufficient. It is important that the incision should be made at the right point. Find the middle of Poupart's ligament, place the finger upon this point, then start the incision at a point about one centimeter nearer to the pubic spine and two centimeters internal to the ligament of Poupart. The incision should extend only through the skin proper and should not include the subcutaneous fat. This is necessary to avoid cutting the rather large superficial epigastric vein which runs directly across the line of incision. If the vein is injured, the danger of infection will be increased owing to stasis of fluids in the region of the wound. If the incision is extended too far downward a branch of the superficial epigastric artery will be encountered. If care is taken to avoid these vessels, ligatures will not be required.

Blunt Hook Dissection (Fig. 3).—After the skin has been incised, the knife is laid aside; the remaining dissection is made entirely with the blunt hooks. The two points of the hooks are placed together in the center of the wound, pressed into the tissues, and separated by drawing toward the angles of the wound. By lifting the angles of the wound with the hooks, the wound is made to gape and the retractors are then introduced, first one, then the other; this procedure is repeated as many times as may be necessary to reach the aponeurosis of the external oblique. When the aponeurosis first comes into sight, it is seen shining through a thin, nearly transparent, deep layer of the superficial fascia, which is closely attached to Poupart's ligament. This fascia must be divided and drawn aside by the retractors in order to bring Poupart's ligament plainly into view.

By means of the retractors the loose skin may be pulled about in various directions. Generally, Poupart's ligament will be very clearly seen when the last thin fascial layer is drawn aside. If necessary the gloved finger may be introduced into the wound to verify the ocular observation. The finger should be passed down along Poupart's ligament to locate the external ring and the spine of the pubes.

Picking up the Ligament (Figs. 4 and 5).—Now fix a point along the ligament about one-third the distance from the pubic spine to the arterior superior spine of the ilium. One centimeter internal to this point, make a puncture through the roof of the inguinal canal with the blunt hook held in the left hand and split the tendinous fibers of the aponeurosis for about one-half centimeter and introduce the other hook with the point turned outward toward Poupart's ligament. The round ligament normally lies in the groove which runs along Poupart's ligament. Dip the hook close beneath Poupart's ligament, and carefully pull up whatever the hook engages. If the ligament does not appear, the hook is introduced again and made to explore the tissues one or two centimeters in each direction along Poupart's ligament. If the ligament is not discovered, turn the hook inward and endeavor to find it beneath the outer border of the internal oblique, where it is sometimes found.

How to Recognize the Round Ligament.—This may be recognized by several characteristics. (1) It is a distinct structure. (2) It differs in color from other structures, looks white like a tendon, although not quite so smooth and glistening as a tendon. (3) Over the surface of the ligament small tortuous veins may be seen which disappear when traction is made upon the ligament and fill when the tension is relaxed. It should be noted that these veins are sometimes greatly enlarged and varicose. (4) The ligament is pulled out more easily than other structures. When, however, the nerve which comes with the ligament is caught with it by the hook, the ligament is held back somewhat, but by separating or cutting the nerve the ligament may be very easily drawn up and does not snap back into the canal, as do other tissues when released.

Care must be taken to avoid dragging out the properitoneal fat or picking up the branches of the deep epigastric artery or vein. If the hook is pushed too deep it will penetrate the floor of the inguinal canal; as a result, the properitoneal fat will be pulled out, together with a branch of the

deep epigastric vein, which may be easily torn, and cause a smart hemorrhage, and possibly a hematoma in the ligament. When it happens that the deep vessels are pulled out they should be released at once, or, if injured, caught with forceps and tied immediately.

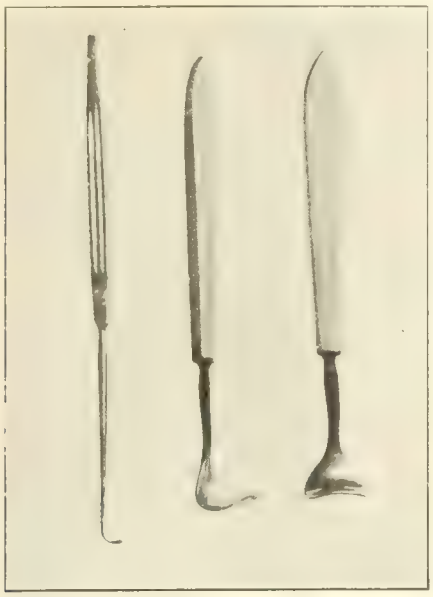


FIG. 1.—Author's blunt hook and retractors for use in round ligament operation.

Not infrequently the first tissue brought up will prove on examination to be the edge of the internal oblique muscle. When under tension the muscle or fascia may very much resemble the ligament. The muscle differs in the fact that when pulled it resists, tears easily, and does not show the distinct and characteristic structure of the ligament.

Failure to find the ligament may be due to several causes.

1. The ligament may be drawn down under the internal oblique to an unusual degree by long continuous and excessive strain.

2. In very stout persons, the ligament may be buried in fat in the lower part of the canal.

3. The ligament is sometimes obscured by a mass of veins, due to a condition analogous to varicocele in men.

4. A more common cause of failure is incorrect placing of the incision or of the puncture through the roof of the inguinal canal. The ligament must be sought in exactly the right spot as above described. If the hook is introduced even one centimeter away from the proper point, the ligament will be found only with much difficulty. The ligament is most easily secured at a point about one centimeter below the internal ring, and of course will not be found above the internal ring. If the ligament is sought too far inward, only muscle will be found. By persevering effort the ligament may sometimes be found when the incision is not rightly placed, but only after the internal oblique muscle has been much lacerated, which should be avoided, as it delays healing of the wound and is likely to be a cause of discomfort to the patient later.

FIG. 3.—Blunt hook dissection.

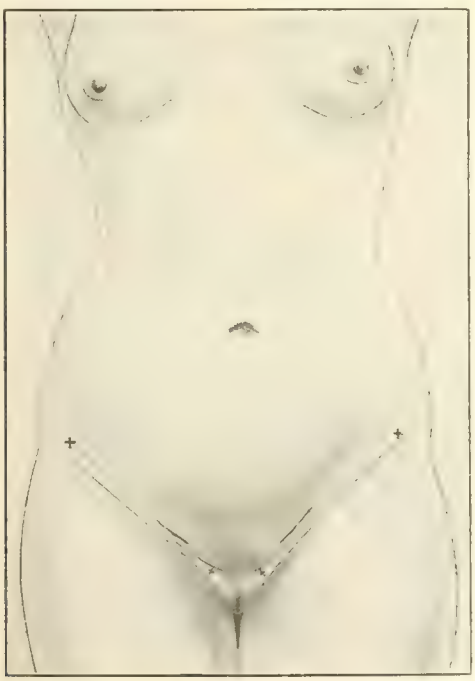


FIG. 2.—Skin incision.

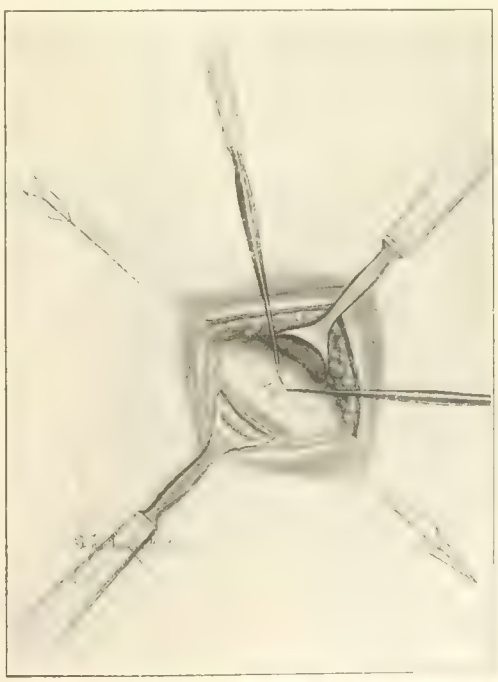


FIG. 4.—Passing blunt hook [illegible].

The ligament should always be sought at the outer border of the internal oblique and should be drawn out from under the muscle instead of being pulled up through it. It is, of course, useless to seek for

the ligament below Poupart's ligament, although some operators have been sufficiently careless in their dissection to make this error. A New York surgeon who visited me some years ago to witness this operation, and who afterward did the operation

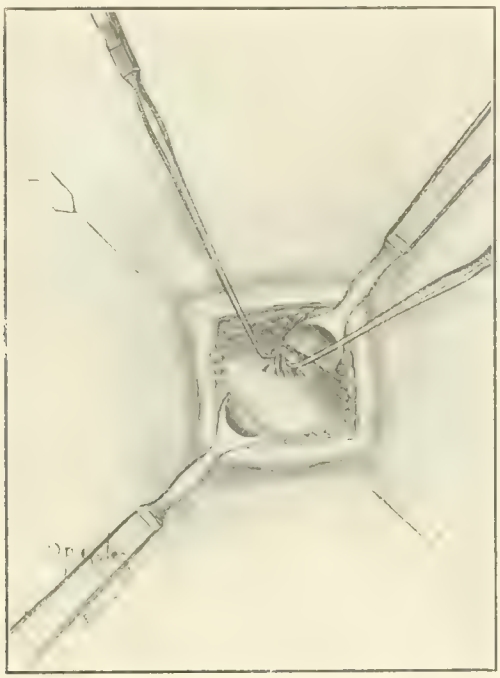


Fig. 5.—Picking up ligament.

in several cases, mentioned in a paper that he had on three different occasions drawn up the femoral vein. If care is taken to keep above Poupart's ligament this mistake cannot occur.

5. The ligament is sometimes so slender that its recognition is very difficult. Small ligaments are most likely to be found in poorly developed women who have not borne children and in whom the uterus is retroverted to an extreme degree. I have many times found a ligament the distal part of which was not as large as an ordinary knitting needle, but even in these cases the ligament by very gentle traction may be pulled up, and the proximal portion is found to broaden out rapidly, so that substantial structures for anchorage may be secured.

Fig. 6.—Pulling out ligament.

6. The ligament is sometimes so unusually large that it is not readily caught by the hook and one is sometimes surprised after several minutes of fruitless search by the sudden appearance of a large, strong ligament, fully half a centimeter in diameter.

One ligament may be small and the other large; the left ligament is most often the larger. This is, perhaps, due to the fact pointed out by the writer some years ago that the left leg is somewhat better

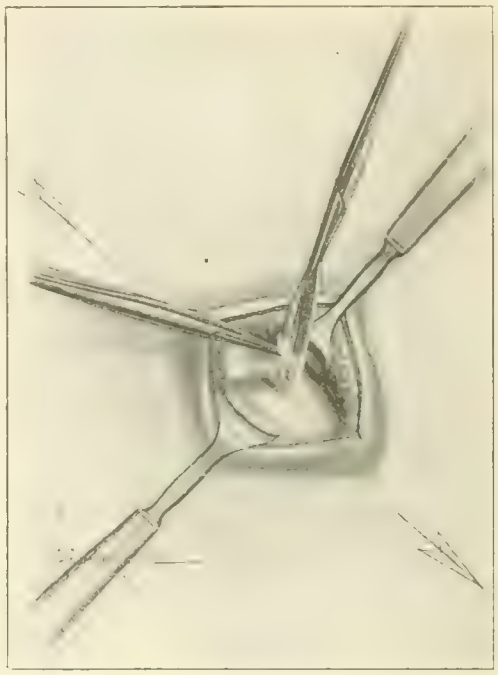


Fig. 7.—Stripping off peritoneum.

developed than the right leg in right-handed persons.

7. The ligament is sometimes invested by fascia and fat and not so easily recognizable as in normal cases. In such patients it is necessary to tease the ligament out from the other structures with which it is closely incorporated.

8. Anomalous conditions of the ligament are sometimes, though very rarely, found. In 1,603

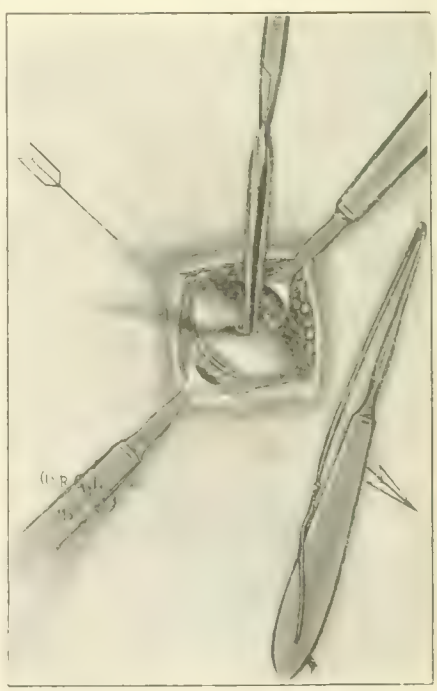


Fig. 8.—Ligament fully drawn out.

cases which I have operated I have encountered conditions which may fairly be regarded as anomalous in not more than half a dozen instances.

9. Occasionally the ligaments are held back by

adhesions, the result of pelvic cellulitis involving the round ligaments.

In seeking the round ligament the tissue pulled out by the hook is each time examined. After a little experience the ligament will be very quickly

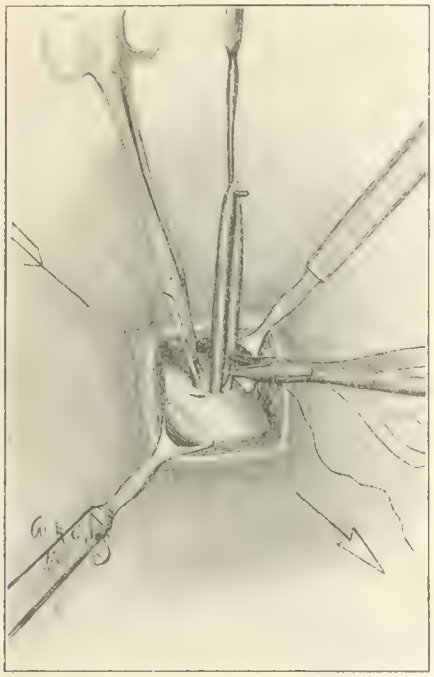


Fig. 9.—Suturing ligament to aponeurosis of external oblique.

recognized by the characteristics which have been pointed out above. The manipulations should always be gentle and bloodless, care being taken to avoid tearing the structures examined. When a mass of tissue which appears to include the ligament has been engaged by the hook, the tissue should be carefully separated by careful teasing with the hooks. Do not seize the ligament with forceps. (The forceps shown in Figs. 6 and 7 are used only

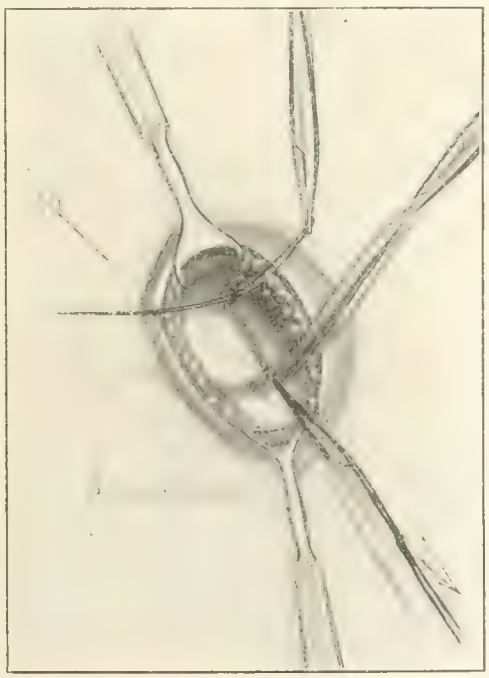


Fig. 10.—Drawing in silk loop with aneurysm needle.

to demonstrate the ligament.) When the ligament is finally found it is caught up on one hook while with the other hook the adherent tissues are gently separated, then the small loop of ligament is caught with a bit of gauze between the thumb and forefinger of the left hand (Fig. 7). Traction is made while the pouch of peritoneum which forms the canal of Nuck and other tissues are separated and pushed back along the ligament with Kelly forceps,

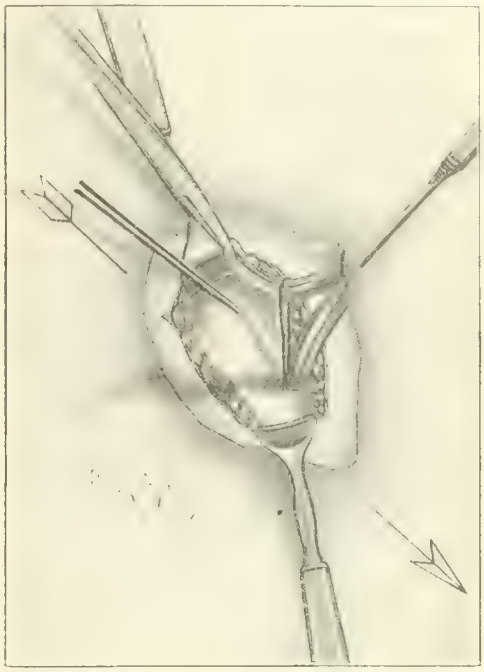


Fig. 11.—Drawing ligament under aponeurosis of external oblique.

which are not released when the peritoneum is fully stripped back, but remain attached as one pair after another is used. This is necessary to permit of ligation of the stripped-back peritoneum, thus avoiding any possibility of hemorrhage which might result in suppuration of the wound or formation of a hematoma in the broad ligament.

As the peritoneum is stripped off, the ligament

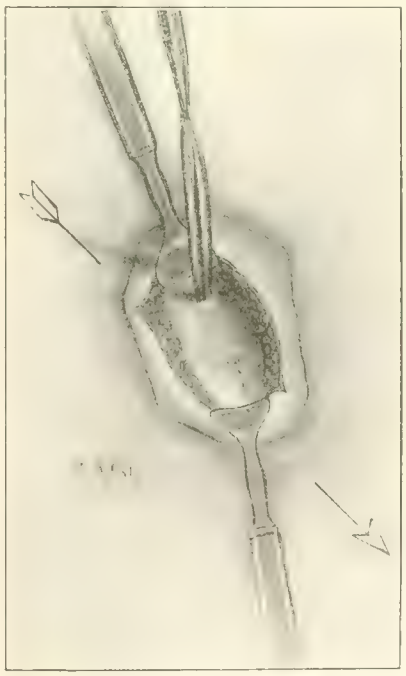


Fig. 12.—Ligament drawn out above the external ring.

may be pulled out more and more, until finally so much resistance is felt that the uterus appears to be drawn up against the abdominal wall in the suprapubic region. Measurement of the double loop of

ligament will show it to be seven to nine centimeters in length, representing a shortening of fourteen to eighteen centimeters. No matter how slender the distal portion of the ligament may be, the proximal portion at the point where it emerges from the canal

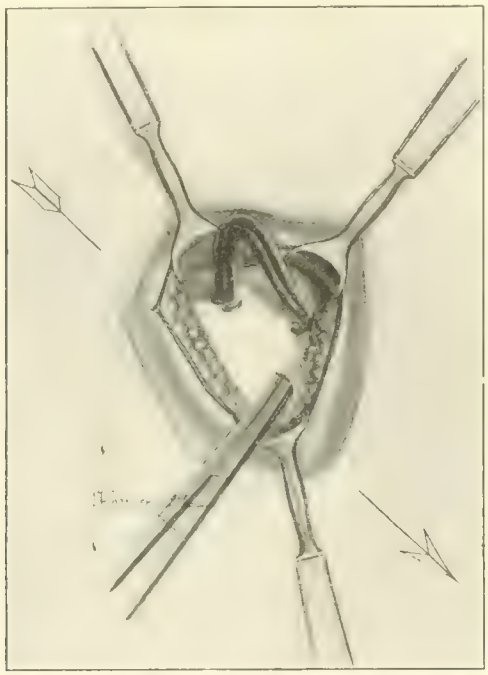


FIG. 13.—Drawing the end of the ligament under the aponeurosis of the external oblique.

will show a width of half a centimeter to three centimeters.

The ligament having been fully drawn out (Fig. 8), the next step is to attach the ligament at its thickest part to the aponeurosis of the external oblique at the upper angle of the puncture by means of a strong chromicized gut suture passed from beneath the aponeurosis (Fig. 9). A ligature

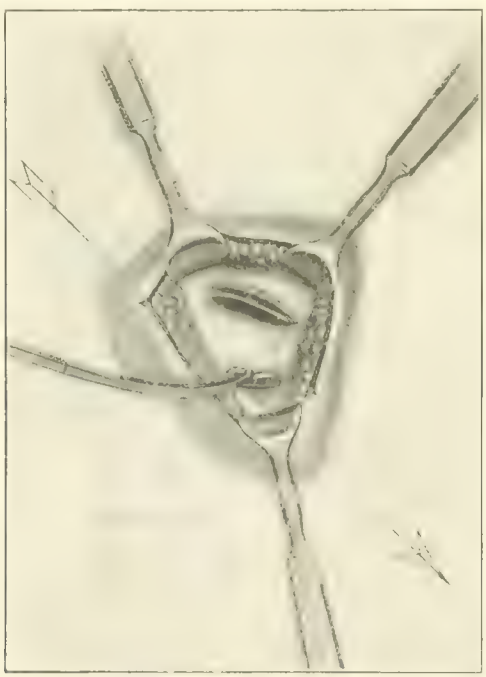


FIG. 14.—End of ligament drawn out through original opening in roof of canal.

is now applied to the shreds of peritoneum held by the Kelly forceps. This closes the canal of Nuck and also ligates vessels which might be a source of trouble.

If the ligament is anchored in this position by attaching the loop of surplus ligament to the anterior surface of the external oblique muscle, the patient may possibly sooner or later develop hernia, as the small intestine will gradually work

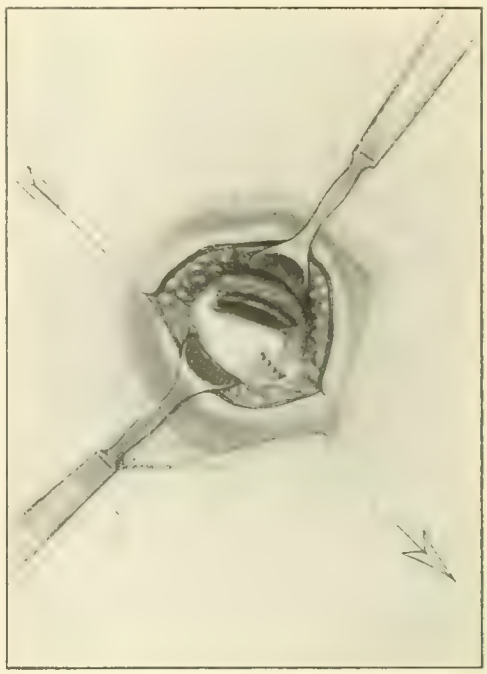


FIG. 15.—Wound in aponeurosis closed.

its way out alongside the round ligament. I followed this plan in my earlier cases and had to operate to repair a small hernia in several cases. To obviate this danger the loop of ligament is drawn back into the canal and pulled up through the aponeurosis at a point five or six centimenters higher up and toward the median line. To accomplish this an aneurysm needle is passed into the canal along the inner side of the ligament and made to emerge at a point five or six centimeters higher up and two or three centimeters toward the median line (Fig. 10). About an inch of the loop

FIG. 16.—Skin wound closed.

of ligament is passed through the silk loop and the ligament is drawn back into the canal and up through the aponeurosis. By this means all danger of hernia is eliminated (Figs. 11, 12).

The end of the loop of ligament is again drawn under the aponeurosis of the external oblique and made to emerge at the original opening through which it was first pulled out. Thus the surplus ligament is woven into the aponeurosis of the external oblique, to which it in a few days becomes firmly attached, forming a very secure and permanent anchorage for the ligament, capable of resisting any strain to which it is likely to be subjected (Figs. 13, 14).

The next step is to close the opening in the roof of the canal, for which a curved needle threaded with No. 00 chromic catgut is employed. Care is taken to pass the suture through the end of the loop of ligament so that when the opening in the aponeurosis of the external oblique is closed the ligament is closely applied to the underside. The roof of the inguinal canal is thus reinforced instead of being weakened (Fig. 15).

The superficial fascia is closed with No. 1 plain catgut and the edges of the skin incision are approximated by two or three skin clips (Fig. 16).

Special Advantages of This Method.—The advantages claimed for this method of operation over other methods are the following:

1. The abdomen is not opened, hence there is no shock and no risk of formation of peritoneal adhesions and no abnormal conditions created which might lead to intestinal obstruction.

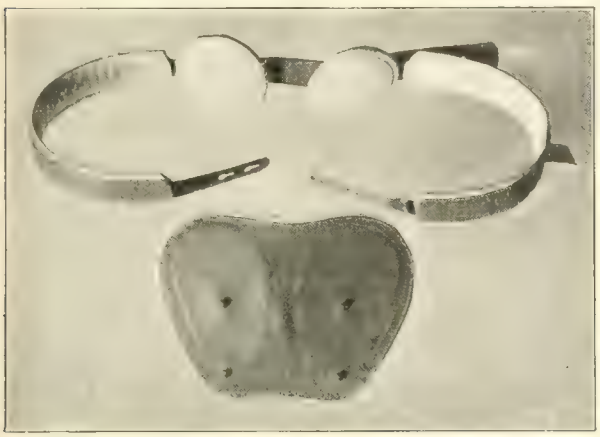


Fig. 17.—Author's spring abdominal supporter

2. The ligament is so secured that the recurrence of prolapse is almost impossible. In the original method of Alexander the ligament was cut off and attached to the fascia about the spine of the pubes. This method did not give secure anchorage and frequently resulted in complete failure because the ligaments tore loose.

3. The ligament is not injured and no mutilation of any sort occurs, so the patient cannot possibly be made worse, as not infrequently occurs with several other methods.

4. The technique is simple and the operation may be quickly done. The time required is rarely more than fifteen minutes and often only ten or twelve minutes for both sides.

5. The small and superficial incision and the short time occupied by the operation give no occasion for shock.

6. The operation does not give rise to complications in pregnancy as do some other methods. Scores of patients upon whom the writer has operated have afterward become pregnant and in not a single instance has he known the operation to be responsible for miscarriage or any other complication. Patients sometimes complain of a slight drawing on either side during the early stages of pregnancy, but this symptom soon disappears.

8. The results, when the cases are properly selected, are better than those obtained from other methods. It is very rare that the operation fails to accomplish everything expected of it. The uterus is not only held in a perfectly normal position, but the patient is relieved of backache and other distressing symptoms. Not infrequently congested or prolapsed ovaries, which are a more or less constant source of pain, become symptomless as the result of restoration of the uterus to normal position. In my early cases failure or partial failure occurred in about 5 per cent. of cases; but the proportion of failures within the last fifteen years has been, I feel very sure, less than 1 per cent.

Fig. 18.—Spring supporter applied

Fig. 19.—Same patient shown in Fig. 18 without supporter

Failure should not occur if cases are properly selected and the patient given proper after care.

There is no internal method of correcting retrodisplacement which offers any advantages over the external method, and all of the internal methods are objectionable on various grounds.

There is no danger of shortening the ligaments too much. The late Dr. Thomas gave abnormal shortening of the round ligaments as one of the causes of anteversion. This is quite impossible. The only inconvenience which ever results from the operation is a more or less unpleasant sensation of numbness and occasionally neuritis, the result of stretching the sensory nerve which accompanies the round ligament. This is quite rare, however, and may be obviated by cutting the nerve or by exercising very great care in separating it from the round ligament to avoid stretching or bruising it. When the nerve is cut, the patient usually complains for a time of a numb sensation of the pubic region.

Conditions which contraindicate shortening of the round ligaments by this method are the following:

1. Procidentia. The ligaments are not strong enough to sustain the weight of the entire abdominal contents, and a more radical procedure is necessary.

2. The absence of symptoms as in cases of retroversion of long standing in which the uterus is small and free from disease, as often noted in women who have passed the menopause.

3. The presence of adhesions of the uterus, tubes or ovaries either to the pelvic walls or to other pelvic viscera, unless very slight. Slight adhesions may sometimes be broken up by manual manipulation, and in such cases the operation may succeed. When adhesions are suspected, however, it is a wise plan to submit the patient to a thoroughgoing *x*-ray examination by an expert roentgenologist to ascertain the extent of the adhesions and the organs involved. When adhesions are found, or evidence of serious disease of the appendages, the abdomen must be opened. After dealing with whatever condition requiring attention may be present, the ligaments should be shortened by the method above described.

After Care.—1. The patient should be kept in bed or in a reclining position for ten days or two weeks, but may go out in a wheel chair after the first day.

2. The lever pessary applied at the time of the operation is retained for three or four months.

3. A spring abdominal supporter is adjusted when the patient gets upon her feet and must be worn constantly except at night, until the abdominal muscles become strong enough to support the viscera (Figs. 17, 18, 19).

4. The bowels must be trained to move normally, that is, three times a day, or after each meal and without straining. This should be accomplished before the operation, so that the ill effects arising from constipation following the operation may be avoided.

5. The abdominal muscles must be developed to enable them to support the abdominal viscera in a normal way. This must be accomplished by systematic and carefully graduated exercises. Among the best of these are exercises taken with the body resting on an inclined plane, the head lower than the feet. For patients who are too feeble to take these exercises, automatic exercise by means of the sinusoidal electrical current may be employed for a time to secure sufficient development of the muscles [illegible] possible more vigorous voluntary exercises later.

6. The corset and tight bands must be discarded definitely and permanently.

The patient must live the "simple life," and must make the care of the health a matter of serious and constant concern. It is especially important that she should understand that the operation alone may not effect a permanent cure, but that with her thorough cooperation it makes a permanent cure possible.

REMARKS ON ESOPHAGEAL OBSTRUCTION, WITH SPECIAL REFERENCE TO CICATRICIAL STENOSIS, DIVERTICULUM, AND FOREIGN BODIES.*

By EDWARD W. PETERSON, A.M., M.D.,
NEW YORK

We may classify esophageal obstruction, with reference to its origin, as: (1) congenital, (2) cicatricial, (3) obturation, (4) compression, (5) malignant, and (6) spasmodic. Congenital strictures and diverticula of the esophagus have been mentioned, but very little reliable information concerning them has been recorded in the literature. The most frequent congenital malformation shows itself in some form of communication between the esophagus and trachea or bronchus. Such a condition is necessarily fatal. Cicatricial obstruction is generally due to the ingestion of caustic acids or alkalis or boiling fluids; cicatrization may also result from peptic, typhoidal, syphilitic, or tuberculous ulceration. Obturation obstruction may be due to the presence of certain tumors or to the swallowing of foreign bodies, which lodge and block the tube. Compression obstruction may be caused by diverticula, aneurysm, tumors of the thyroid gland, by bronchial or mediastimal growths, etc. Malignant obstruction may be due to any of the types of cancerous growth; epithelioma, however, is the most common variety. Spasmodic obstruction is seen in neurotic individuals, is often intermittent in character, and is due to some reflex source of irritation.

Anatomy.—The esophagus is a musculo-membranous tube, 9 to 10 inches in length, commencing in the middle line, opposite the sixth cervical vertebra, then deviating slightly to the left as far as the root of the neck; thence to the fifth dorsal vertebra it gradually returns to the middle line; finally it turns again to the left, at the same time passes forward to pierce the diaphragm, and, after an abdominal course of half an inch, enters the cardiac end of the stomach, opposite the upper border of the body of the eleventh dorsal vertebra. The lumen of the esophagus is narrowed at the commencement, 2¾ inches below this point (opposite bifurcation of the trachea) and where it passes through the diaphragm. The diameter of each of these points is a trifle over ½ an inch (14 mm.) and the diameter elsewhere is about ¾ of an inch (17-21 mm.).

Structure.—The esophagus is composed (1) of an external envelope of loose areolar tissue; (2) of a muscular layer composed of superficial longitudinal and deep circular fibers (they are striped fibers above and smooth below). The longitudinal fibers are deficient in the upper end of the esophagus posteriorly; (3) of a cellulofibrous and glandular layer; (4) of a mucous layer presenting folds, papillæ and stratified epithelium.

*Read at a meeting of the N. Y. Post-Graduate Alumni Association, March 14, 1916.

Relations.—The following relations are of surgical importance: The esophagus in nearly all its course is in close contact with the front of the vertebral column. In the neck the trachea is immediately in front of it, and in grooves at each side between these two structures run the recurrent laryngeal nerves. The left lobe of the thyroid is also in front of the gullet. Laterally it is in relation to the lobes of the thyroid gland and the carotid vessels, particularly on the left side. In the thorax it has the left bronchus, left bronchial glands, pericardium, and left auricle in front of it, while the two pneumogastric nerves form a plexus on it. The thoracic duct for the greater part of its course lies behind and to the right of the esophagus; opposite the fourth dorsal vertebra it crosses behind it, so as to lie to the left in the superior mediastinum. The aorta lies to the left of the esophagus above and crosses behind it to the right just above the diaphragm.

FIG. 1.—Carcinoma of esophagus

General Remarks.—Before the advent of the esophagoscope and the *x*-ray into the field of esophageal surgery, the diagnosis of esophageal lesions was largely a question of guesswork and the treatment a matter of blind, unscientific haphazard, With these aids, however, the diagnosis is relatively simple, differential diagnosis is seldom difficult, and treatment is far more satisfactory and certain. When a patient suffers with dysphagia, before making the routine physical examination it is well to bring out the following points in the history of the case, as they are helpful in making the differential diagnosis: the age of the patient; the date and character of the onset and the subsequent course of the symptoms; whether corrosives or foreign bodies have been swallowed; whether the individual ever had syphilis, severe typhoid fever, or marked digestive trouble, with the accompanying dysphagia; whether there ever occurred dyspnoea, dull boring pain in the vertebrae, ribs or sternum, or regurgitation of material mixed with blood, pus or fragments of a neoplasm.

In every case of organic obstruction of the esophagus there are three constant symptoms, varying in degree, of course, with the nature and extent of the stenosis, namely, *increasing dysphagia, persistent regurgitation* and *progressive inanition.* In the early stages dysphagia accompanies the taking of solids and gradually increases until soft food and finally liquids are swallowed with difficulty. Regurgitation may be immediate or may occur some time after the ingestion of food or liquids, depending on the tolerance and capacity of the esophagus above the point of obstruction. Inanition may be due to starvation alone or to insufficient nourishment for the needs of the economy—plus toxemia. When these symptoms occur it is an easy matter, by means of bougies, the *x*-ray and the esophagoscope, to determine the presence, the location and oftentimes the exact nature of the occlusion. The introduction of flexible bougies will establish the site

FIG. 2.—Carcinoma of esophagus, with fistulous tracts communicating with bronchi

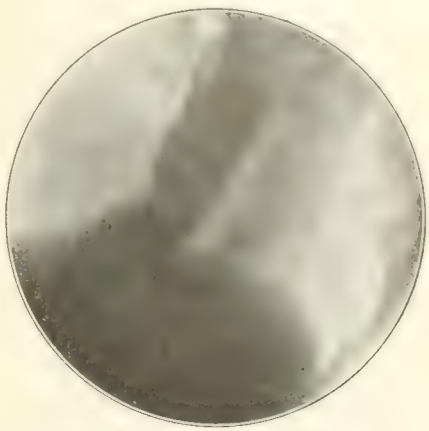


FIG. 3.—Cardiospasm

of stricture and the patency or non-patency of the canal. Begin first with large instruments and gradually decrease the size, until one is passed or until the non-patency of the esophagus is established. The greatest caution and gentleness should be observed in the efforts; absolutely no force should be exerted, for it is very easy to penetrate the wall of the gullet and thereby to set up a fatal inflammation of the mediastinum. One should not be satisfied with a single examination, but with instruments of various size, and with the head of the patient in different positions, repeated attempts should be made to pass the obstruction. The *x*-ray is a most useful diagnostic aid, and through its use one can often obtain accurate knowledge of the location of the stenosis and of the caliber and course of the esophagus above. It is invaluable, too, in locating foreign bodies, such as coins, false teeth, pins, needles, bones, etc., which may become lodged in the esophagus. Esophagoscopy should always be conducted by an expert, otherwise the examination is unsatisfactory and not without danger. In skilled hands it is possible through the use of the esophagoscope to obtain an accurate picture of the esophagus, to establish the presence of a new growth, of a foreign body, of ulceration, cicatrization, spasm, extra-esophageal pressure, etc. It is also possible through this instrument to remove tissue for examination and to perform special operations under the direct guidance of the eye. I wish to acknowledge

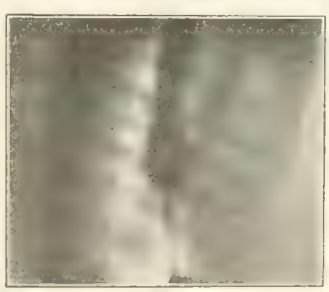


FIG. 4.—Cicatricial stenosis due to [illegible]

my indebtedness to the consulting esophagoscopists who have given me invaluable aid in the management of certain of my cases.

Benign Cicatricial Stricture.—As has been stated, cicatrization may follow any variety of ulceration,

but usually results from the ingestion of caustic acids or alkalis. It is generally agreed that, before any treatment is started, the burn should be allowed to heal. This can be determined only with the esophagoscope. If the burn is not deep and

Fig. 6.—Cicatricial stenosis due to the ingestion of lye

cicatrization is not extensive blind catheterization of the esophagus and gradual dilatation will be followed by good results. If catheterization of the esophagus is difficult it had best be done through the esophagoscope, under the direct visual guidance. Often the opening is eccentric and is difficult to find. Many yielding strictures where instruments could not be passed blindly have been successfully dilated through the aid of the esophagoscope. Where the stricture is hard, unyielding and tortuous, it is best to do a preliminary gastrostomy. Then if a filiform bougie can be passed from above or below, or a thread washed through the stricture, one has control of the situation. Internal esophagotomy without a guide is a very dangerous operation. The "Abbe-Dunham" method of chafing through the stricture with a string or linen fish line, a preliminary gastrostomy having been done, is probably the safest way of doing an internal esophagotomy. I have used this method with success several times.

Fig. 9.—Pharyngo-esophageal diverticulum

The measures mentioned will succeed in the majority of instances. It must be remembered, however, that cicatricial strictures are prone to recur, therefore vigilant supervision must be maintained in every instance until such tendency has disappeared. Electrolysis, in selected instances, has given good results in the hands of others, but I have had no experience with it. I have encountered no case of impermeable stricture, and, judging from the testimony given at the Twenty-fifth Congress of the French Association of Surgeons, it is very rare. When the stricture is absolutely impermeable, one can do a simple valvular gastrostomy, which is the measure generally resorted to. If the stricture is in the cervical esophagus, an external esophagotomy can be done; if at the cardia, esophago-gastrostomy is the operation of choice; if in the thoracic esophagus, esophagectomy or esophago-jejuno-gastrostomy, the operation of Roux might be attempted.

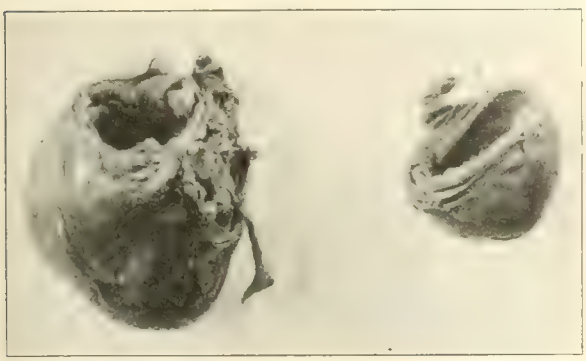
Fig. 7.—Coin in esophagus

Pharyngo-esophageal Diverticulum.—This defect, which is really a hernia at the posterior pharyngo-esophageal junction, manifests itself in middle or advanced life, most often in male subjects. Dysphagia developes very slowly, and may be accompanied by a sense of fulness or an actual tumor in the neck. If a tumor is present it can be made to disappear by pressure or regurgitation; the pressure of the pouch on the pneumogastric nerves and the recurrent laryngeal branches produces an irritative cough. All of the patients I have observed have had

Fig. 8.—Open safety pin in the esophagus

more or less bronchitis. Food collecting in the diverticulum decomposes and causes the breath to be very offensive. There is always present the danger of acute inflammation developing in the sac. Malignancy is another complication which may occur in these cases.

The radical extirpation of a diverticulum is not a technically difficult procedure, but owing to the poor condition of and the complications present in sufferers from this affection, the operation is a serious one. One of the greatest dangers is from the anesthetic. My preference would be for local or gas-oxygen or rectal anesthesia. Ether by inhalation is badly borne and is often followed by pneumonia. Before operation the mouth and teeth should receive the most careful attention and the pouch should be washed out thoroughly with a mild antiseptic solution. Before cutting away the sac a large bougie should be introduced into the esophagus, in order to avoid the removal of too much tissue, with subsequent narrowing or stenosis of the first portion of the esophagus. During the operation avoid any leakage into the tissues of the neck. My plan has been to apply a crushing clamp, to cut away the sac, to carbolize the stump, then to introduce the first row of chromic gut sutures before removing the clamp, and finally to bury the first suture line with a second



1. 2.

FIG. 9.—(1) Large pharyngo-esophageal diverticulum successfully removed from man, aged 49 years. (2) Pharyngo-esophageal diverticulum successfully removed from a woman, aged 66 years.

row of catgut sutures. The neck wound should be drained. After operation give the esophagus rest for forty-eight hours by allowing nothing by mouth. Give fluids by proctoclysis or hypodermoclysis or infusion. By observing the precautions mentioned there has been no leakage or infection in the cases operated upon by me. The one fatality is believed to have been due to the ether inhalation anesthesia.

Foreign Bodies in the Esophagus.—A great variety of objects have been known to lodge in the esophagus. They may partially or completely block the canal, or wound it severely or actually penetrate its wall. Smooth bodies which at first do but little damage, may from pressure produce ulceration and later alarming esophagitis or even perforation. It is never safe to follow an expectant line of treatment; foreign bodies should be removed at the earliest possible moment. Radioscopy may be used with advantage both in locating and removing the offending object. The horse-hair probang of Weiss and the coin catcher of Gräfe, instruments much condemned in recent years, still have a definite field of usefulness in the removal of certain smooth bodies, such as coins, buttons, etc. The blind removal of sharp objects, however, is absolutely contraindicated, for the damage incident to such attempts may prove irreparable. Under such circumstances the foreign body should be located and its removal accomplished through the aid of the esophagoscope. Through this instrument the ring of an open safety-pin can be seized with special forceps, the pin carried into the stomach and there turned, after which it can be withdrawn with comparative ease and safety.

I have personally encountered and treated either radically or palliatively a number of cases of esophageal obstruction, most of which belonged to the cicatricial stenosis or foreign body group. Cancer is probably the most frequent affection of the esophagus. Törek's resection of the thoracic portion of the esophagus for malignancy was the first successful operation of its kind in the human subject. It leads one to hope that in the future, early diagnosis and prompt radical treatment will be attended by a fair measure of success in this most difficult and discouraging field of surgery. My own experience in this class is limited to the performance of palliative gastrostomy in late cases. I have treated six cases of cicatricial esophageal stenosis, due to the ingestion of corrosives, and during my interne service in the babies' wards of the Post-Graduate Hospital I had an opportunity, under the supervision of Drs. Samuel Lloyd and Theodore Dunham, to study six additional cases. There were two deaths in my series. In the first instance, after very careful efforts to introduce bougies, pneumonia developed and resulted fatally. It was not thought at the time that the gullet had been perforated, but as autopsy was not allowed this question could not be determined. Pneumonia is an occasional complication of esophageal instrumentation, and this danger should always be borne in mind. The second death was unquestionably due to starvation; a simple gastrostomy was done, but the patient died of exhaustion a few hours later. Three cases were successfully treated by gastrostomy and internal esophagotomy. A fourth case yielded to gradual dilatation with bougies. One interesting case of obturation obstruction, in an infant, was due to the presence of a fibrous polyp, with a long pedicle, springing from the pharynx. Occasionally the growth would be swallowed, producing alarming symptoms, such as choking, cyanosis, and threatened suffocation. The removal of the polyp was easily accomplished and brought about immediate relief of the symptoms. Another obturation case was in a little girl who some time before had accidentally swallowed lye. After swallowing an improperly masticated piece of meat, there was for two days occlusion of the esophagus, even to the passage of liquids. After the removal of the meat, which was lodged about opposite the sternal notch, a cicatricial stricture was found at this point, which was successfully treated by gradual dilatation with flexible bougies. Three cases of pharyngo-esophageal diverticulum have been treated by radical removal of the pouch and esophagoplasty. One of these cases died of double pneumonia in less than forty-eight hours after the operation; the other two are alive and well to-day. Among the foreign bodies which I have removed from the esophagus without accident or ill effects are the following: a chicken bone, a piece of meat, a pin, an open safety-pin, a public school medal and a number of coins. But one case of cardiospasm has come under by care. This spasm developed in a man who was being treated for amebic colitis, and disappeared spontaneously after a sea voyage. Also I have had but one case of congenital obstruction of

the esophagus. A gastrostomy was performed, but the infant died on the fourth day. Autopsy was not allowed, so the nature of the malformation could not be determined.

The accompanying *x*-ray pictures illustrate some of the types of esophageal obstructions.

325 Park Ave., N. Y.

AUTOSERUM IN THE TREATMENT OF CANCER*.

By CAPTAIN OWEN PAGET, M.D.,

FREEMANTLE, WEST AUSTRALIA.

MÉDECIN CHEF, HÔPITAL MILITAIRE 37 A, DIEPPE, FRANCE

In previous publications in Australia and America I have attempted to show that "Epithelial cells are if not the most important at least probably the most often employed structures not only to protect and immunise us against disease, but also to cure disorders already in evidence." The importance of the intestinal mucous membrane is manifested by the universal appreciation of the necessity of a proper physiological activity of the bowels.

Again the exanthemata which represent the majority of the infectious diseases are usually cured by an appeal to the skin. And lastly my own work, which has been specially directed toward the nasal mucous membrane, seems to prove that this structure has not only protective and immunising, but also curative powers against tuberculosis.

The belief that epithelial cells have curative properties against disease suggested the possibility of stimulating these cells by a blister and injecting the resulting fluid into the subcutaneous tissue of a person suffering from cancer. This disease as is well known is characterized generally by a depreciation of health, and locally by a persistent and abnormal infiltration of epithelium-like cells.

It is this combination of conditions which it is important to appreciate, for the body may at any time be disabled by a general depreciation in health without any apparent change in the epithelial cells. On the other hand an abnormal if not persistent proliferation of epithelial cells may occur, as in the simple tumors, without any corresponding debility. The word "cancer" is intentionally employed in this paper, as it is essential when viewing a proposition from a fresh standpoint to unfetter the mind from conventional classifications and methods of thought. As Dr. Pettit pithily expresses it—"Le pathologie du cancer, c'est la blague."

In patients suffering from cancer who are treated by the method mentioned, the beneficial influence is first noticed in an amelioration of the general cancer cachexia, and not for some time in the growth itself.

The first local examination of the case given in this paper was intentionally not made for one month. Although the patient's general appearance at the end of that time was distinctly improved, the best that could be said for the growth was that it was less rigid, and that it was easier to make a thorough examination without fear of injuring the patient by provoking hemorrhage or fear of rupturing the bowel.

In this connection I wish to quote from Sir James Paget's "Pathology of the Cancers" a passage with reference to disproportion between cachexia and growth. He says: "Cancerous disease exemplifies a frequent event in the history of specific diseases; namely that when the morbid material is most intense and acute in its action, when it most manifestly affects the constitution, it may produce the least indications of local morbid influence." Again he says: "I think malignant tumors are local expressions of some specific morbid states of the blood." It seems as if the keynote of the cancer problem lay in these two definitions.

Supposing that a cancerous growth is an expression, however incompetent, of resistance to some virus, which virus is not necessarily the same in all cases, then after all the growth is a condition akin to an abcess or violent inflammation, and cannot justly be designated a disease, but rather a symptom. It will be seen to what extent in the following case these theories receive corroboration.

Patient's name—Ferdinand Piette, a private in the 25th Territorial Regiment, born January 15, 1873. Admitted here August 5, 1915. Had felt ill for about 18 months before admission. Had consulted a medical man for hemorrhage from the bowel at the commencement of the war, August, 1914, but was not examined. He was transferred from another hospital to this one as a case of enterocolitis with dysentery and passing of blood. General appearance on admission—haggard, cachectic, and slightly jaundiced; carried himself with a stoop. Each time he desired to urinate, it was necessary to go to the closet, as the bowels wanted to act at the same time. Appetite poor and capricious. Passing large quantities of blood per rectum, also much mucus. Motions otherwise evil-smelling, watery, and very frequent. Some pain on urination. Weight on August 26 was 135 French pounds.

The case was examined by Dr. Pettit of Paris, a former pupil of Professor Metchnikoff's, and consulting surgeon for this military district; Dr. Dupont in charge of a French Military Hospital; and Dr. Oliver Walker, attached to this hospital.

Diagnosis: Large inoperable carcinoma of the rectum. Wassermann reaction negative.

August 21. Treatment was begun. *September* 18. The growth is less rigid. It is easier to make a thorough examination without fear of injuring the patient. There is a slight gain in weight. There has been less hemorrhage from the bowel, and less trouble with urination. General appearance of patient improved. He feels stronger and objectively does not look so haggard and flabby. Tendency to jaundice is distinctly lessened. *September* 22. Patient examined by Dr. Dupont for first time. Diagnosis of carcinoma of rectum confirmed. *October* 3. Growth is less rigid, and also less in size. *October* 9. Distinct improvement. *October* 16. Examination by Dr. Pettit, Dr. Walker, and myself. General condition much improved, also growth smaller in size. *October* 23. The growth now feels like a uterus with torn cervix. Finger, after passing through external os, moves freely inside. Whole growth has some swing like a uterus, but still attached behind. At one place growth passes into normal tissues without an edge. *October* 30. Opposite the former place is another part where growth passes into normal tissue without an edge. Less like a malignant growth and more like an adenoma. *November* 5. Weight is now 147 French pounds. This is an increase of nearly one stone (English) since August 26. Dr. Dupont made another examination and said: "In my opinion since I saw the patient (6 weeks) the tumor has diminished about a quarter. It is much less hard, and the finger now penetrates easily the contraction which did not allow a proper examination. The general appearance of the patient is better, and especially his color. He looks better." *December* 6. Examination by myself. Apparently general improvement; especially the character of the mucous membrane covering the growth seems more natural. A natural moisture. Gain of 1 lb. since last examination.

Before this date patient had lost all general symptoms of his disorder except occasional hemorrhages, mostly very slight in character. His general condition and strength were enormously improved. The motions, no

*A lecture delivered at the Medical Schools, Cambridge, England, January 17, 1916.

longer offensive, are usually semi-solid and occasionally formed. There is no longer mucus in the stool. He does not sleep too soundly at night. This may be accounted for in part by the blisters, which irritate and in addition prevent sufficient exercise. He is rather stale as a result of his surroundings. From a surgical point of view he is now easily operable. The growth is apparently quite free from the bladder in front and gives the impression that it can be pulled down to the anus.

December 15. (Dr. Walker's examination.) Growth smaller. Much more movable now. *December* 16. Dr. Pettit's examination and report. Comparison between present condition and when seen four months previously: "Lorsque j'ai examiné Piette le 15 Aout 1915 j'ai constaté au toucher rectal une tumeur constituée par des saillies volumineuses reposant sur une base indurée et encumbrant la lumière du rectum. Les saillies étaient dures, commes du cartilage, et le pulpe de l'index ne pouvait pénétrer au dessus de la tumeur ni-même s'engager dans le rétrécissement. L'état général était mauvais—amaigrissement, faiblesse. Je demandai une réaction de Wassermann qui fut négative. Je revois le malade le 16 Decembre 1915. Etat général bon. Forces en grand progrès. Embonpoint très satisfaisant. Au toucher le doigt pénètre facilement dans le rétrécissement maintenant plus large, et en dépasse juste la limite supérieure. Les végétations sont moins grosses et plus souples. La base indurée est beaucoup moins dure. Ces modifications sont particulièrement nettes vers la partie postérieure du rétrécissement."

December 27. Although no injection has been given since December 17 progress is still satisfactory. *January* 10. Improvement in growth still satisfactory, weight and general condition remain the same. There has been no treatment for nearly one month.

In my observations on tuberculosis, the conclusions arrived at were that the prevention, immunity, and even cure of the disease are dependent on the physiological perfection of the epithelial cells of the nasal turbinates and sinuses, and to a lesser degree the lining cells of the intestinal mucous membrane. The natural action of epithelial cells in resisting and immunising against disease is quiet though persistently in evidence. It is as much a physiological function as the digestion of food or the secretion of sweat. More so in fact. We are resisting disease every moment of our lives. We do not eat or sweat all the time. I think this point should be very clearly understood and appreciated. Medical thought is too liable to regard disease as a sudden invasion. It may be such, but it is much more a breakdown of constant resistance.

In tuberculosis, with this breakdown of resistance and immunising capacity, the body becomes invaded with tubercle bacilli. Once attacked, it may yet apparently withstand the disorder, but is dependent on an inefficient leucocytosis, and is in a state of unstable equilibrium; so that a strain or a blow causes an abcess perhaps in the hip, perhaps elsewhere. It results from this that tuberculous infection is the result of physiological imperfection.

In cancer the disease is probably in similar fashion held in check by the physiological action of epithelial cells, but when this capacity breaks down, it is not a pathological leucocytosis which arises, but an erratic epithelial growth. The exanthemata are the best expression of the importance of epithelial cells. In these diseases there is not only the objective appearance of the running nose and injected conjunctiva, the subjective sensations of improvement with free action of the bowels and skin, but there is further the rash, that most emphatic expression on the part of nature to utilize the epithelial cells of the skin in an attempt to cure disease.

If, as seems infinitely probable, the cancer virus circulates in the body and with the blood, it is reasonable to suggest that nature seeks to deal with this agent in a manner similar to that employed in the infectious diseases. Drawing a comparison with tuberculosis the occurrence of the cancer virus in the tissues is already an assumption that normal epithelial action has broken down. It is hardly conceivable otherwise, for we must be constantly exposed to cancer virus, which is as constantly held in check by some action, which experiment seems to show is epithelial.

The cancer virus once in the system, the body is probably still capable of some resistance, but as in the case of tuberculosis is in a state of unstable equilibrium. If now the vitality of any region is lowered either by constant irritation, as in the case of the smoker's lip, or as in the case of a woman from a blow on the breast, or even from causes imperceptible to us, then there results a local proliferation not of leucocytes, but of epithelium-like cells. It is probably false to regard this as an hypertrophy due to increased work. It is an excessive incompetent activity due to an irritating stimulus, and as such knows no bounds or limitations. The only apparent difference therefore between the abcess of tuberculosis and the cancerous growth, outside the fact that they are formed of different varieties of cells, seems to be our capacity to deal with them surgically.

An abcess by constantly enlarging and eating away the body is as capable of destroying it as a cancerous growth, but apparently, in some way very inexplicable, it changes its character when it discharges its contents.

It is well known that cancer attacks us at that time of life when common experience suggests that our physiological functions are naturally diminishing. These activities are still further depressed by the demands of civilized existence, which with its monotony and worry psychologically depresses them. While the cares and anxieties of our social system are so innumerable that mankind is never free from them, the influences of the nervous system on epithelium are enormous. Its impulses excite us to cry when distressed, inhibit salivation and digestion at times of fear and anxiety, and cause the skin to be blanched and faded, when the body is exposed to excessive strain. Hypercivilization with its punctualities and duties demands a restraint of physiological impulses, and hence is a potent factor of constipation. This, in turn depresses the normal activities of the cells lining and forming the intestines. With their lowered capacity the cells permit the transmission of bacteria, which apparently are enmeshed in Lane's adhesions. These further lower the capabilities of the intestine, and are regarded in surgical circles as precursors of cancer.

Clothing again by its character must often be inhibitory to the normal action of the skin. It was recognized in former days that chimney sweeps whose skins were in a perpetual state of irritation or inhibition through soot were peculiarly liable to cancer, and parliamentary legislation was brought to bear to remove this danger from a section of the people.

If the view is taken that any attempt to treat concer should be directed against neutralizing cancer virus, it is not necessary to expect any speedy or immediate retrocession of the growth. In fact it is surprising that it is affected at all. There is possibly no longer a reason for this artificially stimulated structure, but once established it is diffi-

cult to expect otherwise than that it will remain, or at best become encysted. However the growth does recede, and gradually tends to return to the natural condition of the tissues. Now there is seemingly no attempt at cicatrization or fibrosis, but on the return to the normal there is a stage where to the touch at all events the growth feels adenomatous.

Is it possible that the difference between a simple adenoma and a malignant growth is that the former having accomplished its purpose becomes encysted and shut off, whilst the latter, never able to destroy the irritant virus, itself destroys the host?

Before taking too definite a view, it is advisable to compare epithelial cells in their resistance to disease with mesoblastic cells and especially leucocytes engaged in a similar endeavor. It must be borne in mind that epithelial and mesoblastic cells may be in action simultaneously.

Epithelial Cells.	*Mesoblastic Cells.*
1. Constant physiological action in protecting and immunising us against disease.	Probably constant similar action but of lesser quality.
2. The body attacked by a virus the reaction is expressed by erythema and rashes as in the exanthemata.	Under similar circumstances reaction is expressed by the various inflammations.
3. Under certain circumstances the virus is not quickly or entirely destroyed. It is however shut off from the rest of the body by collections of cells. *e.g.* The adenomata.	Under similar circumstances. The gumma and the tubercle.
4. Sometimes the character of the cells is such as to prevent them becoming encysted. *e.g.* The papilloma and the rodent ulcer.	Similarly, the sarcomata.
5. Sometimes the cells infiltrate and irritate the tissues. They are in addition both destructive and liable to destruction. *e.g.* The cancers.	Similarly, noma, some soft chancres, and abcesses.
6. A rare modification of the last. The scirrhous cancer which is cured.	Similarly, the encysted (cold) abscess.

If the hypothesis is entertained that the reason why epithelial cells behave in certain ways is because they have curative properties, one's interest is aroused as to what powers they have to move from place to place. My own knowledge of present day pathological histology is so limited as not to permit me to discuss the matter with any degree of freedom. But reading Mr. Sampson Handley's book on Cancer of the Breast, the impression left is that there are not only considerable movements of cancer cells in the lymphatic spaces in disease, but that probably epithelial cells circulate in the lymphatic circulation during health.

After all, is it essential that epithelial cells be fixed, and do we know positively where all the cells in the blood and lymph come from? Certain it is that epithelial cells can be implanted and take root in foreign soil with great ease, as is shown in the surgical skin graft.

This paper is not a clinical one, but there is a practical aspect. The case was diagnosed as one of inoperable cancer of 18 months' duration. Four months from the commencement of treatment the general health is excellent. The patient has gained 14 pounds in weight, and the growth is very much smaller.

The psysiology and pathology of tuberculosis and cancer have been shown in this and previous papers to be simpler than is usually assumed. A future paper will deal with the results of treatment in a series of cases already started, and will attempt to explain the extraordinary phenomenon of the apparent disappearance of the growth after discontinuing the treatment.

My sincere thanks are due to the members of the French medical profession with whom I have been brought in contact for their invariable kindness and courtesy, and for their scientific and open-minded attitude with regard to my investigations. It is a pleasure to mention with them Miss Olivia Walker, M.B., who is at present attached to this hospital, having come all the way from Trinidad to lend her services to the wounded.

THE VALUE OF MODERN AIDS IN SURGICAL DIAGNOSIS.*

By JOHN T. HOWELL, M.D.,

NEWBURGH, N. Y.

THAT the nineteenth century saw the most remarkable progress in surgery of all times was due chiefly, as we know, to two discoveries—anesthesia and the role of microorganisms.

The highly developed senses of those physicians who practised before this epoch had enabled them to discover in a wonderful way many obscure subjective symptoms which to-day might baffle us if we were limited only to such methods of diagnosis. However, while we continue to make examinations by physical methods, we have the assurance that there yet remain in reserve the laboratory, the *x*-ray, and the various instruments of precision with which a diagnosis can be confirmed. Modern surgery has had many claimants for the honors of its marvelous development, but the test of time has left comparatively few worthy of such credit. Besides Morton and Pasteur may be named Hunter, Virchow, Lister, Tait, Koch, Behring, Metchnikoff, Ewald, Boas, Röntgen, and some others, who have revealed the secrets of pathology, bacteriology, hematology, gastroenterology, and röntgenology.

In all of these fields there have been discovered certain pathological, etiological, and functional factors, a knowledge of which is of great assistance in surgical diagnosis—and it is to a consideration of the value of these modern aids that I ask your attention.

The first of these aids owes its origin to the postmortem and cellular pathology conducted by Hunter and later by Virchow. Tait contributed much to living pathology in his original abdominal work incident to surgery of that cavity, and later Horsley, Cushing, Carrel, Crile, Matas, and others have developed the pathology of surgery along many important lines.

Accurate pathological findings may now be depended upon to detect neoplasms from hyperplasia —and in neoplasms, malignancy from benign conditions; also to classify by types, different malignant and non-malignant growths—and in most cases to tell from what tissue originating and from what embryonic tissue derived.

The pathological findings are positive in a dif-

*President's address before the Newburgh Bay Medical Society, Jan. 11, 1916.

ferential diagnosis between Hodgkin's disease and tuberculous lymph nodes; and it is possible to differentiate between syphilitic and tuberculous conditions. Preoperative specimens should be examined whenever it is possible to obtain them, but it is conceded that the examination of frozen specimens at the time of operation is oftentimes not a dependable method.

In cases in which exudates and transudates are present, a study of the character and number of cellular constituents found in the specimens is often of great help in diagnosis, especially in pleural, joint and cystic fluids, and in fluids obtained from the cerebrospinal cavity, which normally contain no cells.

The importance of an early diagnosis in many of these cases is well appreciated. In those cases where there is no living tissue available, a Wassermann reaction, for example, will determine, in a large percentage of patients, whether syphilis be present or not; and where tuberculosis is suspected in children, we have a convenient and reliable test in von Pirquet's reaction. The reaction from old tuberculin, according to the method of Koch, is positive only if there be a tubercular focus, whether active or latent.

These tests are based upon the degree of resistance of an individual to a given disease. A complement fixation test for tuberculosis[1] is being worked out with much promise, and bids fair to be as valuable as the Wassermann test for syphilis.

To Pasteur is due the revelation of the role of microorganisms—undoubtedly the most important discovery in the field of medicine during the last century. Bacteriology has already revealed the secrets of many hidden problems, and the present army of second generation workers is constantly reporting other enemies in the fields of microbes they are exploring.

Of the many surgical infections now traceable to definite microorganisms there can be named: anthrax (*B. anthracis*), actinomycosis (*ray fungus*), erysipelas (*Streptococcus pyogenes*), glanders (*B. mallei*), malignant edema (vibrion septique), rabies (Negri bodies), tetanus (*B. tetani*), tuberculosis (*B. tuberculosis*), boils, carbuncles, circumscribed abscesses, and pyemic infections (*Staphylococcus pyogenes aureus*), etc.; and the infection spreading local inflammations with necrosis of tissue, phlegmonous erysipelas, suppurating joints, purulent peritonitis and pelvic cellulitus (*streptococci*, etc.). The abscesses found in the region of the alimentary canal are generally due to *Bacillus coli*. The gonococci may be found outside the genitourinary tract causing peritonitis, endocarditis, meningitis, suppurative pleuritis, and arthritis.

Certain bacilli cocci and some of the specific parasites can be detected in the blood. Examination of the blood cells has become a dependable means of diagnosis and is a ready means of verifying the existence of suppuration in obscure or inaccessible places. The white blood cells and differential counts are of positive value in determining the presence of suppuration, and by noting the degree of polynucleosis one is helped to differentiate between an acute catarrhal and an actual suppurative condition. It is important not to mistake a pus pocket for a malignant neoplasm, as in both there may be a leucocytosis, and it is here as in many other conditions that it is necessary to remember to give full consideration to all other symptoms, both subjective and objective. In general the following blood conditions are significant:[2]

A normal leucocytosis (7-10000) and low polynuclear (60 per cent. — 75 per cent.) are negative of pyogenic infection, but may exist in typhoid, malaria, colics, etc. An absence of leucocytosis may indicate a feeble resistance or that the pus is shut off from the general circulation. A high degree of leucocytosis (80 per cent.) indicates the existence of an intense process; a steady increase of leucocytes, a severe spreading process; a sudden increase generally means a new invasion, while a falling degree of leucocytosis follows evacuation of abscess. A leucocytosis often occurs after hemorrhage.

The number and condition of the red blood cells are of importance as an indication of a cachexia, pernicious anemia, severe hemorrhage, and certain parasitic diseases.

The use of the sphygmomanometer as a register of blood pressure has an important place in surgical diagnosis and is a helpful guide in determining certain surgical conditions resulting especially from injuries to the head or spine, from shock, and in anesthesia.

It should be noted[3] that during an operation the blood pressure is apt to show a marked fall—5 mm. or more. Irritation of the large nerve trunks may cause a rise, while if the peritoneal cavity be opened and the viscera handled there will be a reactionary fall. Concussion of the brain during the paralytic stage is generally accompanied by low blood pressure, while in acute compression from clot or fracture the blood pressure is increased. A complicating uremia will also increase blood pressure. High blood pressure in acute peritonitis may indicate a typhoid perforation. It is well to remember that the diastolic blood pressure changes are of more importance than the systolic range. The average normal diastolic range between the ages of 15 and 67 is from 85 mm. to 99 mm. The average systolic range for same period, 110 to 140 mm.

Uranalysis continues to afford valuable aid in surgical diagnosis, and such an examination, it is conceded, should be employed as a matter of routine in all cases, in order to determine not only functional disturbances but also the possible presence of albumin, sugar, acetone, urea, indican, casts, pus, blood, etc. Information thus derived may indicate a choice in the selection of anesthetics, the limitation of the period of operation, subsequent diet, etc. If a further examination be indicated this may be accomplished by the aid of the cystoscope or urethral catheter, thereby determining the existence of vesical or renal calculi, growths, ulcers, etc., and the amount and character of the secretions of each kidney.

In the autumn of 1895 W. K. Röntgen's discovery of the *x*-ray opened up a most wonderful field for investigation and study of the opaque structures of the human body. In so far as the broadening knowledge goes this discovery of the cathode ray ranks among the foremost contributions to surgery. Of great value was the localizing of foreign bodies, which was found always possible if the substance were sufficiently opaque—observations of the bony skeleton, especially deformities, displacements, and fractures, have been of the most valuable aid in diagnosis, although, as is well known, a critical examination of all radiographic plates is necessary to their correct interpretation. The use of the screen, it is claimed by some authorities,[4] is much better than plates in determining certain conditions in the thoracic and abdominal cavities, as pleural

effusions and some cases of gastric cancer. There is, however, a greater exposure and danger to burns on the part of an operator in using the fluoroscope, especially from a high power machine. Since the employment of the bismuth meal or a preparation of barium sulphate it has become possible to visualize the gastrointestinal tract in such a way as to make it possible to study its motor and structural changes.

The diagnosis of gastric cancer from ulcer is but relative, but these conditions can undoubtedly be distinguished earlier by the *x*-ray than by other methods. Carmen[5] claims that an *x*-ray diagnosis can be made in 93 per cent. of cases examined, and Cole[6] in 89 per cent. by serial plates.

The serial plates have been most successful in abdominal work, but are expensive. However, since one-third of all cases of cancer occur in the stomach, gastric work with the *x*-ray is of greatest value. Haenisch obtained successful diagnosis of stomach conditions by distending it with air. The various conditions of ptosis are rendered evident after the ingestion of a meal of some opaque substance. Hair balls in the stomach have been diagnosed by Barclay and Holland. Duodenal ulcers are shown by the persistence of a spot on the plate. Palefski[7] advocated the use of the duodenal tube to bring out the upper intestine. It is claimed[8] that the appendix can sometimes be shown if a radiograph be taken when it is most likely to be distended, about six hours after meals. Large aneurysms, cystic and solid tumors, enlarged kidneys, and abscesses may occasionally be demonstrated clearly, and adhesions of the intestines and adventitious bands have also been successfully shown on some plates. The duodenal cap formed by adhesions with the gall bladder is considered diagnostic of gall stones.[9] Gall stones (containing calcium) may be recognized in about 30 per cent.[10] of cases, but they must be carefully differentiated from other shadows cast by kidney stones or calcareous glands. Pfahler[11] claims that he can show 50 per cent. of his cases by the use of a special technique.

Pyelography, which consists in obtaining an *x*-ray shadow of the renal pelvis and calices, which have been filled with an opaque fluid, has been successfully employed in the early diagnosis of dilatation due to calculus or movable kidney, in growths affecting the pelvis of the kidney, and in calculi in either the pelvis or calices of the kidneys; *x*-ray pictures of bladder stones are uniformly successful, but like other deposits these must be composed of lime or other opaque substance to be brought out clearly. Uric acid calculi can seldom be seen.

Radiographs of the teeth are successful in showing the pus foci of pyorrhea alveolaris, and plates taken of the head and face may reveal obscure collections of pus in some of the sinuses or the mastoid, and sometimes unsuspected fractures of the skull are revealed.

Transillumination is another practical means of discovering retained secretions or pus in the various sinuses referred to.

Time will not permit mention of the bronchoscope, esophagoscope, proctosigmoidoscope, and other special aids to diagnosis, valuable chiefly in the hands of experts. The same is true of the various gastroduodenal tests.

In closing I would emphasize the necessity of obtaining a complete general history and examination of every surgical case before resorting to any of these special aids, which, although valuable, should have the corroboration of all other diagnostic signs and symptoms if they are to be safely accepted as evidence in the rendering of a dependable final decision in diagnosis.

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207 GRAND STREET.

ERYSIPELAS MIGRANS AND MULTIPLE ABSCESSES IN A SIX MONTHS' OLD INFANT SUCCESSFULLY TREATED WITH VACCINES.

BY LOUIS FISCHER, M.D.,

NEW YORK.

THE literature records a number of cases in which a breach of continuity of the skin cannot be made out, but still we have distinct evidence of erysipelas due to the invasion of the Fehleisen bacillus. This condition is fortunately very rarely seen in infancy.

Fully 50 per cent. of the cases of infantile erysipelas recorded in medical literature have had a fatal termination. I desire to report the following successful case which had continued high fever and symptoms pointing to a general toxemia. In this case there was no macroscopical evidence of the point of invasion as there was no breach of continuity perceptible. The case is interesting because of the severity of the infection, the fact that the whole body suffered from the disease, and that we were dealing with a very high fever from the beginning. The only circumstance in favor of the infant was the fact that it was nourished with human milk, and that it took its food regularly and seemed to assimilate the same.

BABY C.—Six months old, a nursing baby, was seen by me several times in consultation with Dr. S. Hermann of Brooklyn. When first seen the infant had been ill three days. The temperature was 105° Fahr., pulse 168, respiration 80. There were marked cyanosis, vomiting, extreme weakness, and retention of urine. There was a marked erysipelatous flush on the vulva which spread very rapidly toward the abdomen and thighs.

The inflammation on the vulva was of a deep red color. There were thickening and edema, while spreading to the buttocks and up the back we could note a sharply defined edge. There was slight pitting on pressure. The redness seemed to disappear under pressure. The redness was of an erythematous character, uniform and not mottled. The skin was tense and shiny. The surface temperature was raised. The inflammation spread from the buttocks to the back, then to the thorax, and downward to the extremities. From the back it spread to the neck, scalp, and face, closing the eyes. There was marked thickening with swelling which involved the ears, cheeks, nose, and neck. This swelling of the face did not interfere with feeding.

Three or four days after the extension of the swelling from the buttocks to the back, there was a marked diminution in the redness and swelling, but the new areas involved were considerably indurated, tense, and hot on palpation. In three or four days more the scalp, ears, and nose which were swollen became less shiny, and the swelling gradually subsided. With the reduction of the swelling and inflammation there was a marked desquamation. The arms and legs were the

last to be involved. They went through the same process of redness and thickening which lasted four to five days longer.

From the spreading nature of the disease, I believe we can classify this case as one of erysipelas migrans—the wandering type of erysipelas.

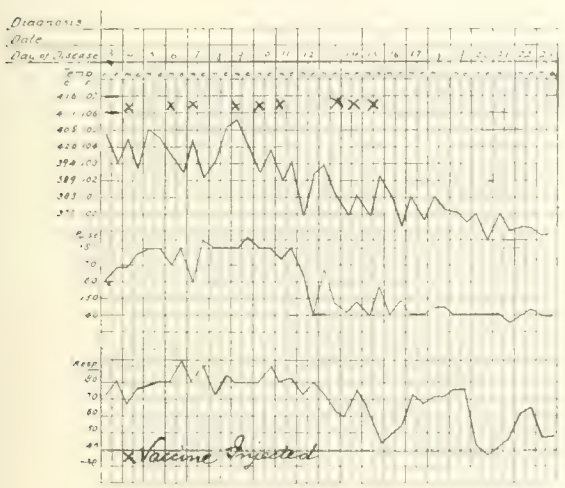
During the course of the disease the behavior of the infant was remarkable. As previously stated, it was a breast-fed infant who took its nourishment at the regular intervals, with the same appetite as when in health. The stool was well digested and normal in appearance and there seemed to be no evidence of faulty metabolism. The infant seemed therefore to offer good resistance to its infection, notwithstanding the fact that the temperature remained unusually high.

Diagnosis.—Erysipelas migrans of unknown origin. The sanitary surroundings were perfect. No apparent reason for the infection. The lungs were normal, although the pulse-respiration ratio was markedly disturbed and suggested a pulmonary complication.

The leucodescent light was tried three times a day by Dr. Hermann the rays covering the affected area. Ichthyol ointment also was used without markedly diminishing the inflammation. The local application of lead and opium wash, and other evaporating lotions did not seem to reduce the temperature nor to modify the inflammation. The swelling continued in spite of the continued use of these lotions.

I have seen excellent results during my service at the Willard Parker Hospital from the constant use of a saturated solution of magnesium sulphate used locally. In this case it did not modify the inflammation. The erysipelas continued to spread, so the light treatment was discontinued and serum treatment was begun.

There was marked fluctuation in the labial swelling and a drop of pus examined showed the presence of *Staphylococcus pyogenes aureus.*



On the fourth day of illness an injection of 75,000,000 germs of a streptococcus stock vaccine was given. On the sixth day, 50,000,000; on the seventh day, 60,000,000; on the ninth day, 70,000,000 germs were injected. A decided improvement was noted. By this time we had obtained an autogenous vaccine and gave the first injection of 100,000,000, a second injection of 100,000,000 plus 100,000 the following day. On five successive days injections, each 100,000 more than the last, were given.

On the fifth day following the first vaccine injection an abscess on the right labium major was incised. A general multiple furunculosis on the arms, scalp, thighs, and back appeared in rapid succession. A general pyemia existed. In addition thereto a pustular eruption appeared on the face and head. Several dozen of these were incised and pus evacuated.

Summary: A reduction of the temperature was tried with lukewarm colonic flushings, also by means of tub baths, but without avail.

Ichthyol was useless, likewise magnesium sulphate in a saturated solution. Neither seemed to reduce the inflammation or the temperature.

Breast feeding was continued throughout the disease and continued after complete recovery.

The streptococcus vaccines, both stock and autogenous, brought down the temperature by lysis, and this seemed very effectual in modifying the erysipelas.

It is difficult to state whether or not the migration of the staphylococcus through the circulatory tract was responsible for the multiple furunculosis, the numerous pyemic abscesses, and the pustular eruption on the face and scalp.

The large dosage of the vaccines given and the non-toxic results therefrom show the tolerance this infant had for the same.

The child made a brilliant recovery, and is perfectly well to-day.

I am indebted to Dr. Hermann for the clinical details of the above-mentioned case.

In addition to the vaccine used by me in the case reported other methods of therapy have recently been tried. Kaiser of Rochester reports a case of a six-year-old child treated with convalescent blood from a nursemaid. Seven ounces of the citrated fluid were injected into the muscles with excellent result. This method of using convalescent blood has been tried in the scarlet fever wards of the Willard Parker Hospital during my service, and reported by Drs. Park and Zingher. Definite conclusions based on the cases treated can hardly be given, although excellent results were frequently seen.

Diphtheria antitoxin has its advocates. It has proven of no value in many cases in which it was used during my service covering many years at the Willard Parker Hospital. In addition to the serum I was always compelled to use local remedies to modify the erysipelatous edema.

As to the value of local applications they serve well in many cases and disappoint in many more. The internal treatment with iron so frequently advocated has served me in some cases and been found wanting in others. I am therefore satisfied that we cannot ascribe virtues to iron in all cases. After all we are compelled in the light of our present knowledge to use one drug after another, and use vaccines when procurable. No one would consider the treatment of a case of febrile erysipelas without clearing the gastric and intestinal tract, thus eliminating toxins through the intestines.

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155 West Eighty-fifth Street.

CEREBRAL SYPHILIS OF RECENT ORIGIN WITH REMARKS ON THE THERAPY.

By MORRIS J. KARPAS, M.D.,

NEW YORK.

CHIEF OF CLINIC OF NEW YORK NEUROLOGICAL INSTITUTE (THIRD DIVISION); CLINICAL INSTRUCTOR IN NEUROLOGY, CORNELL UNIVERSITY (MEDICAL DEPARTMENT); FORMERLY ASSISTANT RESIDENT ALIENIST, BELLEVUE HOSPITAL, NEW YORK.

Syphilitic affection of the nervous system of comparatively recent origin is of relatively infrequent occurrence. In fact, at one time such distinguished authorities as Fournier and Huebner were of the opinion that nervous manifestations during the first stage of syphilitic infection were unusual.

In going over the literature which is so well handled by Nonne in the last edition of his book, "Syphilis und Nervensystem," we find various references made to isolated cases of cerebrospinal syphilis in which the etiology was of recent origin. Lefévre's case of facial paralysis developed during the secondary symptoms. In 1864 Kühn, Bahr, Vidal, and Lancereaux described cases of syphilitic nervous diseases occurring within a few months of the primary infection. In 1879 Fournier and Troisier, together with the statistical documentary evidences of Braus, Lang, and Naunyn, unanimously concurred with the idea that in the majority of instances the nervous system usually becomes affected during the first year of luetic infection. Cases of unusually early involvement of the nervous system have been observed and reported by various investigators. For instance, Gilles de la Tourette's patient developed a severe syphilitic condition of the brain and cord only two months after the primary lesion. This author alludes to a patient of Fournier who had well-defined symptoms three months after luetic infection. There are other cases on record as follows:

Author	Case	Within the Period of Infection
Kreibich	1	4 months
Jolly	1	8 months
Gol Blum	1	8 weeks
Mingazzini	13 cases from literature plus 5, his own cases	From 6 weeks to [illegible]
Trommer	1	4½ months
Schaulers	1	6 weeks
Nonne	1	2 months
Nonne	1	4 months
Nonne	1	4 months
Nonne	1	During the secondary symptoms
Stursberg	1	During the second stage
Collins and Taylor	1	4 months

In the light of our present knowledge of serology and the cytology and chemistry of the cerebrospinal fluid we find that in cases of systemic syphilis without clinical symptoms of the central nervous system involvement abnormal changes in the fluid may be noted. For instance, in some cases a lymphocytosis of the cerebrospinal fluid, increased globulin content or a positive Wassermann reaction is observed. These abnormal phenomena prove that even in the early stages the *Spirichæte pallidæ* may invade the nervous tissue. Indeed, experimental studies of Weygandt and Jacobs demonstrate the fact that in syphilitic rabbits of two weeks' duration the central nervous system presented definite pathological alterations in the sense of meningoencephalitic process and adventitious cell formation around the blood vessels. These investigators are of the opinion that the syphilitic germ possesses a great affinity for the nervous system.

It is possible that by more careful clinical observation, associated with complete laboratory examinations, early syphilitic affection of the nervous system could be more frequently demonstrated than it had been heretofore.

Three cases of well-defined cerebral syphilis came under my direct observation in addition to several more that I saw on different services in Bellevue Hospital.

Case I.—J. N.; Admitted to the Psychopathic Department of Bellevue Hospital May 14, 1913. Aet. 26; male; Sweden; three years in U. S. A. Sailor. Single. Family history negative. Personal History: The patient was always well and there was no history of severe diseases except in February, 1913, that is four months prior to his admission to the hospital, he contracted syphilis.

Onset of the Neuropsychic Disorder: Five weeks prior to his admission the patient began to suffer with headaches and would see black spots before his eyes. Soon he found difficulty with walking. He felt weak and somewhat drowsy. For this reason he was unable to attend to his work. Upon admission to the hospital he was rather confused, had difficulty to express himself, perseverated and appeared depressed and drowsy. On the next day the aphasia and confusion disappeared and he was able to give a good account of himself. He maintained that he was sick, complained of headaches and felt fatigued and weak.

Physically the patient was of fairly good development. There were evidence of iritis, but the pupils responded to light and accommodation. Some nystagmoid twitchings of both eyeballs were noted. Knee jerks were overactive and unequal. The gait was somewhat waddling but no definite ataxia could be demonstrated. No sensory disturbances were present. The Wassermann test was positive in the blood and fluid, and there were 280 lymphocytes per cmm. and globulin content was much increased.

Case II.—M. G. was admitted to the psychopathic department of Bellevue Hospital, October 6, 1912. Hungarian. Aet. 20. Single. Chauffeur. Family history practically negative. Personal History: The patient was always well and of fairly good habits, except for the fact he smoked to excess.

In the early part of May, 1912, *six months before neuropsychic symptoms developed, the patient contracted syphillis* for which he was treated by Dr. B. Weiss, to whom I am indebted for his careful notes of the case regarding the onset of luetic infection. Three days before his admission to the hospital the patient began to complain of headaches and grew lethargic. Weakness of the right side of the body and inability to speak developed within thirty-six hours of my observation.

Upon admission to the hospital the patient was dull and drowsy, answered few questions, was dull of comprehension and manifested general sluggishness. The right side of the body was partially paralyzed, but within a day complete paralysis of that side developed with motor aphasia. Mentally the patient was dull and drowsy and occasionally he would become restless and fidgety. He was unable to speak and showed some confusion and perplexity. Physically in addition to the right sided hemiplegia with some indefinite sensory disturbances there were unequal pupils which responded to light and double optic neuritis. The right abdominal and cremasteric reflex was absent. A papular eruption al lover body, especially of the upper and lower extremities were in evidence. Wassermann test was strongly positive. There were 618 lymphocytes per cmm. and globulin was much increased.*

Case III.—This patient came under my observation in private practice. He is a man of thirty and of fairly good habits. He always enjoyed good health; in the *latter part of April,* 1915, *he contracted a hard chancre for which he* received local treatment only. In October, 1915, (five months after the initial lesion) he suddenly felt dizzy, vomited and suffered with headaches which were so severe and intense that he could not raise his head. He was then taken to Bellevue Hospital where his Wassermann in the blood and fluid was strongly positive and cerebrospinal fluid showed a lymphocytosis and increased globulin content.

*This case was reported in detail by Dr. M. S. Gregory and the writer in *Review of Neurology and Psychiatry,* Edinburgh, May, 1913.

When he consulted me (November 18, 1915) the patient was clear mentally but complained of feeling somewhat dizzy and had heavy headaches. Physically he was fairly well nourished, and showed no evidences of visceral disease. His pupils responded sluggishly to light and there was a double optic neuritis, left more marked than right, but no other cranial nerve involvements; however, slight nystagmus was perceptible. Knee jerks were overactive, right was greater than left. The Wassermann test was 16 units. (Dr. Cyrus Field). He was later admitted to New York Neurological Institute (Dr. P. Bailey's Service) where he was treated for his condition.

The luetic etiology in all the three cases was of recent origin, varying between four and six months. In all of them a definite neurologic condition was demonstrated; in Cases I and III a meningitic affection was in the foreground. In Case II there was a meningitic involvement in addition to vascular degenerative inflammatory process. Under active treatment the patients showed a marked improvement with the exception that Case II was not very amenable to treatment because of considerable anatomical changes in the brain caused by vascular lesions. However, he made sufficient improvement enabling him to walk without assistance and he was able to speak fairly distinctly.

In the treatment of syphilis of the nervous system, two important points must be borne in mind: First is to establish the proper diagnostic classification of the case in question, and in all instances the Wassermann test and cerebrospinal fluid examination are extremely important in order to obtain a clear idea of the underlying anatomical changes. There are four large groups of cerebrospinal syphilis: (1) Meningitis, acute and chronic; (2) gumatous; (3) endarteritic; (4) mixed.

From the point of view of therapy, the first two types yield readily to anti-luetic remedies. To be sure, the question of complete restoration would depend on the intensity and degree of damage done to the nervous tissue. In prognosticating cerebral syphilis, this point must always be remembered. In the endarteritic forms the outcome is poor because the vascular changes produce certain pathological conditions in the central nervous system and in such instances, antiluetic remedies cannot replace or arrest such degenerative processes. This is also true of paresis and tabes.

The second important point to bear in mind is that in the affection of nervous system, syphilis exerts a dual action, a *local* and *general*. The former expresses itself in the nervous symptoms and the latter is purely systemic. In other words, in the treatment of such cases, our attention should be directed along these two lines, viz., to rid the system of the poison and again combat the special symptoms.

Aside from the usual hygienic, dietetic, and tonic treatment, the actual therapy of cerebral syphilis consists of three remedies: (1) Salvarsan and neosalvarsan; (2) mercury; (3) potassium iodide.

It is generally contended that salvarsan or neosalvarsan exerts a specific action on the *Spirochæta pallida* and the effect of mercury is on the inflammatory by-product as well as on the syphilitic germ. Potassium iodide aids the breaking up of connective tissue and prevents its formation. Recently the work of Jobling and Petersen show very definitely that iodides are only adjuvants in the treatment of syphilis and to sum up their views: "Iodine neutralizes the action of the agents which prevent resolution and absorption of diseased or necrotic tissue in syphilis and at the same time lays bare to the action of real germicidal agent the infecting organism which previously had been protected by necrotic tissue. With the exposure of the infecting organism such agents as mercury and salvarsan would be more effective (quoted by an editorial writer in the *Journal of the American Medical Association*, January 22, 1916)."

In all cases where the usual contraindications are wanting salvarsan and neosalvarsan should be administered. It is always wiser to begin with a small dose in order to test the patient's constitutional tolerance. On the day following the administration of salvarsan, mercurial injections or inunctions with potassium iodide should be given. It is preferable to employ mercury salycilate injections because of rapid action and general cleanliness. The first dose should never exceed a half grain. However, the drug should be gradually increased till constitutional tolerance has been attained. In hospital work three grains a week can be used, but in private practice mercurial injections should be limited to two grains a week. In all instances the patients should be carefully watched for untoward effects. The potassium iodide should be given in increasing doses and it is remarkable how patients with cerebral syphilis can tolerate large amounts without showing constitutional symptoms. In this connection, it is important to call attention to the fact that intraspinous treatment (Swift-Ellis and Ogilvie Methods) of salvarsanized serum and mercurialized serum (Byrnes) are decidedly efficacious in the treatment of cerebral syphilis. Of course, proper cases must be selected for such treatment. In instances where acute inflammatory symptoms are intense it is better to control them by ordinary methods before instituting the intraspinous therapy.

It cannot be too strongly emphasized that the relative time duration of the actual treatment must depend upon the individual case, and one must necessarily be guided by the clinical symptoms and the Wassermann test and cerebrospinal fluid examination. In fact, the fluid examination is just as important as the Wassermann in aiding one in the therapy of syphilis.

My hearty thanks are due to Dr. M. E. Gregory for permission he has given to refer to cases I and II.

24 East Forty-eighth Street

A PLAN FOR THE CARE OF THE INSURED UNDER THE PROPOSED HEALTH INSURANCE LAW.

By A. C. BURNHAM, M.D.,

NEW YORK.

Under the title "Health Insurance" a bill has recently been introduced in the New York State Legislature which provides medical care and invalidity benefits for every salaried employee in the State who receives less than $100 per month. Briefly stated, the act is intended to provide New York State wage workers with medical and surgical care and a weekly cash benefit during invalidity in all cases not included under the present Workmen's Compensation Act. The insurance is to be compulsory and includes practically every vocation. The costs are to be met by contributions from the employer, the employee, and the State.

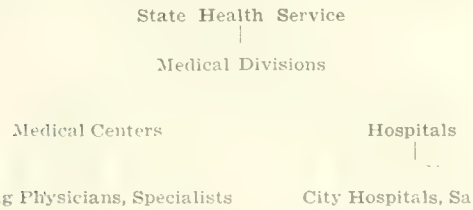
It is proposed to supply medical care, nursing, and medical supplies to the insured for a total

period of invalidity amounting to not more than twenty-six weeks during the year. In addition to this, medical care and cash benefit are provided for in maternity cases, the wives of wage earners being included under this provision. The law provides that the medical care should be adequate, but it leaves the details to the local societies, supposedly under government control.

A brief consideration of the above indicates the magnitude of the change that is contemplated in the medical care of the great mass of the population. It is claimed that no provision was made as to the character and manner of medical treatment in order that these matters might be left open for discussion and decision by the various medical societies of the State.

It is of extreme importance that the medical profession should inform itself of its position in reference to the proposed law, and that a definite plan should be formulated for the care of the insured as required by this act. It is desirable at the beginning to avoid the mistakes made under the health insurance laws of European countries, assuring adequate compensation to the physicians, competent treatment of the wage earner, with economical and satisfactory results for the State.

The writer believes that such results are possible only under a State Health Service somewhat after the plan of the Army Medical Service, or the United States Public Health Service. The basis of such a plan would be the medical center which would be the unit for a given locality. A number of these units joined together form a division which would in turn be one of the integral parts of the State Department of Health. Such a service might be shown graphically as follows:



The duties of the State headquarters and the divisional officers would be purely administrative, while the patients themselves would be under the care of the medical centers and hospitals. The existing hospitals and sanatoria are probably insufficient to care for all the wage earners who would be beneficiaries under the act and who would require institutional treatment, but in the beginning they would care for a large number of patients coming under the provision of this law, and new hospitals could be erected under State control when the need became apparent. Private hospitals stand ready to make a daily rate for hospital care as is done under the Workman's Compensation Act, and the remuneration for hospital physicians can be provided in the same manner until the State itself can undertake to provide better facilities of its own. A similar plan is followed by the army where Federal hospitals are not available.

We may now consider the basic unit of the entire system, the medical center. The medical center under the proposed plan has the entire care of the insured except when hospital treatment is necessary. It should be the aim of the medical center to prevent sickness and when it occurs to limit the disability to as short a period as is compatible with the continued health and longevity of the insured.

The following tentative plan of a medical center is presented for consideration. The medical center shall consist of the following medical officers and employees:

1. Serving on full time basis: Head physician, four assistant physicians, four visiting nurses, three clerks.

2. Serving on part time basis: Pathologist, nerve specialist, surgeon, eye, ear, nose, and throat specialist, dentist.

Headquarters shall be rented at a convenient location near the geographical center of the district served, and hours be designated for the treatment of ambulatory patients, the insured using the medical center in much the same manner as the industrial worker uses the present dispensary. In addition to this the wage earners may, when the occasion arises, notify the medical center and have medical attention furnished at his home. Usually this is accomplished with less loss of time than would be required to secure the services of a private physician.

It is estimated that this unit would care for a population of from 8,000 to 10,000 employees at a cost not to exceed $25,000, much less than would be required if the same wage earners were cared for promiscuously by private practitioners. In order to indicate the economy of both time and money under the medical center plan, a case may be cited as handled by one of the clinics in New York City.

John Smith is sick and is told by his employer to stop work and go to the clinic for treatment. At the clinic he is seen by a clerk who searches the records for his history or if it is the first visit he takes his name and address and refers him to the examining room. Here he is seen by a nurse who takes his temperature and pulse and makes a note of the important points in his history and he is then seen by the physician. Let us suppose that he is suffering from follicular tonsillitis. The physician examines, treats, and prescribes for him in fifteen or twenty minutes and tells him to go home and go to bed, making a note to call the next day. He takes a culture of the patient's throat and gives it to the nurse, who fills out the pathological slip and sends it with the culture to the laboratory. The physician then makes a few notes on the history blank, which is given to the clerk for filing.

The next day the physician calls and finds his patient much improved but the temperature is still above 102° so that rest for several days is advisable. The culture being negative he is not concerned about the case and the third day he asks the visiting nurse to see the patient and continue treatment. On the fourth day the physician again calls upon the patient who is now nearly convalescent, but still running a little temperature. The next two days the visits are made by the nurse who reports steady progress, and at the end of a week, the temperature being normal, and the patient feeling well, he is allowed to get up and, reporting to the clinic, is told to go back to work. A complete record made by the nurse and inspected by the physician is filed by the clerk for future reference. All insurance reports are made out, and most of the clerical work is performed, without trouble to the physician.

This case, then, represents a degree of economy and efficiency of method and labor which is impossible for the private physician to attain. The physician's work consists of a maximum of professional labor and a minimum of clerical and administrative duties. He has given a case adequate professional care over a period of one week with an expenditure of not over one-third the time and exertion required of the private physician; his reports are better kept and his professional energies are preserved. It is believed that if the State Health Service is conducted along the same lines as the United States Public Health Service it will

attract the better class of physicians and give an economical service to the community.

The principal advantages of a State service may be stated as follows: (1) An economical and efficient medical service. (2) Complete records which may be easily correlated. (3) Economy in administration expenses as compared with any other method of medical care. (4) Complete control of the patient and his surroundings. (5) An elastic service which can be expanded or contracted as occasion requires.

The following are the chief disadvantages of State control: (1) Possibility of political influence and graft, which is not probable if well organized under Civil Service, and the appointments made for life. (2) The lack of sympathy and cooperation between patient and physician. It is believed that this is more imaginary than real and that patients will be glad to be treated where they receive the best care.

The salaries would range from $3,000 to $4,000 for the head physician down to $2,000 for the junior physicians with an increase for length of service. Physicians would have no office, or other professional expenses, and consequently would be attracted by a career of this kind. Attending physicians who are on duty part time could be retained for about $1,000 yearly. It is estimated that the total expenses of the medical unit as outlined in this paper would be about $25,000, divided as follows: salaries of head physician and four assistants, $11,000; salaries of four visiting nurses, $4,800; salaries of three clerks, $2,000; salaries for five specialists for part time duty, $5,000; total salary list $22,800. This would leave a balance of $2,200 for rent, light, heat, cleaning, etc., which would be ample.

It is impossible to discuss here the other plans for the medical care of the insured. The plan of free choice and the contract plan are both open to serious objections and have been found wanting in countries giving then a thorough trial. The State panel, either at a per capita annual fee or at a fixed fee for each treatment, is less objectionable but has many failings, one of the chief of which is the non-standardization of treatment, and another of which is the excessive amount of clerical labor involved.

As a result of a complete survey of the entire subject the writer is of the opinion that the above system is the most economical, the most elastic, the most efficient, and in general the most satisfactory method advanced for the care of the beneficiary of compulsory health insurance.

140 West Seventy-ninth Street.

Trachoma in the United States.—The United States Public Health Service announces that there are thirty-three thousand cases of trachoma in Kentucky, and also that among the three hundred and twenty-three thousand Indians in our country, fully sixty-five thousand are infected. It was found, too, to be prevalent in the public schools of one of the southern cities last spring. —*National Committee for the Prevention of Blindness.*

The Goat as a Source of Milk.—The Board of Agriculture and Fisheries recommends goat-keeping to families living outside the area of retail delivery in England. Goat's milk is easily digested by infants, and less likely to contain tubercle bacilli than cow's milk. The average goat will give usually three pints of milk daily, and the unpleasant flavor can be controlled by the animal's food.—*The Lancet.*

A UNIFORM METHOD FOR THE COLLECTION OF SPINAL FLUID INTO TEST TUBES.*

By A. Levinson, M.D.,
Chicago, Ill.

Spinal puncture is so important a procedure and so simple in its application that every physician can do it, and most physicians have at one time or another attempted it. However, not all who make use of the spinal puncture know the fine points involved in its application. It is the man who has had a great deal of experience in this direction, who has had his successes and failures, that realizes the importance of the fine details that enter in the work. One of these is the method of collection of the spinal fluid in test tubes.

Under normal conditions the fluid is so small in amount and so uniform in nature that the whole amount to be withdrawn may be collected in a single tube, or in two tubes, and either one of these may be used for examination. Under abnormal conditions, however, the method of collection plays a great rôle, having a special bearing on the pathological findings. This is especially true in meningitis.

Very few are aware of the fact that different portions of the same fluid differ in the cellular contents, in the number of organisms contained, in the reduction index to permanganate, and even in the globulin content. Time and again I have found the cellular contents to show a difference of from 50 to 100 per cent. per cubic millimeter, between the first and last portion. Meyerhofer has shown the reduction index to permanganate to exhibit as high a difference as 1 c.c. or more from the first to the third or fourth portion. I found the same to be true in my work on the permanganate index. I also found that when a direct smear is made from the first c.c. of spinal fluid, the organism is often found more easily than in the centrifuged portions of the subsequent tubes. This is particularly true in the case of meningococcus meningitis, where the organisms are found within or just outside of the cells.

The most important reason, however, for the need of systematizing the collection of spinal fluid is the pellicle. In a forthcoming publication I expect to discuss the pellicle more fully. Here, however, I should like to point out the necessity of leaving the fluid undisturbed if a pellicle is expected to form. If the fluid is taken haphazardly and some of the fluid of the same tube is used for other purposes, the pellicle is not likely to form at all. Furthermore, a pellicle formation is accelerated when the fluid is kept in a cool place. The examination for the organism, on the other hand, is spoiled when the fluid is kept on ice, the meningococcus being killed at freezing temperature and growing luxuriantly at incubator temperature. The observance of such precautions has a great deal to do with the success of the operation. I should therefore like to present here the method I have found successful in collecting spinal fluid.

I start with four sterile and chemically clean test tubes, although in most cases three are sufficient for the complete examination. The fourth, however, comes in handy if the quantity of fluid is very large. The tubes should be labeled 1, 2, 3, 4.

Tube 1 should receive the first 2 c.c. of fluid, and this amount should be used for (1) Cytological examination; (2) Direct uncentrifuged smear for microorganisms; (3) ½ c.c. should be used for culture; (4) 1 c.c. should be used for the permanganate test.

*From the Sarah Morris Children's Hospital, Chicago.

If not examined immediately, this test tube with its contents should be placed in the incubator.

Into the second tube should be run in from 3 to 5 c.c. of spinal fluid, depending on the amount and on the pressure. This should be put in a tube rack, and placed in the icebox for the formation of a pellicle. Care should be taken that it is not disturbed.

Into the third tube should be run 5 to 8 c.c. of fluid to be used for (1) The second portion of the permanganate test; (2) The different globulin tests (Noguchi, Ross Jones, and Nonne); (3) Lange test; (4) Wassermann test; (5) Sugar contents; and a part for centrifugation for examination of organisms if the first portion did not show it. To facilitate matters in private practice, I would suggest that the third portion should be run in into a centrifuge tube. This will in many cases give a sediment inside of one hour or even in less time, and save centrifugation. The other portion of the fluid should be taken in ordinary test tubes.

Into the fourth tube should be run in the rest of the spinal fluid desired to draw, which is from 5 to 8 c.c. on the average if the case is one of meningitis, either meningococcic or tuberculous. In the meningococcus type the withdrawal of more fluid is of value in that it makes more room for the serum to be injected, and in tuberculous meningitis it is of some therapeutic value, tending to relieve the intracranial pressure at least for some time. On the average, then, from 15 to 20 c.c. of spinal fluid should be the amount removed in cases of meningitis.

The method herewith suggested will be found to save time, in that the nurse or assistant will always know how much fluid to allow for each test tube. Its main usefulness, however, will be found in the fact that uniform results will be obtained at different examinations and by different workers.

59 North Michigan Boulevard

Medicolegal Notes.

Evidence of Negligence—Excessive Damages.—A surgeon employed to remove the adenoids of a child of seven removed them successfully, but in doing so cut her tongue. He stated to the child's father at the time that the accident had been caused by the slipping of the gag. The father testified, in an action for negligence, that the defendant pulled the instrument from the child's mouth with a sudden and vicious jerk. The defendant did not testify. It was held that the evidence was sufficient to take the question of his negligence to the jury.

The defendant contended that negligence in cases of this nature can be established only upon the testimony of competent experts. The court said that this was not a case where the sole question was upon the treatment of the diseased part, and whether it was in accordance with approved and medical standards. The jury did not have to consider whether the method of the defendant in removing the adenoids was correct or scientific, but whether the unintentional wounding of the child's tongue was caused by lack of reasonable care. This involved no question of science, or necessarily of expert knowledge. By way of illustration the court said that, if a physician undertakes to administer a medicinal poison like strychnine, or arsenic, or morphine, and by mistake gives the patient an admittedly fatal overdose, it would be illogical to hold that the question whether he exercised due care was to be determined by expert evidence alone. Nor was it any answer to say that the most eminent and most skillful practitioners are human, and that at times the most careful among them make mistakes. Nor was it sufficient to say that the child by some sudden unlooked-for movement or struggle must have caused the unexpected and unintended contact of her tongue with the instrument, notwithstanding the exercise of due care by the defendant. Her father, who held the child on his lap, swears she did not move until the act was done, and the defendant, the only other person who could speak to the fact, declined to do so. It was therefore held that upon the whole record the issue was for the jury.

Only a slight scar was left on the tongue, without personal disfigurement, and there was a slight defect in vocalizing the letter "t." It was held that a verdict of $1,000 rendered by the jury was excessive, and would be reduced to $750.—Evans v. Roberts, Iowa Supreme Court, 154 N. W. 923.

Exemption of Charitable Hospitals from Taxation.—The Kentucky Court of Appeals holds that, under section 170 of the State Constitution, exempting institutions of purely public charity from taxation, a hospital incorporated by trustees as a charitable corporation, having no capital stock and holding property for the maintenance of a hospital for the treatment of sick and disabled persons and for medical and surgical treatment and the maintenance of poor persons not able to provide it for themselves, maintained without pecuniary profit, and having funds invested, the income of which was used solely in meeting its necessary expenses, was an "institution of purely public charity," whose invested fund was exempt from taxation.—Mason County v. Hayswood Hospital, Kentucky Court of Appeals, 179 S. W. 1050.

Who May Institute Proceeding for Practising without License—Chiropractors Require License.—Under the third section of the Pennsylvania act of June 3, 1911, P. L. 639, as amended by the second section of the act of July 25, 1913, P. L. 1220, imposing upon the Bureau of Medical Education and Licensure the duty of inforcing all the requirements of the act, and providing that in case of violations thereof proceedings shall be through the Attorney-General or by a special attorney, or both, at the discretion of the bureau, it is made the duty of the bureau to see that the act, as a whole, is carried into effect, and that its provisions are complied with, but there is nothing in the act which requires a member of the bureau to make the information charging a violation of the statute. The duty imposed on the bureau to institute a prosecution does not preclude any other person, either an officer of the commonwealth, county detective, or private citizen, from making the necessary information as the foundation for the prosecution.

Under the act chiropractors, though not specially named therein, are held to be within the classes contemplated by the act, and cannot practise their profession without having first obtained a license from the Bureau of Medical Education and Licensure.

The exemptions contained in the 13th section of the act indicate that in every respect, except those particularly excepted or exempted, the act was intended to cover all kinds of practice in medicine, no matter what the form might be or the agency employed.—Commonwealth v. Byrd, 24 Pennsylvania Dist. Rep. 1031.

Waiver of Privilege Relating to Disclosure in Insurance Policy.—The Michigan privilege statute, Comp. Laws 1897, section 10,181, which prohibits disclosure by a physician of information imparted to him in his professional capacity by a patient, was amended by Pub. Acts 1909, No. 234, providing that after the decease of such patient, in a contest upon the question of admitting his will to probate, his heirs at law shall be deemed to be his personal representatives to waive the privilege. An insurance policy issued by a fraternal benefit organization provided that the insured waived her privilege relating to the disclosure by attending physicians of information obtained while acting as such. It was held that the waiver was inoperative to render a physician's testimony admissible, since the Act of 1909 creates the only exception to the prohibition against physicians' testimony.—Gilchrist v. Mystic Workers of the World, Michigan Supreme Court, 154 N. W. 575.

Harrison Opium Act—Hospital Employees.—The Attorney-General for the State of Pennsylvania is of the opinion that the exemption in section 1 of the Harrison Opium Act of the "officers of State governments or of counties and municipalities lawfully engaged in making purchases of such drugs for State, county, or municipal hospitals or prisons," does not include the superintendent and other persons attached to State hospitals, they not being officers of the State government. The proper officers of the State government, being exempted by the act, may make such purchases for State institutions.—24 Pa. Dist. Rep. 248.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE TREATMENT OF VARICOSE LEG ULCERS.

IN most surgical divisions of the out-patient departments of our hospitals varicose leg ulcers are considered as almost if not quite an unmitigated nuisance. The treatment of these cases is usually handed over to the junior members of the staff, who are generally allowed or even encouraged to pursue their own inclinations as to methods of treatment unhampered, or with few words of advice from the senior surgeons. Unfortunately, most of them were taught that at some stage in the healing of an ulcer salves should be applied. Furthermore, the idea that salve is "soothing" to the ulcer is firmly implanted in the minds of the laity; hence both patient and doctor have felt that the right thing was being done when boric, zinc oxide, or some other ointment or Lassar's paste was applied to the ulcer and the treatment completed by the application of one or two compresses, held in place by a gauze bandage. This process has often been repeated every two or three days for weeks, months, sometimes even for years, and still for some mysterious reason the ulcer has not been cured. Such patients often migrate from clinic to clinic until finally they may be fortunate enough to fall into the hands of someone who appreciates the principles involved and carries out treatment on a rational basis.

When a varicose ulcer is first seen at the clinic usually two things are indicated: (1) the ulcer must be cleaned up and stimulated either by curetting, or by the application of a strong solution of silver nitrate, or some other such agent, and (2) the chronic passive congestion must be eliminated as far as possible by the application of a firm supporting bandage. If there is any syphilitic taint, antisyphilitic treatment must be instituted, while steps must also often be taken to raise the general physical condition. Further local treatment will consist in stimulation of the ulcer, when necessary, the protection of the granulations, and, most important of all, proper support for the tissues, usually by a carefully and properly applied muslin bandage.

Some of these points are well brought out and elaborated by P. G. Skillern, Jr., in the *Annals of Surgery* for February, 1916. In this article he emphasizes three cardinal principles in the treatment of varicose leg ulcers, namely, the necessity for (1) protection, (2) drainage, and (3) support. In obtaining this last requisite he points out the efficacy of Unna's zinc-oxide-gelatin paste dressing in certain cases. His conclusions are mainly as follows: (1) The rationale of treating varicose leg ulcers is to establish a tendency to heal by combating the pathological hindrances to healing. (2) These hindrances to healing are due to chronic venous congestion. (3) The rational treatment of varicose leg ulcers depends upon the recognition and application of the principles of protection of the regenerating epithelial edge, drainage of the discharge from the ulcer, and support of the venous channels from without, thus neutralizing the baneful effects of chronic venous congestion. (4) The agents employed in the rational treatment of varicose leg ulcers may be summarized by terming the method the rubber tissue-dry gauze-muslin bandage method. In selected cases the calomel-adhesive plaster strapping method cures rapidly and efficiently; while for routine treatment of the average case Unna's zinc oxide-gelatin paste stocking serves as an efficient support. (5) The tendency to healing has been established when the base of the ulcer is covered with healthy, red, vigorous granulations, and when the epithelial edge becomes broader and assumes a pale, bluish-white tint. (6) If in a case of multiple varicose leg ulcers the smallest ulcers become completely covered with epithelium under the influence of treatment, it has thereby been proven that a tendency to healing has been established, and that in time the larger ulcers will heal, if not too large, excessively fibrosed, or adherent to bone. (7) Healing of the ulcers having been brought about, it remains to prevent recurrences. Recurrences may be prevented mechanically by the use of a silk-elastic stocking or by a Randolph bandage; and barking of the shin should be insured against by a shin-guard or wool padding of the part of the stocking that covers the shin. If an operation for excision of varicose veins is indicated it should be performed after healing of the ulcer has taken place; otherwise the operative wound might become infected from the ulcer and septic thrombophlebitis, with all the attendant dangers of embolism, might then ensue. (8) The success of this treatment proves the fallacy as well as the futility of expecting cure from the application of medicaments, while overlooking the fundamental pathological etiology of the ulcer.

EXPERIMENTAL PRODUCTION OF MUMPS.

EPIDEMIC parotitis has attracted comparatively little attention from the research workers. A few have endeavored to produce the diseases by the inoculation of animals with organisms isolated from the saliva of patients or with material isolated from the affected gland. Others have made inoculations with a filtrate of the saliva and have obtained suggestive results. The fact that intratesticular inoculation has been of such aid in bacteriological investigations and that the testicle is so frequently involved in mumps stimulated Wollstein to attempt this method of studying the etiology of the disease. In

a recent article (*Jour. Exper. Med.*, 1916, xxiii, 353) she reports the results of a large amount of experimental work which yielded quite successful results. Rabbits and monkeys gave poor results, and she used cats almost exclusively for her experiments.

The material used was obtained by washing the mouth with sterile salt solution after massage of the affected parotid gland. This was then passed through a Berkefeld filter and found to be sterile. Injection of one cubic centimeter of this material was then made directly into the substance of the parotid or the testicle. After the preliminary mechanical reaction, which subsided within twenty-four hours, there was a quiescent period of from six to seven days, after which there appeared a swelling and tenderness of the gland so inoculated. Coincident with this there was a marked leucocytosis with generally a polynucleosis. There was also a temperature rise of between 1 and 1.5 degrees. The initial polynucleosis was usually followed by a lymphocytosis. The parotid changes were less marked than those in the testicle, which latter persisted for from eight to twelve days and in some instances were followed by atrophy of the gland. The author was able also to transmit the disease from cat to cat by the injection of material obtained from the affected gland. The work was controlled by the injection of filtrates from the saliva of healthy individuals and of material prepared from the parotids and testicles of uninoculated cats, all of which produced only temporary rises of temperature and swelling in the gland. A mixture of the infectious material with the serum of cats which had recovered from an inoculation produced a distinctly less active reaction than that developing in control animals. Reinoculation of animals which had recovered also produced but very little effect.

This work does not, of course, solve the problem of mumps. It is apparently successful in the reproduction of the experimental disease, however, and shows quite effectively that the infectious agent is a filterable virus. Attemps to grow the virus by the method of Noguchi are not reported upon. The serum protection experiments are especially interesting, since they suggest that the work already done in the use of immune serum in the prevention of scarlet fever and measles can possibly be extended to mumps.

TOXICITY OF EMETINE.

LITTLE is known concerning the toxicity of emetine, and little information can be gleaned from medical literature regarding the subject. Experiments on animals do not reveal to a satisfactory extent the effect on man, and its effects on man cannot be gauged accurately enough to render such kind of evidence of a very convincing character. Dr. Andrew Balfour, writing in the *Journal of the Royal Army Medical Corps* for January, 1916, points out that treatment by emetine is comparatively recent, dating only from 1912. The doses employed are usually well below those required to produce toxic symptoms; and again, there is not yet sufficient evidence to show whether certain symptoms, noted after the treatment of dysentery with emetine, are due to the disease or the remedy. With regard to its effects on human beings, Zept carried out experiments in two directions: (1) Giving small doses of emetine per ounce to phthisical patients, and (2) giving suppositories of emetine to lunatics. His main conclusions were that emetine when applied locally is irritating to both ends of the digestive tract; that it causes loss of appetite, stomach troubles, and headache; that it has an action on the upper respiratory passage and exerts a depressing effect on the central nervous system. He did not study the action on the heart. Cushing states that in man vomiting has followed the hypodermic injection of 4 grains of emetine, but 1 grain administered in this way has no such effect.

Intensive treatment by emetine is reported to have brought about intense salivation in one case. This may have been an instance of special idiosyncrasy to the drug. A large dose of ipecacuanha wine has produced death. Balfour, in concluding his review, says that medical officers treating cases of amebic dysentery with emetine will do well to remember: (1) That it is a very costly drug. (2) That if it is going to do good its beneficial action is generally quickly apparent. (3) That it is useless, unwise, and wasteful to subject patients to repeated or long-continued courses of the drug. Very little is known of the possible cumulative action of emetine. There may be none, but in any case two short courses of the drug in appropriate doses will usually suffice to cure a case of amebic dysentery. This would necessitate a primary administration of in all from 10 to 15 grains, and accords with the experience of Low in his recent article on the treatment of amebic dysentery. (4) That emetine may itself produce and keep up a certain degree of diarrhea, and that it is important to distinguish this drug-produced diarrhea from that caused by intestinal disease.

THE FURRED TONGUE FETISH.

OF course the exact pathology of coated tongue has not yet been definitely determined, although we are aware that it is a proliferation of the epithelial layer. It has long been held that this phenomenon indicates some disturbance of the digestive apparatus. We call to mind the respected (and feared) spinster in our community a good many years ago who had her own opinion of doctors. Urged to consult one of this fraternity when a little indisposed she would repel the suggestion with scorn. "All they do," she would say, "is to say, 'Let's see your tongue. How's the bowels? Two dollars, please.'" We have met with clinicians of the old school who could make a pretty accurate diagnosis by looking at the tongue and we have also had the pleasure of accompanying a physician on his hospital rounds who could diagnose a case of pneumonia in a child he had never seen before when he was yet ten feet away from the bed. And what is more, he could tell which side it was on and even designate the lobe affected in some cases. Most of us, however, are not gifted with this diagnostic acumen; we must go into all the signs, objective and subjective, and even then we do not come right out and make an irrevocable statement—we usually leave a loophole or two.

Dr. Goodhart in the *Lancet* for September 25 calls attention to coated tongue which is totally disassociated with gastrointestinal disturbance. This is the furred tongue of the neurotic, especially the hypochondriacal type. Goodhart reports two cases of it. It is, of course, well known that the type of person who develops a neurosis seems to be able to develop almost any symptom there is in the realm of medicine and the coated tongue would naturally be a frequent selection, so to speak, this condition being extremely familiar to the laity. Just what causes the actual physical appearance of a "coat" on the tongue in these cases is, of course, not easily explained, although the best way to approach it would seem to be along the line of conditioned reflexes. The treatment would naturally be the treatment of the underlying neurosis.

Facts which seem to support the theory of a nervous origin of the coated tongue in cases otherwise unaccounted for are the development of this symptom soon after a fracture of the base of the skull and the well-known tendency of the hemiplegic to develop a coated tongue. So when we next run across this symptom, especially in a patient who comes to us chiefly on that account, let us not turn to a mental pigeon-hole and bring out together the time-honored trinity—coated tongue, disordered stomach, liver trouble—but approach the subject with an open mind.

Stealing the Sunshine.

Much attention has been given of late years to the hygienic conditions which surround workers, especially with regard to heat and ventilation. Little study comparatively has been given to lighting, it being taken for granted that if the worker was able to see what he was doing it was sufficient. The reason for this indifference is not far to seek. The occupant of a room which is too cold or too hot soon complains about it; the foreman, the manager, and the owner soon notice it if they are obliged to spend any time in the room and these see that it is corrected. The atmosphere of a room which is insufficiently ventilated immediately warns a visitor that something is wrong. But the supervisors who are not obliged themselves to use the light so constantly and whose desks are usually the most favorably situated in the room do not often appreciate the eyestrain under which the subordinates labor; in fact, the latter only rarely appreciate it themselves. The first report of the Departmental Committee on Lighting in Factories and Workshops has been recently published in London, and shows some startling facts. For instance, in testing the strength of the illumination in a workshop on a well-lighted top floor, they found it was only 2 to 10 per cent. of the direct sunshine. In other words, workers in what would ordinarily be considered favorable conditions were losing 90 to 98 per cent. of the light. No wonder that eyestrain and headaches are common among indoor workers. It has been found that as a matter of fact spectacles are much more commonly in use among them than among outdoor workers. Much, of course, can be done by improvements in the system of lighting and in one case the committee found on investigating a workshop where a better system of lighting had been installed that the production had increased 10 per cent.

News of the Week.

New York City Death Rate.—The health of New York City during the week ending April 8 was considerably better than during the corresponding week of last year, the respective rates being 15.63 and 18.51 per 1,000 of population. This decrease in the death rate is equivalent to a saving of 309 lives. The only disease which showed an increased mortality, in the comparison of the two periods, was cancer, the number of deaths reported from this cause during the week being 113, as compared with 92 during the same week of 1915. The death rate for the first fifteen weeks of 1916 was 15.64, as compared with 15.50 for the corresponding period of last year. Considering the unfavorable climatic conditions prevailing this spring, and the rather severe outbreak of influenza which took place last January, the Health Department considers that this showing is very good.

Chicago Death Rate.—During the month of March, 1916, there were reported in Chicago a total of 3,440 deaths, giving a death rate of 16.3 per 1,000, as compared with a total of 3,214 deaths and a rate of 16.2 for February, 1916, and a total of 3,565 and a rate of 17.2 for March, 1915. Twenty-five deaths were due to typhoid fever, as compared with 12 in each of the other months, and 25 to scarlet fever, as compared with 12 in February, 1916, and seven in March, 1915. Tuberculosis caused 352 deaths during March, 1916, and 411 in March, 1915, and there was a decrease, also, in the comparison of the two months, in deaths due to cancer, heart disease, and nephritis.

Huddleston Memorial.—The friends of the late Dr. John H. Huddleston, desiring to establish a fitting memorial to him, have determined upon the establishment of a modest organization to develop the work of caring for what are known as "cardiac children," that is, children of the poor who are found to be suffering from constitutionally weak or diseased hearts, but who, under proper treatment, can be developed to comparative strength and to usefulness in many industries. In the years just preceding his death Dr. Huddleston was intensely interested in such cases, and had already made a beginning in the organized treatment of them. He felt strongly that this field, little cultivated up to date, afforded a wonderful opportunity for preventing many such defective children from falling, not only into permanent disease and disability, but into such physical and nervous weakness as to lead them readily into decadence and crime. After canvassing the whole question, therefore, a committee having the matter in hand has reached the conclusion that the development of such an organization will form the highest possible tribute to Dr. Huddleston's memory. The aim is to secure a fund of $40,000, with which a definite and satisfactory start can be made in the Gouverneur district, to which Dr. Huddleston had devoted much of his time, and, perhaps, in two or three other districts. The work will be carried on under the general supervision of an executive committee, consisting of Dr. L. Emmett Holt, chairman; Dr. Lewis A. Connor, Dr. Haven Emerson, Dr. Philip Van Ingen, Dr. A. S. Knight, and Dr. H. B. Wilcox, who will serve without compensation. It is believed that this plan, if generously supported, will serve to perpetuate, in practical and admirable form, a memorial worthy of the loving kindness and noble character of Dr. Huddleston.

A Conference on the Training of Medical Missionaries was held April 5 and 6, 1916, under the presidency of W. Douglas Mackenzie, D.D. The conference was well attended, and an interesting program was provided. Several papers were read on medical missionary work. Dr. Alden R. Hoover, missionary of the American Board in Turkey, on leave of absence from Red Cross work in Constantinople, read a paper on the different types of medical service called for in the foreign field and the personal qualifications essential to success. Prof. Horace D. Arnold, M.D., dean of the Graduate School of Medicine in Harvard University, dealt with the preparation of the medical missionary for his task. Dr. Belle Allen, missionary of the Woman's Foreign Missionary Society of the Methodist Episcopal Church in Baroda, India, devoted her attention to a consideration of the preparation of women for medical mission service and how it should be differentiated, if at all, from that of men. Dr. Paul W. Harrison, missionary in Arabia of the Board of Foreign Missions of the Reformed Church in America, gave a paper, in which he discussed the preparation which medical missionaries should have in addition to their regular medical studies. The question of medical preparation for missionary work was debated from all angles, and it was decided to recommend that a high school course of four years and a college course of at least two years be taken before commencing medical studies. It was further urged that, when possible, it would be well to take a full course of four years in college. So far as medical training is concerned, it was recommended that a course of four years in a medical school of Class A should be taken, the regular curriculum to be followed, and no attempt made to specialize except through optional or elective courses. After a degree in medicine has been obtained, at least one year as interne in a good hospital should be required. It was also strongly recommended that one year of post-graduate study should be taken in subjects which are important for medical missionary work. Among these subjects emphasis was laid upon the need for a medical missionary to take courses in preventive medicine, hygiene, and sanitation. It was also recommended that, in view of the scope of the medical work of women physicians in the Orient, women medical missionaries should be specially trained in obstetrics, and in the diseases of women and children. The acquirement of such knowledge predicates supplementary study and hospital experiences in these branches. It was further recommended that opportunities should be afforded medical missionaries for prosecuting research work.

The Hay Bill Condemned.—Our attention is called to an error in the news item with this heading in the issue of April 1. It was there stated that at a recent meeting of the County Medical Society a resolution was passed to the effect that there should be in the United States Army in time of peace one surgeon to each 1,000 enlisted men; this should have read *seven* surgeons to each 1,000 enlisted men. The resolution did not condemn the Hay bill *in toto*, but only that section of it abolishing the Medical Reserve Corps of the United States Army.

In Honor of Dr. Welch.—A supper will be given by the Harvey Society in honor of Dr. William H. Welch following his lecture upon medical education before the society on April 29. The supper will be given in Sherry's ballroom.

Preparedness Meeting.—Major-General Leonard Wood, himself a physician, spoke on the subject of preparedness to more than 300 students and officers of the College of Physicians and Surgeons, New York, on April 12 .

New York Geriatric Society—A meeting of the New York Geriatric Society was held at the Sherman Square Hotel, New York, on April 19. The subject for discussion was "Senile Neuroses and Psychoses."

Street Accidents.—The Department of Health of the City of New York calls attention to the fact that in the city last year street accidents caused nearly twice as many deaths as did typhoid fever, and comments on the little attention paid by health officers generally to these as a cause of injury and death. Recent statistics prepared by the Police Department put the total of street accidents in the city during 1915 at 22,540, of which 659 were fatal. Of those killed, 510 were males and 149 females; 106 were children under 6 years of age, and 184 were between the ages of 6 and 16. The statistics show that the principal causes, in the order of importance, were as follows: Passenger automobiles, 4,866; electric street cars, 3,026; falls, due to causes other than vehicular, 3,005; horse-drawn vehicles, trucks, or wagons, 2,441; collisions of all kinds, 2,428. The other causes were comparatively insignificant.

Personals.—Dr. ANTHONY BASSLER has been appointed consulting gastroenterologist to Christ's Hospital, Jersey City, N. J.

Dr. CHARLES A. POWERS of Denver, Col., sailed for Paris on April 8 to serve for three months in the American Ambulance in that city.

Dr. FLOYD M. CRANDALL of New York has been appointed secretary of the Medical Society of the State of New York to fill the vacancy caused by the death of Dr. Wisner R. Townsend.

The Saratoga Reservation.—The New York Legislature has passed the bill placing the control and development of Saratoga Springs in charge of the Conservation Commission of the State. The chairman of the commission will, we trust, appoint a business man of proved executive ability as his deputy to take charge of the development of the Springs.

Obituary Notes.—Dr. OSCAR J. STAFFORD of Port Chester, N. Y., a graduate of the Medical Department of the University of Buffalo, in 1888, and physician to the United Hospital of Port Chester, died suddenly, while attending a patient near his home, on April 12, aged 58 years.

Dr. JOHN W. CULVER of Jersey City, N. J., a graduate of the New York University Medical College in 1895, died at his home, on April 12, after an illness of several weeks.

Dr. LOUIS HATTON of Camden, N. J., a graduate of the Philadelphia University of Medicine and Surgery in 1864, died at his home, on March 27, aged 81 years.

Dr. CHARLES CLAXTON of Philadelphia, a graduate of the Medical Department of the University of Pennsylvania in 1882, died at his home, on April 4, aged 57 years.

Dr. SMITH COOPER of Wilmington, Del., a graduate of the Medical Department of the University of Pennsylvania in 1876, and a member of the American Medical Association, the Delaware State Medical Society, and the New Castle County Medical Society, died at his home, on April 6, after a short illness, aged 64 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

RETRENCHMENT—BOARD OF CONTROL—LOCAL GOVERNMENT AND EDUCATION BOARDS—NATIONAL INSURANCE—REPORT OF ROYAL COMMITTEE.

LONDON, March 24, 1916.

THE final report of the Retrenchment Committee has been issued and is obtaining consideration by the press. Its scope did not include expenses of the army, navy, or munition services, and even in civil departments it was advised to avoid questions already decided by parliament as at the present time there is no opportunity for legislation which may involve controversy. The first thing to strike the reader of the report is the enormous, one may say unprecedented, increase of expenditure—nearly 200 per cent.—to be exact, from £32,000,000 in 1895 up to £90,000,000. This is mostly due to new grants and the parliamentary legislation which has involved them, as *e.g.* old age pensions which reached £13,500,000, national insurance and labor exchanges £9,500,000, and education £12,000,000. Such measures as have been taken to promote a reduction of expenditure have not been effectual. There was an increase of £205,000 in the cost of the civil service and revenue for 1915-16, but the estimates for this year, excluding items connected with the war, show a decrease anticipated to be over £3,000,000. Looking round for some expense to curtail, the committee pounces on the reports of certifying surgeons on accidents which cost £12,500 per annum; and it supports the proposal of the Factories Committee and obtains legislation for their abolition. The board of control consists of ten commissioners and the committee recommends a reduction of numbers as well as of salaries, commencing by not filling up early vacancies. A reduction in the contributions toward the cost of institutional treatment is also advised, and a definite limit of cost of maintainance in all cases.

The vote toward the Local Government Board has risen from £221,000 in 1905-06 to £362,000, mainly through the increased attention paid to medical, sanitary, and housing problems, and the committee recommends a special inquiry into the administrative staff. Further, it falls on the medical fees for notification of infectious diseases, which have steadily risen of late years and will probably rise higher as measles and German measles are added by a recent order to the diseases to be notified. It says as doctors have now become familiar with notification, the 2s. 6d. fees might be reduced to 1s. Would they venture on a parallel proposal to the legal profession?

The medical work of the Education Board and the Local Government Board overlaps as regards the arrangements for the health of mothers and young children (under school age)—thus two government departments are dealing with one problem. This should not be, and many are saying that the control of all such institutions had better be handed over to the Local Government Board to administer in connection with its public health work and in cooperation with its local authorities. Such a plan has succeeded in Scotland, but perhaps definite amalgamation would be better still.

With regard to national insurance, the committee does not think centralization of the whole service practicable, but that it should be possible to devise a scheme safeguarding national sentiments without retaining all the 21 commissioners with salaries amounting together to £24,600 per annum. The cost of the central administration per thousand insured persons seems to be in England, £28; Scotland, £36 14s.; Wales, £51; Ireland, £59 14s. These differences may well attract the attention of economists, for the committee professes to be unaware of conditions which would account for them, but expresses the opinion that much could be done to reduce the expense of the Act and to increase the sums available for benefit by simplifying its provisions. Something has been done in this way by departmental action, but much more might be accomplished and great savings achieved by a brief act of parliament increasing the powers of departments.

The Report of the Royal Commission on Venereal Diseases is issued this month. Eighty-five witnesses were examined, to whom 22,296 questions were put. The report opens with notice of previous action by the State, particularly with regard to the army and navy, the Contagious Diseases Acts and the opposition to them, which led to the Royal Commission and later to the parliamentary proceedings and the intense public controversies which followed.

FRATERNITAS MEDICORUM; A REPORT AND A DISCUSSION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR—In the issue of the MEDICAL RECORD for July 31, 1915, an "Appeal to the Men and Women Engaged in Medical Practice and the Advancement of Medical Science" was published, asking them to join the organization of the Medical Brotherhood for the Furtherance of International Morality. It was signed by about one hundred and fifty members of high standing in the profession of this country, many of whom enjoy an international reputation. Soon after its publication, we began sending out the Appeal and an enrollment card to members of the medical profession. We wish now to give an account of the results thus far attained, and to discuss the nature of this venture and its merits.

Report.—To this date over thirteen thousand American physicians have enrolled as members of the Medical Brotherhood, the greatest part of whom are either members of some medical societies of good standing or of societies which cultivate medical sciences. The Appeal was also sent to some leading members of the profession of other neutral countries. Here again we obtained very encouraging results. We received, and continue to receive, requests from members of the medical profession of these countries to be enrolled as members of the Brotherhood of our country. Among our correspondents are such well-known men as Theodor Kocher, Einthoven, Thalma, Rovsing, Thunberg, Von Monakow, Zwaardemaker, de Quervain, Jaquet, Marsden and others of similar standing. The Appeal was published in some of the medical and scientific journals of these countries, and we have the encouraging information that organizations similar to ours were started there. *We did not approach members of the profession in any of the belligerent countries;* nevertheless, we received requests to be enrolled from medical men in Finland (Russia) who probably read the Appeal in Swedish medical journals.

The thirteen thousand members of the medical profession of this country who have enrolled as

members of the Brotherhood represent about 15 per cent. of the number of physicians to whom the Appeal was sent. We have, therefore, good reasons to consider henceforth the Fraternitas Medicorum as an established organization.

Analysis of Objections.—While it is idle to speculate as to the real attitude of those who did not respond to the Appeal, certain instructive facts, capable of shedding some light upon this question, may be, nevertheless, learned from an analysis of part of the correspondence we have had. We shall not include in the discussion the numerous letters in which the writers unreservedly and enthusiastically approve our movement. But we have to mention that among the enrolled members are some who originally looked upon the enterprise with misgivings. We shall mention further the instructive fact that a number of physicians asked for enrollment cards months after the Appeal was sent to them, stating frankly that they threw away the Appeal without even having read it, because they were bothered with too many war and peace circulars.

However, we received about twenty-seven letters, the contents of which were unmistakably adverse to our movement. Nine of these communications were anonymous; they contained coarse, grossly offensive remarks, assuming that the Medical Brotherhood was a part of an organized German propaganda, and insinuating further that the expenses were met by the German Kaiser.

Among those who signed the adverse letters are several from men who are of high standing in the profession, and are personally known to us. Several of our correspondents, some of whom were during the present war for short periods in France, stated that there is not a neutral fiber in them; their only goal is to crush the Germans; although some of these writers seem to be willing to join the Brotherhood after the crushing process has been accomplished. It is an instructive fact that in this group were two with "100 per cent. German blood" in them. Two German physicians, on the other hand, did not wish to join because they "feel too strongly pro-German to be neutral." Two physicians objected to the idea that physicians have a higher claim to international morality than other people. Several of our correspondents said that they either could not see the object of the movement or, as one expressed it, he could ont see where "the uplift comes in"; or, on the contrary, that the aim of the Brotherhood is too Utopian for them. Finally, several writers approved the idea in general, but thought that the organization of a Medical Brotherhood should be postponed until after the war.

The objections to the organization of the Medical Brotherhood, so far as could be ascertained from this small number of adverse manifestations, may be summarized as follows: (1) That it is a part of a German propaganda, or, at least (2) a veiled pro-German movement; that (3) it is meant to be a neutral body which, therefore, ought not to be supported because the paramount duties of American physicians ought to be to crush the Teutonic Allies; that (4) physicians have no higher claim than other people to international morality; that (5) there is no object (no uplift) in this organization; that (6), on the contrary, the object is too Utopian, and finally, (7) that the movement is premature.

Financial Resources.—Small as the number of our critics are, their adverse points of view merit public discussion. In so doing we shall deal in the first place with the most objectionable interpretation given to the aims of the Medical Brotherhood, namely, that it is part of a pro-Teutonic propaganda and that it is financially supported by the German government. In the Appeal, as well as in a letter published in the *Journal of the American Medical Association* (Vol. 65, p. 971), it was expressly stated that the Brotherhood is neither a pro-Teutonic nor a pro-Allies movement. Such assurances probably do not reach the type of men who are capable of writing anonymous letters. But we owe it to the medical profession at large to make the following statement regarding the financial resources of the Medical Brotherhood, which is as follows: Private contributions, to the amount of $622, were made, in smaller and larger sums, by some of the enrolled members. The main financial support comes, however, from the Carnegie Endowment for International Peace. The Executive Committee of this body granted us a liberal fund for the purpose of developing our organization. The Executive Committee is made up of such prominent Americans as President Butler, President Pritchett, Elihu Root, and others of similar high standing. It is quite safe to say that no individual with normal judgment could think for a moment that these foremost American citizens would consent to support a pro-Teutonic organization. But ought such a question to have been raised at all by any fair-minded member of the profession in the face of the standing of the members of the committee which signed the Appeal? Would, for instance, the Surgeon Generals of the Army, of the Navy, and of the Public Health Service consent to be honorary presidents if the Medical Brotherhood had some ulterior, pro-Teutonic or other un-American tendencies?

General Discussion.—As to the other criticisms, they can be best met, we believe, by discussing the fundamental considerations underlying this movement. The term "brotherhood," it is true, recalls to mind a state in which all men shall treat one another like brothers—like good brothers. This is a visionary ideal which probably will never be attained. The specter of the unattainable drives practical men away from such ideals. But it should be remembered that even the unattainable ideal may be of great educational value, if utilized merely to indicate the *direction* which our practical activities ought to take. However, the Medical Brotherhood directs the appeal only to the medical fraternity, and does not intend to deal with unattainable objects. The medical profession has a training which is scientific in character and method, and which has, in modern times, among its precepts the following maxims: (1) The development of a new view must be started on the basis of an assured fact and not from mere desire or by the impulse of an untamed phantasy; (2) not to be afraid to assume, or to work for, something which has not received the approval of that great authority, the practically wise man; (3) not to work for the demonstration of the correctness of the new assumption, or for the realization of the new aim, in the maner of the practical man; that is, by violent activities and in the expectation of attaining completely the desired end in a month or a year (perhaps to lose it again in a shorter time), but to work patiently, trying to attain the end, or even only small parts of it, by steps which may apear to be very small but which offer the greatest chance for permanency; (4) not to be discouraged by some failures; and, finally, (5) by caring more for progress in the right direction, than for attainment of the goal.

Now, we started on the development of our organization on the basis of the following indisputable facts. The ethical relations between separate nations are thousands of years behind the state of morals governing the relations of individuals of the same nation. International morality progresses at best in waves, positive and negative, making perhaps three steps forward and two and sometimes four or five steps backward. However, during the normal state of the world's affairs, ethical men of all countries are ready to be guided by the two great moral principles: patriotism and humanity. The present world-wide catastrophe has demonstrated, however, that even the most idealistic citizen is incapable, and, in fact, is not in a position to serve both ethical principles at the same time, while his country, right or wrong, is at war with another country. Physicians, however, are in an exceptional position; they are permitted and even required to observe both ethical demands even during war. In war the physician's services to his country are as necessary, as great as that of the warrior, but he is in the fortunate position to be able to treat his compatriot and his country's foe alike. That standard of morality is upheld not only by the medical profession itself, but is practically demanded by the regulations agreed upon by the various international conventions, regulations which have been rarely broken even in the present most brutal war. Even in the present state of frightful confusion of judgment, practically no sane individual exists who would not consider this standard of morality desirable to obtain in all domains of human endeavor—if it were attainable. These are safe facts. Now the Medical Brotherhood was organized primarily to bring these instructive facts to the consciousness of the members of the medical profession, to tell them of their ethically privileged status. This message is not sent to non-medical men; neither do we mean to say to the non-medical man that we physicians are holier than thou. We wish only to convey to physicians the message that their profession permits them to remain at all times simultaneously patriotic and humane, and that they should train their character properly so that they could be fit to exercise this high privilege. The nearest and simplest end to be gained from such information is the consciousness of a sense of higher duties which comes from the knowledge of one's higher moral dignity.

There is no doubt that the medical profession is a noble calling. Do medical men represent a noble class? They ought to. There are two good reasons for such an expectation. "A medical man whose ethical standard is not above that of the average man is morally below him." His activities are of a most serious nature; they concern life; and, furthermore, they can not, as in other callings, be controlled by anybody or anything else but the physician's own conscience; that conscience therefore must be of a higher type. Then the physician has constantly to deal with suffering, that of the patient and of those to whom the patient is dear; sympathy, therefore, ought to be an integral part of the make-up of the desirable physician. It is true that the medical calling is at the same time the physician's business by which he makes his livelihood; it is therefore often afflicted with many of the moral shortcomings which frequently go with money-making occupations. The Medical Brotherhood, however, does not deal, and does not have to deal, with this side of the physician's life. It deals with the physician in his relation to his country, when he acts and has to act as a patriot; or when other countries are at war with one another, when the physician of neutral countries has to act as a humanitarian. Here every physician can afford to exercise his noble profession in a noble spirit. It is that for which the Medical Brotherhood appeals to all physicians of our country. That alone seems to us to be an object worth while looking for. It may appear to some "practical men" as too small or even "too foolish" an object to waste their attention on. Let these wise men stay out of the Medical Brotherhood; it may be of benefit to the aims of the movement. Many of the practical men have always been stumbling blocks in the path of progress. The marvelous progress of medicine in this country during the last three decades was attained against the good will of this influential class of medical men.

The fact that within only about eight months and without agitation and publicity, thirteen thousand members of the medical profession of the United States alone should have joined the Medical Brotherhood shows that we struck the right chord. This group of medical men and women, the vast majority of whom surely have more or less idealism, represent about 10 per cent. of the medical profession of this country. Moreover, there can be no doubt that the Appeal issued by the committee exerted a morally favorable influence upon many members of the profession who did not formerly join the Medical Brotherhood; and there is great probability that a good many will join it when the war approaches its end.

In this connection we may call attention to the most encouraging fact that the medical journals of our country act in a most exemplary manner with relation to the war. None of the journals, at least none known to us, has indulged in offensive discussions of the various belligerent nations or made disparaging comments on the behavior of the medical members of these nations. The subject of the present war has been handled by the medical journals with rare good sense and tact. In a general way, the same may be claimed for the utterances of the members of the medical profession when made in lay gatherings or publications, although here the unavoidable small fraction of exceptions has not been lacking. The Medical Brotherhood has had occasion to remonstrate in two instances, in one with complete and in the other with partial success.

From the point of view of the scientific investigator, who is not afraid of Utopian ideals which may give him the direction for his work, but who works for his goal by small and practicable steps, we may claim for the movement of the Medical Brotherhood that it has a definite object, "an uplift," that it is not Utopian in its direction, that it was undertaken at the right time—when the medical mind was in a state of fermentation—*in statu nascendi*, and, best of all, that the movement has already attained a gratifying success: it has aroused the moral, humane spirit in a great many members of the profession in this country as well as in other neutral countries.

We have no quarrel with those of our colleagues who do not wish to join the Brotherhood, because, as they say, they can not remain neutral in this war. No matter with which party one sides, and what his wishes may be, we do not question the moral nature of his motives. But we wish to make the following two remarks: First, the Medical Brotherhood does not aim for mere neutrality. A neutral occupies, with reference to war, the same moral level as the

belligerents, with the mere difference, that he is not in it, or not yet in it. The Medical Brotherhood wishes to occupy a position above this level. War represents a very backward place in the development of human ethics. The various belligerent nations are simply products of the same moral phase, the same developmental period. The medical profession is fortunate to be able to occupy an advanced ethical position. Its members should be aware of it, and should adhere to it. Secondly, the Medical Brotherhood is concerned only with the medical part of its members. As private individuals the members are at liberty to sympathize chiefly or exclusively with one side or the other of the warring parties. What we expect of members of the Medical Brotherhood is that they should commit no public act which is not in harmony with the advanced moral standing of the medical profession. One who does not feel that he can bind himself to this simple obligation, or one who does not believe, or does not want to assume, that the medical profession occupies an advanced moral position, should, of course, not join the Medical Brotherhood. This organization must consist of medical men and women who believe in the advanced ethical position of the medical profession and are willing to live up to this belief. It is as certain as day that only good and no harm can come from such a belief.

We shall not risk the presentation of a list of the problems which we may be called upon to try to solve now or later; "each bridge will be crossed when we get to it." One thing we may state definitely: we do not intend to meddle with problems which deal with the termination of the present war. The exertion of our energies will be limited to that which is attainable by us. On the other hand, we contemplate dealing definitely with this one problem. At the termination of the war, or even at the mere sight of this termination, an attempt should be made to unite the medical men of all the neutral countries for the purpose of arranging an early international meeting of the medical profession, to which meeting some members of the profession of the belligerent countries, who have manifested through the war a more conciliatory, loftier spirit, may be invited to attend. We shall thus perhaps be in a position to accelerate an early rapprochement and fraternal reconciliation of the members of the medical profession of all the civilized nations. Here again we shall attempt to do our duty as we see it without being too sanguine as to an early and complete success.

Hippocratic Oath.—A few of our sympathizing correspondents wished to know whether the aims of the Medical Brotherhood are not already covered by the Hippocratic oath. No; that oath covers only the relations of the physicians to the individual as his private patient or pupil. As we all know, the influence of this oath leaves plenty of room for the ethical activities of the American Medical Association, the newly created College of Surgeons, etc. The Medical Brotherhood does not intend to deal with any part of this phase of medical affairs; it has in view exclusively the relations of the physican to his country as a patriot and to other countries as a humanitarian.

Patriotism and Medical Preparedness.—We have stated that medical men are in a position to be patriots and humanitarians at the same time. We have so far dealt exclusively with the international side of the Brotherhood. In fact, in the Appeal it was expressly stated "For the Furtherance of International Morality." However, it would not be out of place to add a few remarks regarding patriotism and the relations of the physicians to it. The present war, while presenting a frightful picture of the bloody struggle between the nations, has revealed, on the other hand, a most remarkable ethical side of the relations of the individual to the State in each and every one of the belligerent countries. The readiness of the individual to be helpful to, and sacrifice himself for the State stands out as a shinning light in the midst of the extreme darkness of the war. But here we wish to speak especially of the relations of our physicians to our country. Preparedness is a subject which at present agitates profoundly the minds of all of our citizens. It is none of our concern here to discuss this subject from the general point of view as citizens. As physicians, however, there can not be the slightest doubt that it is the duty of every member of the profession, who is in a position to do so, to offer his assistance to the medical department of the military organization of our country. We do not know when the country will be called upon to defend itself. It may come suddenly, like a bolt from the skies, which are surely not clear at the present time. Physicians who are not devoid of a sense of duty should, therefore, prepare themselves with the necessary knowledge and skill, and should in large numbers inform the military medical department of their willingness to serve in case of need. The hygienist, bacteriologist, internist, etc., can be of just as much service as the surgeon in the incidents of war. The medical man who marches with the scouts ahead of the army to select camps, to test the drinking water, etc., is as important as those who work behind the lines. And the medical man whose daily work brings him in contact with infectious and contagious diseases is trained in courage as high as the veteran of many battles; bacteria are as deadly as bullets; and in his daily work the physician, like the man in the firing line, never knows when they may strike him.

On the other hand, the practitioner knows now quite well what importance is to be attached to sympathetic psychical treatment of patients who are in need of it. A training to preserve humaneness in the midst of passion and hatred ought to be a part of medical preparedness. After furious battles the poor injured prisoner of war needs often this mode of treatment as much as the surgical one.

The Medical Brotherhood of this country wishes to gather into its union those members of the medical profession who have a vein of idealism in them and who are willing to serve their country as patriots and humanitarians. It appeals further to the inspired ones to spread this gospel, wherever they find the proper opportunity, with impressiveness combined with patience and tolerance.

S. J. MELTZER, M. D.,
President of the Medical Brotherhood.

Diagnosis in Pulmonary Tuberculosis. — Lawrason Brown states that an appearance of ruddy health does not exclude tuberculosis, and that in any patient with constitutional symptoms, no matter of what he complains, the possibility of tuberculosis must be kept constantly in mind. Also the importance of physical examination in the diagnosis of this disease has been over-emphasized; symptoms are a better and more accurate guide to activity than physical signs. Symptoms without physical signs demand treatment, while physical signs without symptoms require only careful watching.—*Wisconsin Medical Journal.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 6, 1916.

1. Practical Points in the Prevention of Asiatic Cholera. Allan J. McLaughlin.
2. Fermentative Diarrhea in Infants. Lewis Webb Hill.
3. The Alcoholic as Seen in Court. Victor V. Anderson.
4. Industrial Medical Supervision. Arthur B. Emmons, 2nd.
5. The Truth About Smallpox and Vaccination. George W. Gay.

1. Practical Points in the Prevention of Asiatic Cholera.—Allan J. McLaughlin had the privilege of observing the work of sanitary officers during the outbreak of cholera in Germany in 1905 and during the cholera epidemic in Manila in 1908, at which time the disease broke out in Bilibid prison. In this institution there is absolute control of the food and water supply and ordinarily no fresh milk is used in the institution. The appearance of cholera in such an institution seemed inexplicable. It was quickly suppressed, however, following an order by the writer to compel thorough disinfection of the hands under guard upon leaving the latrines and before eating. At that time the writer made the statement that "The most important rôle in the transmission of cholera is played by the bacillus carrier." At this time 264 healthy persons were examined and seventeen were found carrying cholera vibrios, or a percentage of bacillus carriers among healthy persons of 6.44. During the last two years increased appropriations and personnel have enabled the Bureau of Sciences to extend greatly the search for carriers with splendid results. The writer has never known a bacillus carrier to harbor cholera vibrios for longer than twenty days, and the great majority lose their vibrios in less than ten days. However, other observers have found them present for longer periods.

Rapid methods of technique and an efficient system of collecting samples and handling the specimens make it possible for one person to examine 100 to 150 stools per day. Frank cases of cholera present little difficulty in diagnosis and are very much less of a menace in the spread of cholera than the carrier. Atypical cases, however, are much more serious as an epidemiological factor. These facts demonstrate clearly that the bacteriological diagnosis is our sheet anchor in preventing cholera, and it is the only means of diagnosis upon which one can rely. The writer accentuates the simplicity of the technique of cholera diagnosis and mentions some of the useless procedures to be avoided. The diagnostic procedures in Asiatic cholera may be limited to the securing from the feces of a discrete colony or pure culture of a vibrio and its agglutination by an anticholera serum of high titer. The agglutination should be performed with a serum of a titer of at least 1 to 4,000, and no weaker dilution than 1 to 1,000 used as a final test. Pfeiffer's phenomenon, complement fixation, and other biological reactions are useful aids, but are unnecessary for the simple diagnosis of cholera. Enriching fluids should always be used, good results being given by the peptone-enriching media. The use of gelatine should be avoided. Hanging drop procedures are time-consuming and of little value.

The author has never found a cholera vibrio freshly isolated from the human body which showed hemolytic properties or any marked variation in morphology, though these variations are found in laboratory cultures or strains isolated from water. He considers that the addition of Goldberg's media to our equipment would be a distinct advantage which would make the passage of an Asiatic cholera carrier through our quarantine still more unlikely.

New York Medical Journal.

April 8, 1916.

1. Serology and the Diagnosis of Syphilis. M. L. Heidingsfeld
2. Thymic Disturbance in the Adult. George H. Hoxie.
3. The Colloidal Solutions of Silicic Acid. S. P. Kramer.
4. Unresolved Pneumonia. A. Judson Quimby and Will A. Quimby.
5. The Management of Breech Presentation. John Chew Applegate.
6. The Malingerer. Daniel Hale Williams.
7. Beriberi. Stanley B. Doyle.
8. Is Plastic Surgery a Lost Art? [illegible] W. Kerr

1. Serology and the Diagnosis of Syphilis.—M. L. Heidingsfeld calls attention to a class of patients that have come to his notice in which a tentative diagnosis of syphilis has been made upon somewhat doubtful clinical evidence, which have been treated with salvarsan and neosalvarsan largely on the ground that the serological report from the laboratory was, in a measure, confirmatory. The laboratory report in most of these cases was "weakly positive" or "doubtfully positive." Under encouragement from the laboratory, antisyphilitic treatment is often pushed to extreme limits with negative results, and the patients eventually drift to the dermatologist for specialized attention. Within the brief period of eight days two such cases, which the writer reports, were referred to him. These cases served to illustrate that the general practitioner and the serologist can both fall into error in the management of many obscure dermatological conditions; that laboratory evidence, valauble as it may be, is not fundamental in character. In summarizing, the author states that the serological examination can never be positive in the absence of syphilis, unless through technical error; that a serological examination may be negative, and syphilis be present in clinically active or latent form; that both the Wassermann and the Hecht-Weinberg-Gradwohl tests are trustworthy, the Wassermann revealing the degree of early improvement and the Hecht-Weinberg-Gradwohl usually remaining positive long after the Wassermann is negative and thus measuring with much greater delicacy and precision the last traces of serological inhibition. A serological report must be either negative or positive; inhibition is either present or absent, and there is no place for a report "doubtfully positive." The diagnoses of dermatoses of doubtful nature or symptoms of uncertain character cannot be entrusted solely to serological evidence. Non-syphilitic dermatoses, resembling syphilis, may possess as associated syphilitic infection, which a positive serological report will invariably cloud with greater obscurity. The writer believes that serology has for the time being usurped the broader province of the clinician, and that the serologist must again yield to the syphilographer, the dermatologist, the neurologist, the internist, the oculist, etc., as the case may be, where there are questions involving doubt in the clinical diagnosis and treatment in syphilis. Serology is a mere aid to clinical diagnosis and therapeutics, and as such belongs strictly in the province of the clinician of syphilis.

3. The Colloidal Solutions of Silicic Acid.—S. P. Kramer describes his observations on the physiological action of these solutions. He finds that when solutions of colloidal silicic acid are injected into the jugular vein of rabbits or dogs, under certain conditions, death of the animal occurs by intravascular clotting of the blood. This will occur more readily the more concentrated the solutions are and the nearer the dilute solutions are to gelation. Animals killed by these injections show the right heart and pulmonary vessels filled with clot. The lungs are infarcted, and the acini show the microscopic picture of red hepatization. There are other striking reactions *in vitro*. If colloidal silicic acid is added to washed sheep red cor-

puscles in the proportion of 1 to 500,000, or even 1 to 1,000,000, a prompt precipitation of all the red corpuscles takes place. If to fluid cultures of colon bacilli colloidal silicic acid is added in the ratio of 1 to 10,000, agglutination and precipitation of the bacilli takes place. If urine, to which has been added silicic acid in amounts equal to 1 to 5,000, is allowed to undergo acid fermentation, the urates and the silica are precipitated as a gelatinous "stone." This precipitate is insoluble on heating. If a solution of Victoria blue B is added to a solution of colloidal silicic acid, a blue precipitate is formed, insoluble in water and dilute mineral acids. This reaction may be used for the demonstration of exceedingly minute amounts of silicic acid. Mucus is rich in silica, and is deeply stained with Victoria blue B. This staining is acid fast. The same is true of cartilage and elastic tissue. No silica could be found by this reaction in normal blood serum or in hydrocele fluid. By adding very small amounts of the dye to cerebrospinal fluid the writer has been able to demonstrate the presence of silica therein. If a drop of 1 per cent. solution of the dye is added to 10 c.c. of cerebrospinal fluid, and this is allowed to stand a few hours, there is formed a blue precipitate. It was found that the amount of silica varied in different diseases. The intravenous injection of dilute solutions of silicic acid in amounts insufficient to cause death of the animal, causes an increase in the flow of cerebrospinal fluid.

6. The Malingerer.—Daniel Hale Williams says that malingering is a part of the social problem; it is composed of a group of lesser problems, the economic, educational, religious, political, and moral. The solution of these lesser problems is the solution of the whole moral problem, for the malingerer is the product of abnormal conditions in these phases of the social problem. One of the considerations which makes the malingerer so reprehensible is his bad example and influence upon others. Perhaps no better illustration of his far-reaching and sinister influence can be found than his influence on the medical profession. The influence of the malingerer has preyed upon the physician just as it has upon the individual by holding before his professional eyes the charms of large and easy fees. This influence is to be feared and dreaded because of the number of weak men in the medical profession who are unable morally and professionally to withstand the allurements of false monetary rewards. This fraud and falsehood within the ranks of the profession lowers public confidence in the whole profession. The malingerer is an equal menace to the legal profession and to society. The Workmen's Compensation Act may be instrumental in abolishing the malingerer. The idea involved to this end is the appointment, by the executive power, of a board of three or more with jurisdiction, by agreement of both parties or upon the election of either, to determine the extent of injury to any person hurt by accident in certain named industries, with a right of appeal to the Circuit Court. One of the distinguishing features of this act in the State of Illinois provides for the selection of a physician by the injured, one by the employer, and a third by these two, or by the board to examine the injured person and report to the board.

Journal of the American Medical Association.

April 8, 1916.

1. Pharmacologic Superstitions. Horatio C. Wood, Jr.
2. Medical Education with Reference to Rural Communities. Gordon Wilson.
3. Some Further Developments in a Pediatric Department of a University Medical School. William Palmer Lucas.
4. Appendectomy Under Local Anesthesia. Joseph Wiener.
5. The Etiology of Stuttering. John M. Fletcher.
6. Craniopharyngeal Duct Tumors. Harry Jackson.
7. An Extraordinary Polymorphonuclear Leukopenia in Typhoid Fever. J. H. Austin and S. S. Leopold.
8. Numerous War Injuries Requiring Plastic and Grafting Operations. Clarence A. McWilliams.
9. Multiple Ureters with Hydronephrosis. Alexander Hamilton Peacock.
10. Typhoid Vaccination: Routine Immunization of Thirty-five Hundred Patients in an Institution. Paul G. Weston.
11. Spinal Anesthesia: Analysis of Two Hundred and Eighty Cases. L. L. Stanley.
12. Two Cases of Infection with Strongyloides Stercoralis. F. L. Wachenheim and E. P. Bernstein.

2. Medical Education with Reference to Rural Communities.—Gordon Wilson says there is no question to-day but that the American people are receiving vastly better medical attention than they did ten years ago, but already the cry for a doctor is coming from rural communities, and they are asking for a good doctor if possible, but in any case "a doctor." It is his opinion that there is need in this country of two classes of medical schools, the one, modeled after the Johns Hopkins, in which the requirements can hardly be set too high, and the other and larger class for the training of the practitioners of medicine. The first type of school should have an absolutely self-limited number of students, and they should be thoroughly trained not only in clinical and laboratory medicine, but also in the methods of research. Naturally the men who graduated from such a school would become teachers, research workers, and specialists, and practitioners and consultants in the larger towns and cities. To require the foregoing of all men who desire to practice medicine would undoubtedly raise the standard of the profession, but in the long run it would prove no more satisfactory than that locomotive engineers should be graduates in mechanical engineering from an approved college. The second type of school, in the opinion of Dr. Wilson, should demand for admission that the applicant be really grounded in the essentials of a good education, namely, the requirements for admission to most colleges in English and its branches, history, mathematics, chemistry, physics, and biology. The knowledge of a modern language is a help, but never an essential. This second type of school should give a full four-year course, and the work should have little of the elective in it. The clinical and laboratory courses should be of the very best, but the time devoted to research work should be limited to a minimum. A study of the physicians practising medicine in rural Maryland shows that there are only four graduates of Johns Hopkins practising there, while there are 350 graduates of the University of Maryland School of Medicine, 88 graduates of the College of Physicians and Surgeons, and 59 graduates of the Baltimore Medical College, who are practising in the Maryland counties. In the opinion of the author these figures justify the belief that graduates of a school like Johns Hopkins will only exceptionally settle in the country, and that we must make the premedical requirements less exacting in time, although, perhaps, they may be raised along certain lines above to-day's standard, and any increase in the requirements must be made slowly and gradually and only after a most careful study of all possible consequences. He believes that we are facing a real and dangerous shortage of doctors, the need of whom will be emphasized by the large number of physicians required for an enlarged army and navy, and the putting into force of the whole-time county health officer advocated by many authorities.

3. Some Further Developments in a Pediatric Department of a University Medical School.—William Palmer Lucas outlines the history of the growth and development of pediatrics in this country, and points out that for the further development of this branch of medicine it is important that the pediatric depart-

ment of a university should be in close relation with the department of nutrition and dietetics; with the academic department of psychology, as this has a direct bearing on all the problems connected with mental defectiveness; with the department of social economics; with the department of education, and the department of physical culture. Thus far the pediatric department of the University of California has established a close relationship with three academic departments of the university; a trained psychologist is a member of the pediatric staff and at the same time holds a position in the department of psychology; the department of nutrition and dietetics, and the department of social economics. The usefulness of these departments has been mutually broadening, and the work of educating the necessary workers for these fields has been put on a stronger basis. The writer points out the need for and the advantage of co-operation between pediatric departments and all public and quasi-public institutions dealing with the problems of infancy and childhood, and says that a point of contact which very few pediatric departments have made, and one which is of importance, is the juvenile court, state reformatories for juvenile offenders, and state homes for feeble-minded children. Further points of contact between a pediatric department and the larger problems of childhood would be a more intimate connection with the recreational and vocational problems which are now being studied in all progressive communities. It is, therefore, incumbent on medical schools to offer just as wide and practical a field to their students as possible, and for the future physician the broader the contact with concrete problems during his period of training, the sooner will he be able to make his own definite contribution to medical life as he in turn meets it in the home, school, hospital, and community.

6. Craniopharyngeal Duct Tumors.—Harry Jackson says that tumors arising from rests of embryonic tissue along the course of the craniopharyngeal duct have not received adequate or proper recognition, although they represent the most common type of heteroplastic tumor of the hypophyseal region. Only three authentic cases of this type of growth in which the genesis of the tumor has been recognized have been reported in this country; to these he adds a fourth case, and discusses the history, embryology, pathology, etiology and symptomatology, diagnosis, prognosis, and treatment of these growths. From a stud of 38 cases in the literature he concludes that most cystic and solid tumors originating from the region of the infundibulum and anterior lobe of the hypophysis grow from embryonic rests of buccal ectoderm from the craniopharyngeal duct. They are the most common type of intracranial tumor associated with the Frölich syndrome. Eye symptoms occur early. Symptoms of acromegaly are absent. Some cases reach the acute stage in three or four weeks, while others admit symptoms lasting over a period of years. The active treatment of this condition is as yet unsatisfactory. It is surgical and consists in the puncture and drainage of the cyst by a trans-sphenoidal route. These cysts usually cease draining and produce pressure symptoms and blindness after weeks or months. It seems impossible to eradicate all the cyst wall, although an attempt should be made to cut away as much as one can without injury to the surrounding parts. Lately, the injection of the extract of the posterior lobe of the hypophysis has been used, the idea being to absorb the contents of the cyst. Some clinicians report good results by this method, although theoretically it is difficult to account for such improvement.

10. Typhoid Vaccination.—Paul G. Weston reports that he has administered the routine immunization against typhoid fever to 3,500 patients in an institution for the insane in Warren, Pa. In this institution inoculation is voluntary for the attendants and compulsory for the patients. At first all patients over 50 years of age were excluded, as well as the patients who presented distinct contraindications. But shortly after the immunization of the first series of 898 patients, two cases of typhoid developed, one in a woman 65 and the other in a woman 70 years of age. Since that time no patient has been exempted on account of age. Since immunization has been made a routine procedure only one case of typhoid fever has developed, and that an exceedingly mild one. The vaccine used was made from the same strain as that used in the army. The suspension of bacteria was made so that 0.5 c.c. contained either one-half billion or one billion bacilli. Three doses are given each patient, at intervals of ten days, the first dose containing one-half billion bacilli and the second and third doses each containing one billion. Newly admitted patients were not immunized at the time of admission, but at intervals of six months all patients admitted during that time were inoculated on the same day. In all 10,500 inoculations were made. Many of the patients slept through the inoculation and knew nothing of it until the next day. In this number of inoculations there were only eight reactions that could be considered severe. Since the duration of the immunity is unknown, the writer says it is not his intention to reinoculate any patients unless typhoid makes its appearance among the immunized. It is now three and one-half years since the first inoculation and but one case of typhoid fever has developed in an inoculated patient, and that occurred three months after inoculation.

The Lancet.

March 18, 1916.

1. Hunterian Lecture on the Pituitary Fossa and the Surgical Methods of Approach to It. V. Zachary Cope.
2. Contributions to the Study of Shell Shock. Being an Account of Certain Disorders of Cutaneous Sensibility. Charles S. Myers.
3. Some Notes on the Treatment of the Turkish Wounded from the Suez Canal. Frank Cole Madden.
4. The Treatment of Hemorrhoids by Injection. Arthur S Morley.
5. The Prognosis in Sympathetic Ophthalmia. Percy Dunn.

1. The Pituitary Fossa and the Surgical Methods of Approach to It.—V. Zachary Cope reviews the comparative morphology and development of the pituitary body in man, the normal and pathological anatomy of the pituitary fossa, and the methods of approach that have been utilized by different surgeons. He says that there are only four of these methods which have been practised on a sufficient number of cases to merit special attention. These are Horsley's temporal method, Schloffer's coarse nasal operation, Hirsch's and Cushing's submucous septal approach, and Frazier's fronto-orbital route. He shows that the nasal, the palatal, and the method of approach through the ethmoid by an external incision are fundamentally unsound since they leave open surfaces, which take a long time to heal and which are a constant danger of infection, and, in addition, considerable deformity to the external nose may follow. There are two operations, however, which have proved fairly satisfactory for approaching the pituitary fossa, The Hirsch-Cushing submucous nasal method, and the fornto-orbital method of Frazier. Though it is not possible yet to decide finally between these, there is some reason for the belief that the fronto-orbital route is more suitable in the great majority of cases. In three cases in which the writer has operated this method has been adopted with success. All three of these cases were almost blind before

brought to operation. In the first case a portion of an endothelioma was removed and the general condition improved, though the sight did not improve. The third case obtained great improvement of vision after a cyst was evacuated. The second case proved to be one of syphilitic meningitis, and though the patient said he was a little better after operation there was no obvious improvement in his condition. Now that the mortality of the operation has diminished surgeons can more readily urge that patients with on-coming blindness due to pressure on the chiasma should be treated by operation more early than is now the case.

4. **The Treatment of Hemorrhoids by Injection.**—Arthur S. Morley relates his experience in the treatment of a large number of cases of hemorrhoids of all degrees of severity by injection. He says he at first employed the method on what might be described as medium cases, in which there was very moderate and occasional bleeding, slight prolapse, and slight pain on defecation, but owing to limited hospital facilities he extended the treatment to cases that he had considered suitable for operation and found that in an enormous majority of them all symptoms ceased like magic after a few injections. The treatment consists of the injection into each internal pile of a few drops of carbolic acid and glycerine, the following solution being used: Acid. carbolici, gr. xlviii; glycerin, dr. ii; aquæ destillat, dr. ii. The injection is performed through a large speculum by means of a modified Dawson's dental syringe, having a bore needle about three-eights of an inch long, fitted into an elbow-shaped socket. The only other essential is a really good light. Before making the injection the piles are sponged over with a weak solution of biniodide of mercury or 1-50 lysol solution, and then touched at the spot where the injection is to be made with pure carbolic. In making the injection the needle should be pushed up along the long axis of the pile to near its base; usually this means entering the needle to its full length. The needle is not withdrawn at once but allowed to remain in position for some 30 seconds until the pile has commenced to swell and become blanched. The treatment is not suited to cases of strangulated or irreducible hemorrhoids, or to cases in which there are complicating conditions, such as old-standing fissures, fistulæ, ulcers, etc., or to cases that have become partly polypoid from previous attacks of thrombosis. It is important that the patient be instructed to keep quiet, if possible in bed, for the first twelve to twenty-four hours after injection. The obvious advantages of the treatment are: "(1) that the patient need not lie up for more than at most twenty-four hours; (2) that there is no need for either general or local anesthesia, since the treatment is practically painless, if properly performed; (3) that it can be made quite inexpensive, so much so, that it may be brought within the reach of even a quite poor patient, who certainly could not face the expense of an operation in private; (4) that it is a perfectly safe procedure in patients, such as the very aged, pregnant women, and others who for some reason cannot take an anesthetic safely, such as persons with dangerous heart or lung diseases; (5) that there is no after pain, and (6) that it is, as far as I have seen after employing it in a very large number of cases, invariably harmless."

British Medical Journal.

March 18, 1916.

1. The Importance of General Principles in Military Surgery. G. Grey Turner.
2. Further Notes on Protozoal Infection Occurring at the King George Hospital. H. M. Woodcock and W. J. Penfold.
3. Spirochaetes and Their Granule Phase. H. B. Fantham.
4. On the Relation Between the Terminal-spined and Lateral-spined Eggs of Bilharzia. R. T. Leiper.
5. Iodine in Tetanus. A. T. MacConkey and S. S. Zilva.
6. Three Cases of Abdominal Growths Presenting Very Unusual Characters. Charles A. Morton.
7. Bloodless Operation for Hemorrhoids and Prolapsus Ani. F. McKelvey Bell.

1. The Importance of General Principles in Military Surgery.—G. Grey Turner writes from a large experience with the wounded returned from Flanders or the Dardanelles. He says that while books are being written on military surgery, schools are being set apart for its study, and it is commonly spoken of as apart from everyday surgery, the principles which underlie surgical practice in general are exactly the same as those which govern the injuries met with as the result of modern firearms. In nearly all the reports from the seat of war the need of guidance by general principles is being recognized. The peculiarities which undoubtedly exist are those of environment rather than any inherent peculiarity in the wounds themselves. The wounds are often inflicted under filthy conditions, the wounded may have to lie for hours, sometimes even for days, before receiving any attention whatever, and the range of modern artillery is so great that the attention they then receive is only in the nature of first aid, and the nature of the wounds makes them exceedingly difficult to cleanse even under the best possible circumstances. Hence, practically all the wounds treated in the home hospitals have been septic. The method of drainage is important, and although tubes are undoubtedly the best means, there are abuses and dangers connected with them which we have learned in the surgery of civil life to avoid. They ought not to be too big, and should be removed the moment they have served their purpose. Counter openings are very useful and cannot always be superseded by the use of tubes. Another principle which we have relearned during the last few years is the importance of fresh air in combating infections. The writer has found that his septic cases improved enormously when kept on a balcony or in open tents both day and night, and believes that no one factor is of more benefit to septic patients than the free use of the open air. He emphasizes the importance of removing the focus of infection before resorting to vaccines, and in this connection says that for many months they have not had a single case of tetanus due to the fact that the wounded men are all getting prophylactic doses of antitetanic serum. The reopening of healed wounds and sinus formation are often due to a definite and tangible cause such as a foreign body or the formation of a sequestrum. In the great majority of instances it is a wise thing to remove a foreign body if this can be done without running any grave risk so far as the life of the patient or the function of the affected part is concerned. Although it is a psychological matter in many cases, it makes all the difference in the world to a man whether his foreign body is in his chest wall or his waistcoat pocket. Certain principles must be always kept in mind. First you must recognize that if you cannot do any good you have no business to run the risk of doing serious harm. Secondly, no one should undertake the removal of a foreign body without very careful consideration as to its exact position and relation to surrounding structures. An operation should never be carried out without an *x*-ray examination. As the foreign body is always potentially a source of infection, the area from which it is removed should always be drained. Some simple devices have been found most useful in *x*-ray work. For instance, it has been observed that when a foreign body is near the surface it can easily be made to move by pressing over

its site during a screen examination. A screwdriver used as a pointer is very useful, and wires have been found of value in the localization of bullets in the chest and in the head. One should always beware of ill-considered attempts to remove small foreign bodies embedded in muscular parts, since they are scarcely liable to give much trouble in such locations. The writer states that on four occasions he has deliberately opened the chest and removed a bullet or shell casing, and in each case with complete recovery. In the treatment of compound gunshot fractures a most important point is to resist the temptation to remove loose fragments since bone is the best stimulus to the formation of new bone, and it is impossible to say how much bone will live or die, and in most instances nature spares more than one would expect. A good deal of evidence is still required to demonstrate that it is good practice to use screws and plates in compound fractures. In dealing with fractures of the forearm the important point is to keep the bones of the forearm fully supinated. It does not matter much how the arm is put up to secure this full supination. Fractures of the lower end of the femur with backward displacement must be met by flexion of the knee, as neglect of this precaution may give rise to a very crippling amount of disability in the movement of the joint. It is important to deal with injuries of the joints in such a way that should an untoward result follow the limb will be in a useful position. This rule should be followed whatever the cause of the joint injury, but is especially exemplified by numbers of cases met with in military practice. More rest and less massage is a very sound axiom in military surgery of bones and joints. Finally, the writer emphasized the importance of cheerful surroundings and of hope as one of the most valuable and cheapest remedies we possess.

Berliner klinische Wochenschrift.

March 6, 1916.

Arthritis Deformans and Accidents. — Senger writes with special reference to this affection as it concerns indemnity claims. He has had occasion after years of accident practice to modify his conception of it. Older authorities looked upon the affection as final, beyond all hope of a restitutio ad integrum. If this is true an accidental origin of such a condition means a life income for the victim. Authorities even if agreed on prognosis differ greatly in their conception of the disease. Hoffa makes sharp distinctions between it and chronic polyarthritis. The latter begins in the soft parts, the former in the skeletal parts. In this distinction he is followed by most general surgeons. Axhausen claims that arthritis deformans begins with necrosis of the joint cartilages, which leads to proliferate changes. This necrosis is practically of traumatic origin. The latter, however, must be demonstrated clinically and in the clinic all joint affections present a close resemblance. Can trauma explain the simultaneous development of the disease in several large joints? Why should the palmar and plantar aponeuroses participate? Why does the disease develop insidiously without local factors? These questions are suggested by Ledderhose's conception of the disease, which however is not admitted by the majority who agree that one large joint is usually attacked, and that the aponeurotic lesions are only coincidental. They also lay great stress on *x*-ray finds. While Ledderhose does not pay much attention to these. The author relates cases of accidents immediately followed by arthropathies. After prolonged treatment with improvement the inconic was reduced. With eventual diagnosis or arthritis deformans victims were pronounced permanently invalided to a certain extent (25 per cent., 20 per cent., etc.) In these cases the disability was established largely by the permanent *x*-ray pictures. The author concludes that arthritis deformans is of much more common occurrence than has been assumed and that syphilitic osteochondritis is not differentiated from that disease in the clinic. He goes further and claims that arthritis deformans must henceforth be regarded as a symptom, and no longer as a disease. It is of course quite intelligible that the syndrome may follow a trauma. In testing these cases for a syphilitic substratum the author obtained a positive Wassermann. The patient was young and the accident relatively recent. The *x*-ray showed that the joint lesions were not fully developed and recovery occurred under salvarsan. Such cases are far from uncommon and hold out a hope for recovery.

Wholesale Poisoning from Nitrites.—Zadek describes an episode in which a number of firemen in the exercise of professional service were forced to inhale the fumes of nitrous acid, the containers having exploded in the midst of a conflagration in a warehouse. The streams of water poured upon the blaze increased the quantity of fumes. The men, eleven in number, continued to work despite the latter, although some were obliged to put on their smoke helmets. The flames were extinguished, the after duties performed and all the men went home and ate heartily. At 11.30 P.M. all hands turned in. Within three hours the majority awakened ill with headache, nausea, and diarrhea. There also developed insomnia, vertigo, and severe headache. All the number were eventually interned in the hospital, the most striking symptom being marked air-hunger with intense cyanosis in the worst cases. The brunt of the attack was sustained by the respiratory and alimentary tracts. The sensorium was clear. Despite the most active treatment the three worst cases were in severe peril for a long period, and one died in coma. These three men, unlike the others, developed delirium. All the nitrites when given in sufficient amounts are severe blood-poisons which change oxyhemoglobin to methemoglobin. This alteration was readily recognized in the fatal case.

Münchener medizinische Wochenschrift.

March 7, 1916.

Clinical Contribution in Reference to the Demonstration of Occult Blood in the Stomach Contents and Stools in Cancer of the Stomach.—Emmert examined twenty-one cases of cancer of the stomach. Occult blood was found in twenty. No other affection shows such an incidence. The symptom is a very early one, and should be present by the time the patient has come to consultation. In one case a positive result was obtained in four weeks after the beginning of the symptoms. Operation revealed an induration as large as a thaler. In another case the presence of cancer was revealed in a clinical picture of gallstone disease. Occult blood in the stomach contents excludes an intestinal lesion. The procedure usually employed is the guiac test; in fact a positive guiac points strongly to cancer while a negative guiac—even a single test—practically excludes cancer. Applied in cases of chronic ulcer and ulcer scars, the appearance of blood marks a transition to cancer. In twenty-six cases of gastric or duodenal ulcer which came to operation not one showed occult blood in the stools; while only in three recent hemorrhagic cases of duodenal ulcer was there a positive result. The author, however, modifies this assertion by stating that in seven cases before treatment was begun there was occult blood in the stools, but this quickly subsided after rest and diet.

Epidemic of Recurrent Fever Treated with Salvarsan.—Prüssian states that relapsing fever is a subject which possesses double interest. It is a disease of mankind due to an organized specific cause and it can be destroyed in the body by salvarsan—a true sterilisatio magna. This discovery of the action of arsenobenzol on a spirillum was in fact the cornerstone of the syphilis treatment with the same substance. In a Russian hospital relapsing fever broke out in 1915, appearing at first sporadically. At first unrecognized its nature was finally recognized by the fever curve and discovery of the spirochete in the blood. The disease continued to spread until there were nearly 400 victims. The infection had apparently originated in a prison camp close by, and in any case is endemic for the locality. It was readily learned that the disease is louse-borne, but while in typhus one louse bite can convey infection in relapsing fever a patient must have become very lousy to become infected. Hence physicians and attendants do not have to suffer, and but one of the latter—the dirtiest and least intelligent—became infected. Before the proper diagnosis had been made numerous cases had received no specific treatment so that an excellent chance for comparison developed. The fever curves in the two sets of cases showed marked differences. Salvarsan even in one intravenous injection completely jugulated the disease save in 5 per cent. to 6 per cent. of all cases. The characteristic recurrence of fever was completely straightened out save in these exceptions. The reasons for such problematic behavior cannot even be surmised, unless due to the fact that the spirochetes have become included in cells somewhere in the body and thus have become unable to use their arsenoceptors.

Deutsche medizinische Wochenschrift.

February 3, 1916.

Pneumococcus and Meningococcus Meningitis after Fracture of the Base of the Skull.—Schmidt relates the following case which he regards as of unusual interest. A workman aged 19 sustained a fractured basis cranii from a fall on the stairs and was rendered unconscious. Thereafter there set in great restlessness, fever, stiff neck, divergent strabismus, and painful sensations. There had been an interval between the accident and symptoms, but its length is not stated. Patient was interned at the clinic on the seventh day, and succumbed on the following day. Specimens of blood and spinal punctate had been obtained before death. From the cerebrospinal fluid both pneumococci and meningococci could be cultivated. The former could also be seen in blood agar plates. The presence of the meningococcus could also be demonstrated serologically. Autopsy revealed a fracture through the bony roof of the sphenoid with an adjoining fissure into the ethmoid. There were clots and bloody mucus in the sphenoidal sinuses. The dura was intact. Quite extensive leptomeningitis was seen in the cerebellar and positive regions. The mucosa of the upper portion of the nasal fossæ was swollen and markedly reddened. There were a number of foci of a bronchopneumonia of three or four days' duration in the lower lobes of the lungs. All the evidence pointed to a blood metastasis and lymphatic propagation seemed out of consideration. The accident led to hemorrhage into the sphenoidal sinuses, and this furnished an ideal culture medium for the germ life which gained access to it through the fracture. These germs excited no pyogenic or other inflammatory action *in loco*, but this fact the author does not regard as prejudicial to his reasoning. The pneumococci in the blood were presumably derived from the cultures assumed to be present in the sphenoidal sinuses. The bronchopneumonia was probably due to aspiration of nasal secretions during the original period of unconsciousness. The author assumes that the cocci of both kinds reached the spinal fluid through the blood. He does not assume that this case throws any light whatever upon the rationale of epidemic cerebrospinal meningitis, and is inclined to accuse a lymphogenic origin of the latter in the majority of cases, although a minority present a parallel is the author's case.

Etiology of Weil's Disease.—Weil, who originally described this affection, is naturally much interested in recent reports concerning its etiology and the more so because he himself is no longer situated to pursue research along these lines. He had never made any bacteriological studies at any time. The cultivation of a specific microorganism from the blood is of great importance but the author seems very conservative if not somewhat sceptical as to its causal role. The disease transmitted to guinea pigs cannot straightway be termed Weil's disease. While much flattered and honored because the affection under discussion was named for him, it might be better to adopt the designation originally proposed by him of an "acute infectious disease with splenic tumor, icterus and nephritis." His intention, over 30 years ago, was to erect a group disease with these lesions—this triad so to speak—of which "Weil's disease" was to be a member. But not all authors chose to adopt this designation. Some have used such terms as "febrile icterus" and "febrile jaundice," but these are far from being equivalent to "Weil's disease." Catarrhal icterus may be present in many fevers. To consider the summation of the picture of Weil's disease it is necessary to enumerate a characteristic fever type, icterus, splenic tumor, albuminuria, cerebral manifestations and severe muscular pains especially in the calf muscles. The author has read of a case of Weil's disease following traumatic erysipelas. It is well enough to regard such spurious cases as belonging to a clinical group disease of which Weil's disease is a member; but the latter term should not be applied to such cases. Once the typical disease has been established in all respects we can begin to formulate abortive and other irregular forms. For the present an inoculation type of the disease on animals cannot yet be regarded as the true malady, because in mankind, as all along stated, we see conditions enough which only resemble superficially Weil's disease. In the same number of the Wochenschrift Hübener and Reiter conclude a serial article on the etiology of Weil's disease. They assert that the latter as studied by them agrees in all respects with the original Weil's disease as first described over 30 years ago. It is an acute, noncontagious, infectious disease, the exciting cause of which is a spirochaete, conveyed to mankind through insect bites directly into the blood, in which specific toxins are formed, and the internal organs attacked so that a general disease is set up with typical fever and damage to the kidneys and liver. In regard to the existence of atypical and abortive forms the authors expect to be able to show that such exist. The results of inoculation experiments involve too much time for rapid diagnosis, but thus far the authors have been unable to obtain serological reactions.

Daily Food Ration of Great Britain.—Langworthy placed the energy value of the daily food ration (year 1908) as purchased for moderate work at 3,800 calories. The ration contained a remarkably large amount of fat. Thompson drew two conclusions from this (1) that the tendency in urban and industrial populations is to increase the fat at the expense of the protein, and (2) that the ration could not be reduced without endangering the efficiency of the working man. The substitution of vegetables as protein sources instead of meat would relieve the cost.—*The British Medical Journal.*

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PEDIATRICS.

Stated Meeting, Held February 10, 1916.

Dr. Royal Storrs Haynes, in the Chair.

A Case of Complete Cretinism with Normal Mentality.—Dr. Ward B. Hoag presented this patient, a girl 5½ years of age, who had first come under his observation when she was 3½ months old. At that time she had all the typical characteristics of cretinism. Her extremities were the shortest he had ever seen. Her head was covered with a thick mass of coarse, flaxen hair, her nose showed no development, her tongue protruded, her skin was dry, and her flesh showed no resiliency. She showed no animation, even hunger apparently forming no part of her desires. At the present time she stood 40 inches in her shoes and she weighed 43 pounds five weeks ago, which was more than the normal weight and height of the average child of her age. There was apparently nothing abnormal in the condition of the child at the present time; she played and talked just as any other child. The absence of the thyroid could not be attributed to trauma, since there was nothing abnormal at the time of birth except that the labor was rather precipitate. Dr. Hoag said thyroid medication was begun at the time he first saw the child, ¼ grain of thyroid extract having been given twice daily. This amount was gradually increased until for a time, when she was about four years of age, she took 5 grains daily. Under this amount she developed the typical signs of excess of thyroid. For some months she had been getting 3 grains daily. Very soon after beginning the thyroid treatment her hair came out in great masses and her skin came off in sheets, two or three inches coming off in one piece, and the child was practically made over in a few weeks. Dr. Hoag thought she was worth while presenting as demonstrating the result of thyroid medication together with persistent and careful attention on the part of the mother. The case showed that if one took a case 100 per cent. cretin early and administered the amount of thyroid that nature intended the child to have, one could get a perfectly normal child, provided the child had no other defect in any other ductless gland secretion.

Dr. Thomas S. Southworth said that in this case he would put the stress a little differently from where Dr. Hoag had placed it. He would say that the case showed what could be done if one got these cases early enough. They had all seen cases coming to treatment later in which a considerable degree of improvement was obtained, but the success obtained in this case was due to the early age at which treatment was begun, and the important point lay in getting these patients before the mental damage was done.

A Case of Death Following Ingestion of One Dram of Camphorated Oil.—Dr. Sidney V. Haas reported this case. He stated that the almost universal use of camphorated oil as a household remedy made a knowledge of the danger attending its internal administration important. Camphorated oil was a preparation containing 80 per cent. cotton-seed oil and 20 per cent. camphor. The literature abounded with reports of deaths due to the ingestion of this preparation. These reports showed that the amounts that had resulted fatally varied. Death had resulted from taking 7½ grains of camphor; on the other hand, an instance had been reported in which a child had taken a teaspoonful of the oil upon a full stomach and was then given a teaspoonful of castor oil and all went well. The case he wished to report occurred in a baby three weeks old. The baby was brought to the hospital three-quarters of an hour after having been given a teaspoonful of camphorated oil by mistake. (The baby had a slight bronchitis and the physician had prescribed castor oil internally and camphorated oil externally.) The child was cyanotic and appeared to be very ill. The stomach was washed out and the child was placed in a ward and at this time did not appear very ill. The maximum temperature was 100.6° Fahr. The child only showed signs of bronchitis which had been diagnosed before the camphorated oil was administered. After about forty-three hours the child died very suddenly in a cyanotic attack. This was in accord with observations previously made that death from this cause usually occurred within forty-eight hours. The urine in this instance showed a slight trace of albumin. As an explanation of the toxicity of camphor in young infants and weakened children, it might be mentioned that C. Happich, in experimenting on rabbits and guinea pigs, found that the degree of tolerance for camphor depended upon the presence of glycuronic acid which was produced in the pulmonary circulation, by the combination of sugar and oxygen. In states of inanition this substance was much reduced and the individual became more susceptible to the toxic action of the drug.

Differential Diagnosis of Thoracic Conditions by Roentgenogram.—Dr. Leon T. LeWald gave a lantern-slide demonstration in which he first showed what was revealed by the roentenogram in pneumonia, and called attention to the possibility of confusing these with old tuberculous bronchial lymph nodes. He then showed a picture which was suggestive of miliary tuberculosis, but was probably a tumor, possibly a sarcoma, of slow growth, and said that such a picture was instructive in emphasizing the importance of taking into consideration the clinical history of the case and the possibility of making a mistaken diagnosis from the radiograph alone. Dr. LeWald next showed pictures of anomalous ribs, cervical ribs, and transposition of viscera, and stated that he had seen fifteen instances of transposition of viscera. Other slides showed foreign bodies located by means of the roentgenogram. In one instance the foreign body had been lodged in the bronchus for seven years, and the patient had been operated on for empyema; in another case, a child was operated on for an encysted empyema, and the condition was found to be due to an upholsterer's tack which had been swollowed two years previously. If one had to deal with a condition of this kind which would not heal it was always advisable to subject the patient to a roentgenological examination. In making radiographs in looking for foreign bodies it was a help to take plates in the lateral or oblique positions. Dr. LeWald also called attention to the possibility of mistaking a beginning pneumonia for an acute appendicitis and related a additional case together with the case described before the Joint Meeting of the New England Pediatric Society, the Pediatric Section of the New York Academy of Medicine, and the Philadelphia Pediatric Society (Medical Record, January 22, 1916.) Both of these cases were under the care of Dr. J. Finlay Bell of Englewood, N. J., and to him belonged the credit for the suggestion of making the differential diagnosis by means of the Roentgen ray.

The Diagnosis of Congenital Pyloric Stenosis of Infancy by Roentgenogram.—Dr. LeWald read this paper and illustrated it with lantern slides. He said that Dr. Downes had operated upon seventy-seven cases of pyloric stenosis in infants. Forty-seven cases belonged to a recent series in which he had performed the Ramstedt operation. Thirty cases were in the earlier series in which a gastroenterostomy was performed. The age of the children ranged from fifteen days to four months. In Dr. Downes' series there were four males to one female. As to the choice of operation, it had been the experience of both Dr. Downes and himself that the Ramstedt operation of simply splitting the hypertrophied muscle allowed the stomach to empty itself in a more physiological manner, while the performance of a gastroenterostomy was likely to produce too rapid emptying of the stomach and intestinal disturbance. According to Dr. Downes' statement, this had been observed in 50 per cent. of the cases in which the latter procedure was employed. After speaking of the attempts to classify the different degrees of pyloric obstruction and of the ingenious theories that had been advanced to account for its origin, Dr. LeWald said that a study of the literature on this subject forced one to the conclusion that, after all, little had been gained and that these theories did not assist very materially in an elaboration of diagnosis nor to establish a definite form of treatment, which was the important and practical end that was sought. Certain cases which exhibited the classical symptoms, namely, projectile vomiting, steady wasting, constipation, excessive stomach peristalsis, in addition to a palpable nodular tumor in the pyloric region, must be regarded as cases of true pyloric stenosis. On the other hand, cases were reported without any palpable tumor, but otherwise having all the usual symptoms in varying degrees of severity. It was perhaps in these that the greatest difficulty arose as to the best method of procedure and in how far they might be surgical. The suggestion was given by the majority of workers that this group should be treated medically until they no longer re-

spond to medical management, as evidenced by stationary or falling weight. They might then be subjected to laparotomy with its high degree of hazard, the operator being necessarily uncertain as to his method of procedure until he had satisfactorily explored the stomach. If a hitherto undiscovered tumor was found at operation, the infant must be able to stand a considerable degree of shock incident to the performance of a posterior gastrojejunostomy. If no tumor is found, little was gained and much lost by subjecting the impoverished infant to the loss of blood and further depletion of its natural resistance. If, therefore, by the use of modern methods diagnostic means could be made so complete that we could with a degree of positiveness determine whether or not a given case should be operated on, we should be making an advance worth while. Modern apparatus with the intensifying sheets enabled the radiologist to make instantaneous exposures, thus securing with the minimum effort negatives of great value. Whether the stomach in early infancy was simply a dilated pouch for the accumulation of food which was quickly acted upon by the gastric juice and immediately allowed to pass out through the pylorus, or whether it performed its share of the preparation of food for the more complex processes of digestion in the duodenum was a question for future study. The fact was that they might observe the exit of food into the duodenum within a minute or two after its intake, and this tended to show that the stomach played a part which had been overvalued. That liquid foods began to be expelled normally in a very short time after they were taken into the stomach was very helpful in making a diagnosis of the conditions under consideration, for if it could be demonstrated with a degree of exactness, by a series of radiographs, that the milk was retained for a greater length of time than in the normal stomach, as was shown by the bismuth shadows, the type of obstruction with which one was dealing could be determined with a fair degree of certainty. Since these striking results could be obtained it seemed manifestly unfair not to early obtain a series of radiographic pictures in every case suspected to be one of pyloric stenosis, so that an infant suffering from a true tumor and lumen so small as to practically occlude the passage of food into the duodenum might be early given into the hands of the surgeon while its physical condition was still good. Again cases of pyloric spasm, even of marked degree, but without tumor formation, could be differentiated, since the amount of food passing through the pylorus and the time required for its passage could be seen and thus the diagnosis and even the prognosis could be fairly well fixed. The prophecy might be made that in the future every suspected case of pyloric obstruction would be subjected to radiographic study before determining on a plan of treatment, just as today no surgeon thought of putting up a fracture without the use of the *x*-ray.

Recurrent Hilus Infiltration: An Unusual Form of Tuberculosis in Children. — Drs. MURRAY H. BASS and HENRY WESSLER presented this paper which was read by Dr. Bass. He stated that our knowledge of the pathogenesis and anatomical varieties of tuberculosis in childhood had undergone considerable change during the past decade and at present it is recognized that the clinical types of pulmonary tuberculosis in the first few years of life were quite distinct from those of adults. There were, however, forms of tuberculosis whose localization in the lungs of children was just as typical as that in adults, the area of lung involved being determined by the presence of the diseased bronchial nodes. After reviewing the generally accepted conception of the origin and distribution of tuberculosis in the infant and child, based on the work of Hamburger, Gohn, and Albrect, Dr. Bass said that recurrent hilus infiltration was an extension of the tuberculous process from the lymph nodes and occurred often enough to be recognized as a clinical entity in the great group of tuberculous infections of the lung. Sluka had encountered it thirty-eight times within a few years and Eisler had also reported an identical clinical picture. For a knowledge of the morphology of this lesion they were indebted to the Roentgen ray. It occurred in the vast majority of instances on the right side and its point of predilection was in the lung in the immediate vicinity of the fissure between the upper and middle lobe. Beginning with its base at the hilus, where a dark shadow of tuberculous nodes was visible, a fairly opaque shadow of homogenous density extended outward into the lung for a considerable distance, gradually fading into the normal lung tissue. The resulting infiltration was triangular in shape, its apex being near the axilla. Its lower margin was sharply defined by the interlobar fissure; the latter was thickened and the seat of a pleurisy, as it could usually be seen extending quite into the axilla beyond the limit of the infiltrated area. Sluka believed that it was a direct infection of the pulmonary tissue from the cascated lymph nodes at the hilus with a resulting infiltration of the lung. Sluka never found it before the age of two years in his series and their experience had been similar in the Roentgen examination of children. Perhaps the most remarkable fact in regard to these cases was that the infiltration did not remain constant in size or appearance. The Roentgen examinations made at intervals of one month might show at first a wide area of infiltration and at later examinations nothing might be left but the thickened interlobar fissure. The latter usually persisted for a long time as a thin sharp line running horizontally across the upper part of the right lung from the inner end of the fourth costosternal junction to the axilla. Such a sequence of infiltration and normal lung might be repeated several times and justified the appellation "recurring hilus infiltration," and its correspondence was found in the signs and symptoms of the patient. Children in whom this typical hilus involvement was found were usually brought to the physician on account of general debility, loss of weight, slight cough, or night sweats. The condition was found in children between the ages of two and eight years, but did not occur in infancy. Physical examination of the chest was usually negative unless the process had involved a considerable mass of lung tissue. This point was of the greatest importance since it emphasized the fact that in such debilitated children with positive von Pirquet test, *x*-ray examination was imperative. This was the more necessary since it had been shown that this lesion was in many cases a curable one, provided appropriate treatment was followed. The writers then reported two illustrative cases from a number coming under their observation and showed lantern slides of radiographs taken at different times during the progress of these cases. In closing they stated that the exact pathogenesis of these lesions was rather obscure, for corroboration by autopsy was impossible since the majority of the children recovered and those that went on to a fatal termination presented the picture of a general caseous involvement of the lung. The histories of many of the cases showed that before the onset of the condition the child had had either measles or pertussis, and the theory had been advanced that possibly there had been at this time not only a lowering of resistance to tuberculosis but also that local conditions in the bronchial lymph glands might be at fault. It was difficult to conceive of a true tuberculous infection coming and going in this fashion and the most plausible theory to account for it was that the underlying pathological process was one of an inflammatory exudate about the tuberculous hilus.

Some Factors Affecting the Incidence and Case Mortality Rate of Measles.—Dr. J. G. WILSON, Assistant Surgeon of the United States Public Health Service, read this paper, in which he stated that a study of the vital statistics of the various cities and states showed that at the present time the general mortality from measles was not nearly so high as it was when Holt placed the general mortality of measles at 4 to 6 per cent. and that of institutions at 10 to 35 per cent. In 1913, in New York City, the fatality rate per 1000 cases was 2.15 per cent. and even this was higher than that of any other city with a population of 500,000 or over. It would seem that we were well within the limits of conservatism if we placed the present case mortality of measles throughout the United States at less than 2 per cent. The assistant statistician of the Prudential Life Insurance Company, Frederick S. Crum, said that the most reliable international mortality statistics showed that on the average, in the countries in the temperate zone, more than 1 per cent. of all deaths were caused by measles. In the registration area of the United States the percentage which measles contributed to the total mortality during 1906 to 1910 was 0.71. The mortality was almost uniformly higher in institutions than in private practice. Dr. Wilson said he had had the opportunity of observing measles at the Immigration Station at Ellis Island and that, notwithstanding the unfavorable conditions offered by the steerage and the fact that patients were almost invariably exposed to cross infection during transportation from New York docks to the Immigration Station

at Ellis Island, the case mortality of measles at the Contagious Hospital at Ellis Island had averaged less than 10 per cent. from the time the hospital was opened in 1911 until the outbreak of the European war. Since that time measles had practically ceased until recently when the steerage from Rotterdam was again bringing the disease. In spite of the unfavorable conditions, the mortality at present was the lowest they had ever had, 8.5 per cent. The essayist exhibited charts showing the regularity of the recurrence of epidemics of measles in this country and in fifteen American cities. With few exceptions the disease showed a biennial periodicity. Various explanations had been advanced to account for this regular periodical recurrence. Muller and Crum believed that a measles outbreak in a community either actually attacked or immunized the whole susceptible population and that the off years following an epidemic simply represented the time required for a new susceptible generation to come into being. If this theory were correct, it would seem that in a continuously susceptible population, the yearly morbidity from measles would remain practically constant. It seemed probable that the immigrant population passing through Ellis Island was continuously susceptible to measles since it represented large handfuls of children of all ages picked more or less at random from widely separated communties of Europe. Notwithstanding this constancy of susceptible persons passing through Ellis Island the morbidity from measles had varied from 0.56 to 1.67 per 1000 immigrants for the last 15 years. A study of all the available data simply established the fact that measles epidemics showed a periodicity of recurrence and that this periodicity seemed to vary in different places. It was quite evident that the disease had no fixed mortality rate. There was probably as yet some undetermined factor entirely apart from age and unfavorable surroundings which entered into the situation and made the disease now a mild one with easy recovery and again a virulent one with a high incidence of complications and death. There was only one factor, overcrowding, which seemed to bear a causal relation to the incidence and fatality of measles and even this was incapable of explanation in its entirety. This factor had influenced the situation at Ellis Island and the same problem had been worked out by the health authorities in Glasgow where both the incidence and the fatality of the disease were shown to bear a direct relation to the number of rooms occupied by the family. Basing his statements on the results of his observation and examination of the histories of 2000 measles cases in the Contagious Hospital at Ellis Island, Dr. Wilson considered the three most important complicating conditions which influenced the course and termination of the individual case. These conditions were suppurative otitis media, bronchopneumonia, and cross infection. At Ellis Island it appeared that measles was four times as frequent as all other contagious diseases combined. Owing to the fact that many of their admissions had been exposed to more than one disease on board ship and in the transfer barges there were a certain number of cross infections, about 4.7 per cent. of the measles cases being complicated by some other contagious disease. This fact added materially to the measles mortality. In this series the mortality was 9.5 per cent. The mortality among the 36 cases contracting diphtheria was 66.6 per cent.; of those contracting scarlet fever 46.4 per cent. From a further study of this series of cases the writer concluded as follows: (1) Cross infection, especially that of diphtheria, was the most serious event that could occur in the course of measles. (2) Suppurative otitis media, although the most frequent complication of measles, was not of grave prognostic import when properly treated. (3) Bronchopneumonia complicated about 10 per cent. of all measles cases, being little influenced by weather conditions in the frequency of its occurrence or its fatality. (4) The fatality of measles complicated by bronchopneumonia was 58 per cent., but this fatality varied in an exceedingly erratic manner and without marked relation to the total case fatality of measles. (5) The incidence rate of bronchopneumonia as a complication rather than its case mortality appeared to be an index to the severity of any particular outbreak of measles.

Chloroma: A Report of Two Cases, Together with the Roentgenological Findings. — Drs. EVERETT W. GOULD and LEON T. LEWALD made this presentation. They stated that only a comparatively few cases of this condition had been reported and they therefore thought it advisable to place on record the following two cases which had appeared in the Pediatric Service of St. Luke's Hospital. An analysis of the cases reported seemed to show that chloroma occurred more frequently in children than in adults and more frequently in males than in females. The chief clinical features which characterized the disease were exophthalmos, which was produced by a retrobulbar lymphoma; swellings of the temporal and occipital regions, due to the involvement of the cranial bones; enlargement of the spleen and lymphatic glands throughout the body, but especially in the cervical region, and a severe and progressive anemia causing weakness, fever, and emaciation. Hyperplasia of the bones of the skull undoubtedly began in the marrow of the cranial bones but soon involved the periosteum and the dura mater, forced the sutures apart, filled up various foramina of the skull, and by pressure upon the nerves which emerged from the brain through these openings might cause blindness, deafness, pain, or other symptoms referable to the nerves involved. While exophthalmos was the first symptom noted in a majority of the cases reported, in some cases there had been no exopthalmos. In the various reports nearly all the bones of the body had been cited as the seat of this change. The blood picture in chloroma varied greatly in the cases reported. The anemia was believed to be due to the rapid proliferation in the bone marrow of the leucoblastic tissues, resulting in the crowding out of the elements from which the red blood cells were derived. The anemia therefore depended upon the deficient production of red cells rather than upon any toxic destruction of them. The hyperplasia of the leucoblastic elements led to the frequent appearance in the blood stream of large numbers of white blood cells of various types and had led to the classification of this condition as a form of leucemia. In most of the reported cases this characteristic leucemic picture had been found at some time in the course of the disease, especially during the later stages. The predominating type might be any one of the normal or leucemic types of the leucocytes, or the hyperplasia of the parent cells might reach such a stage that the new forms did not reach the blood stream in such numbers as to give the picture of a leucemia. During the time that the cases herein reported were under observation the blood picture was never that of leucemia, but in these cases this time represented but a small part of the duration of the disease. The name "chloroma" was given to the disease because of the peculiar green color frequently seen in the tumors removed from the body, and which might also be found in any of the new growths, or even in a blood clot within the heart, though it was a more common characteristic of the hyperplasias of the bone marrow. Recent observations in regard to the histological characteristics of this disease showed that it did not belong to the lymphomata, carcinomata, or lymphosarcomata. Klein and Steinhaus perhaps first observed that the tumors of chloroma were largely composed of cells of leucoblastic origin. They found that neutrophile cells, especially myelocytes constituted a large part of the tumor mass. Large and small lymphocytes with eosinophile granules were frequently predominant, and they therefore classified the disease with the leucemias. Warthin showed that in his cases at least the tumors which involved the vertebrae and the prevertebral tissues were primary in the bone marrow spaces, that they infiltrated or grew through the lymphatics and blood vessels or broke through the bone, and secondarily involved the periosteum and surrounding tissues. Section showed that the normal marrow tissue was almost entirely replaced be cells of the large lymphocyte type, most of them showing eosinophile granulation. Transition forms of various kinds were numerous, but the whole vertebral tumor was made up of cells of leucoblastic origin with a scanty and delicate tissue reticulum, and with little evidence of new blood-vessel formation. Nodules of similar histological structure were found in various organs of the body, arising from intravascular proliferation and seeming to have little influence on surrounding tissues excepting by pressure and atrophy. There was little manifestation on the part of the organ involved of a reaction in the nature of a resisting proliferation of the tissue cells or the development of a reticulum and blood vessels. Of the two cases coming under their observation the writers stated that the first was a female child 3½ years of age and the second a male child, 5 years of age. In neither instance was an autopsy obtained, but the Roentgen ray findings were fairly characteristic, especially in regard to the proliferation of bone tissue in the skull producing a separation of the suture lines. In the second case there

were characteristic changes in the long bones. The process seemed to be essentially a rarefaction and proliferation in the medullary cavities combined with a subperiosteal change lifting the periosteum over a variable distance from the surface of the shaft. The condition was distinguished from infantile scorbutus and rachitis by the absence of epiphyseal changes; from a myelomatous condition by the combination of the periosteal changes with the changes in the medullary cavity, and from sarcoma by the extent of the process. The change in the medullary portion of the bone appeared to be distinctly different from those of syphilis. The gross pathological changes in both of these cases were in exact accord with those described by Warthin. As far as the writers had been able to ascertain these were the first cases of chloroma in which the Roentgen ray findings had been recorded.

Dr. LeWald exhibited lantern slides of the Roentgenograms of these patients. He said the radiograph of the first patient taken January 29, 1913, showed marked enlargement of the mediastinal lymph nodes with slight displacement of the trachea to the right. Another radiograph taken three days later confirmed the finding of enlargement of the mediastinal lymph nodes. Examination of the skull on February 5th showed a distinct separation of the coronal sutures, producing a wedge-shaped gap measuring one cm. at the vault. Radiographic examination of the head on February 12th confirmed the previous finding of separation of the coronal sutures and also showed a separation of the parietal sutures. Stereoscopic examination confirmed the findings of separation of the sutures of the skull including those of the occipitoparietal regions. The first radiographic examination of the second patient, made October 22, 1913, showed a distinct separation of the suture lines especially marked in the region of the coronal and the parietal sutures. The separation of the frontal suture measured about 2 cm. at the vertex. Examination of the chest showed an extensive involvement of the mediastinal lymph nodes. The diaphragm was pushed upwards on both sides, indicating a distinct enlargement of the liver and spleen. The bones of the upper extremities showed marked changes of a very peculiar type. The medullary portion of the long bones showed a peculiar mottling due to the rarefied areas. The periosteum was distinctly raised from the surface of the bone over the greater portion of the shaft. The peculiar combined involvement of the medullary cavity and the periosteum had not been observed in other bone lesions; from these findings a diagnosis of chloroma seemed justified, when taken in conjunction with the history of the case. Radiological examination of the lower extremities showed an involvement of the long bones exactly like that observed in the upper extremities.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting, Held February 24, 1916.

DR. GEORGE W. KOSMAK IN THE CHAIR.

THIS program was arranged by the gynecological staff of the New York Polyclinic.

The Teaching of Gynecology to the Advanced Student. Dr. ARNOLD STURMDORF read this paper. He said that the pedagogics of gynecology and of post-graduate gynecology in particular presented intrinsic obstacles to both the teacher and the student that were not encountered in other specialized departments of medicine and surgery. Its diagnostic fundamentals demanded the cultivation of keen tactile perceptivity which could only be acquired among ample clinical facilitites, such as were circumscribed by obvious prohibitive restrictions which limited the utility of the average gynecological patient for objective class demonstration; this created a relative paucity in opportunities for specialistic cultivation. The mechanistic empiricism that dominated the votaries of the established practice was slowly but surely merging into the realms of the obsolete. Surgical virtuosity alone no longer constituted a gynecologist; healed incisions and operative correction of purely objective deviations from hypothetical normals did not prove the cure, while the use of symptomatic nosology did not establish a diagnosis. They were formerly taught to see a passive retention wedge in the "perineal body" where they now recognized an active myodynamic deflector of intraabdominal pressure in the levator ani muscle. The time was passing when "endometritis" encompassed the beginning and end of all uterine pathology, when "reflex neurosis" presented the shibboleth of its symptomatology, and "curettage" the slogan of its therapy. The student must be taught to see beyond his finger tips; an organism, not an organ, was the object of his study. He must learn to calculate in terms of "gonad and endocrine denominators;" to balance and correlate dynamic, biologic, and other factors in his clinical definitions. The student must be able to differentiate the gynecological manifestations of systemic disorders from systemic disturbances of gynecological origin. Individually, the post-graduate students were ardent and earnest men who sought knowledge at personal sacrifice; collectively, however, they presented a mental and technical heterodoxy that ranged from specialistic endowments down to an absolute lack in first principles; in the present status of post-graduate instruction, the teacher must adopt a course that ranged from the needs of those who could not locate a fundus uteri to those who sought the last word on the chemotaxis of ovular nidation. At the New York Polyclinic each of the six gynecological divisions conducted two clinics weekly, one operative and one ambulatory. The morning sessions were devoted to the details of surgical technique and the incidental study of operative findings in their anatomical, pathological, symptomatic, and diagnostic bearings. The ambulatory clinic, however, afforded opportunities for discussion and elucidation of advanced gynecological problems. In the ambulatory division of Dr. Sturmdorf's clinic he said he had adopted a course which met, as nearly as possible, the requirements of those seeking only a practical working knowledege, as well as those interested in the more academic phases of the subject. His class was divided into sections of twos. Sounds and specula were discarded and the previously established diagnoses and histories were withheld for the time. The students were supplied with the blank form on which their dictation of objective abnormalities were noted in strict topographic sequence as follows:

I. Topographic Sequence.
II. Objective Features.
III. Functions Involved.
IV. Symptoms Deduced.
V. Diagnosis.

Under one were the following: Vulva. Introitus. Vaginal Canal. Cervix Uteri—Outlines. Direction. Form Consistency. Fundus Uteri—Direction. Size. Horn. Consistency. Mobility. Adnexa—Situation. Form. Consistency. Mobility.

During the manual examination of the patient, any deficiency in method or tactile perception on the student's part was corrected. Based on these objective findings the functional disturbances were deducted and their incidental symptomatology postulated. In conclusion, Dr. Sturmdorf said that advanced gynecology was both an art and a science. The teacher could demonstrate its practice and elucidate its theories, but he could not impart aptitude and when all was said and done he had become convinced that advanced gynecologists were born and not made.

Supravaginal Hysterectomy by the Vaginal Route with a Report of Two Cases.—Dr. ADOLPH REICH presented this paper. He said that three conditions were recognized at present for which this operation was indicated: I. For the removal of the products of conception during the first four months in tuberculosis of the progressive type. II. In the presence of fibroids, or general fibrosis, of the uterus where the Wertheim-Schauta operation for prolapsus uteri could not be done on account of the large size of the uterus. III. For uterine hemorrhage which endangered life; in order to definitely check this source of loss of blood with the least trauma and least danger to life. Martin, in 1899, was the first who unintentionally performed this operation while doing a myomectomy through the posterior culde-sac. It was by chance that H. W. Freund came upon doing the operation extraperitoneally. His first case was in a primipara with a myoma the size of a child's head, and soft. The uterus was retroflexed. There were severe psychic disturbances, the patient being most rational during menstruation. On performing a posterior colpotomy the tumor proved to be a myoma which embraced the entire uterine wall. The upper portion of the fundus had to be removed leaving only a few centimeters above the internal os. The intended myomectomy resulted in a supravaginal hysterectomy, but the stump was not covered with peritoneum. His second case was a patient who had given birth to three children. She was forty years old. The uterus was

very large and the body with its adnexa was amputated in the usual classical manner, covering the cervical stump with the bladder. In July, 1908, H. v. Bardeleben decided to cut an elliptical portion out of the tip of the fundus, taking away most of the placenta site, and leaving just a few centimeters of tissue above the internal os, and closing the fundus with five or six interrupted sutures fastened to the bladder on the posterior surface of the cervix. The operation was finished *lege artis*. He based his indications on the observation of the fact that ordinary abortion with or without sterilization produced, in those cases which were followed for a period of sixteen months, the mortality was from 8 to 53 per cent., while with the amputation among the same class of cases only 5.6 per cent. died during the same period. In the Wertheim-Schauta operation, the uterus had to act as a supporting wedge in the urogenital diaphragma; the success of the operation did not, therefore, depend upon the correct technique of the fixation only but also on the size of the uterus. Stoschel stated that under ordinary conditions he never had found the uterus too large, and in cases of fibroids he preferred to do a hysterectomy and utilize the broad ligaments as the future support for the bladder and vagina. This later procedure undoubtedly prolonged the operation to a considerable extent. The Pfannenstiel wedge resection was frequently accompanied by oozing of blood, necessitating drainage in a number of cases; secondary hysterectomy had to be resorted to in order to check the hemorrhage. Several had reported good results, with preservation of menstruation, by leaving a few centimeters of the endometrium above the internal os in young women who, after all kinds of treatment, bled persistently and were doomed to hysterectomy, no matter what the cause might be, whether myoma, metritis, arteriosclerosis, neurosis, etc. They all knew that in those severe cases of patients who hardly had time to recover from the loss of blood from menstruation to menstruation, hysterectomy might be absolutely indicated.

Statistics were not at all conclusive. Without considering the gross complaints elicited voluntarily by the patient, or by their direct questioning, there was a fine psychic and physical process connected with menstruation which they could not elicit by their studies; of which perhaps the women themselves were not conscious. A woman without her menstruation was not considered as a full value either by men or women, and no one knew whether such a young woman developed in a different manner from those who were in possession of this function. It was therefore best to cure the woman of the excessive bleeding with preservation of her menstruation. This was best accomplished by leaving about two cm. of the fundus above the os. In a case of procidentia a "T" shaped incision was made into the anterior vaginal wall; then separating the bladder from the uterus and vagina freely, the uterovesical fold was opened and the fundus was pulled down into the vagina and, the bladder being held up with a towel, the uterosacral ligaments were plicated, leaving the last suture long. A pair of blunt forceps was pushed through the broad ligaments to catch the last suture attached to the uterosacral ligaments and then bringing them out along both sides of the cervix, the bladder peritoneum was fastened to the postuterine wall at the level of the internal os. The round ligament and tubes were then tied off and if necessary the ovaries and tubes could be entirely removed. The broad ligament was pushed down and the uterine artery tied along the side of the uterus and as much of the fundus cut off as would make it fit the gap comfortably. The round and ileopelvic ligaments were sutured to the stump of the fundus, the vaginal flaps trimmed and sutured to the vagina along the entire anterior wall of the uterus. The two sutures that held the uterosacral ligament were tied and the operation was concluded by a good perineorrhaphy.

Dr. JOHN VAN DOREN YOUNG had examined the cases reported by Dr. Reich; the patients complained of no pain and the results he believed were all that could be desired.

The Care of Abdominal Surgical Cases.—Dr. BROOKS H. WELLS said that when he began his service at the New York Polyclinic in 1885, they used the old cumbrous methods, drastic purging, elaborate preparation of the patient and the site of operation, antisepsis instead of asepsis, drainage when in doubt—and in nearly all cases they were in doubt—a crude technique with its necessarily high mortality and morbidity, the so-called stimulation of the patient by strychnia and digitalis, and enforced immobility of the patient with many weeks in bed. A gradual evolution had led to the reversal of most of these conditions and to an increasing simplicity in the management of abdominal cases until during the last few years they had treated them substantially as he then described, with a great fall in the mortality and morbidity, a great lessening of postoperative pain and discomfort, and, practically entire absence of postoperative hernia. With better training for the younger surgeons, with increased knowledge of the simplified and perfected technique which would eventually prevail, surgical morbidity—and with it, mortality—from purely surgical causes should drop almost to the vanishing point. When patients were admitted to the hospital, and if operation was considered necessary, the preparation for this was very simple and consisted of a mild laxative on the morning of the day preceding the operation, followed by an enema the evening before, together with the preparation of the skin. Severe purging was avoided, as it increased the tendency to bowel distention and the formation of gas; this was a great source of discomfort to the patient and increased postoperative intestinal atony, nausea, and vomiting. Only rarely were patients held in the hospital for more than twenty-four hours before going to the surgeon. Usually the evening before operation the abdomen was shaved and scrubbed with tincture of green soap and warm water, rubbed on with a piece of clean gauze. The soapy water was carefully and completely washed off and the skin dried with alcohol and covered with a light dressing of sterile gauze. When the gauze was removed before operation, the dry skin was painted with tincture of iodine, three and a half per cent. A moderate Trendelenburg position was used in nearly all cases. As was also an intermuscular or the suprapubic transverse incision; this incision having been found to give most satisfactory results, with great freedom from hernia and an inconspicuous scar. Its greatest fault was the liability to the formation of the hematomata from imperfect or careless hemostasis. Gentleness of manipulation was strongly urged; no rough handling or sponging of peritoneal surfaces was allowed. Vessels were ligated before being divided, and clamps were never applied except to tissues that were to be removed; this was an important means of avoiding thrombosis and consequent embolism. Great care was taken to repair all torn or denuded peritoneal surfaces. Van Horn and Sawtell catgut was used in the peritoneal cavity, doubled where greater strength was necessary. No. 0 or 1 chromic gut was used for intestinal work; celluloid linen was discarded as dangerous and liable to produce late complications. Abdominal incisions were closed in layers with No. 1 plain catgut for the peritoneum, No. 2 ten-day chromic gut for fascia, and No. 0 or 1 plain catgut for the skin. Where there seemed danger of wound infection through-and-through silkworm gut sutures were used in median incisions in addition to the catgut layer sutures. Before the patient was taken off the table, she was given a hypodermic of atropine sulphate, gr. 1-120, followed in a few minutes by a hypodermic of eserine salicylate, gr. 1-50. The eserine could be repeated at six hour intervals as might be needed. It was found to have a positive effect in relieving postoperative pain, and in helping to blot out the recollection of pain; it lessened the nausea, promoted intestinal peristalsis, and lessened the shock. Morphia was needed to control the pain in only one case in four. Eserine should not be used in larger doses than 1-50 of a grain. Where there was actual obstruction eserine was a dangerous agent. After a prolonged anesthesia the stomach was washed out at the end of the operation. If there was vomiting, water with a little sodium bicarbonate was given freely by the mouth and, when the condition would permit, the head and shoulders were raised. To relieve shock, to supply fluids, and to control thirst, a half pint of pure water was given by rectum every four hours until the bowels moved or until the patient could take fluids freely by the mouth. The bowels moved spontaneously as a rule; if they did not, castor oil was given on the third or fourth day. Early feeding was considered quite important. After operation the patient was allowed from the first to turn in bed or be moved by the nurse. On the fourth day, unless there was some contraindication, she was lifted out of the bed into a chair for a short time. Early mobility encouraged the patient, lessened the nausea, promoted the early return of the appetite, increased peristalsis, made the bowel movements easier,

improved the respiration, lessened the tendency to pulmonary complications, prevented loss of muscle tone, and greatly facilitated a rapid convalescence. When patients were sent home early from the hospital, they should be kept in bed most of the day for another two weeks or longer. With these precautions they had not seen the neurasthenic conditions or other ill results that had been said to follow early rising.

Ectopic Gestation.—Dr. LOUIS J. LADINSKI presented this communication, giving only a short abstract of the papers published by him in 1907 and 1912, in which he reported 110 and 200 operative cases respectively. Since that time he had operated upon 45 additional cases. He said the signs and symptoms of ectopic gestation might be divided into two groups, those of the ruptured and of the unruptured. The diagnostic signs and symptoms in the unruptured type were amenorrhea, or some irregularity of menstruation, a feeling on the part of the patient that she was pregnant, pain which was sharp, lancinating, and paroxysmal in character not only referred to the affected side but particularly to the ovarian region, bleeding from the uterus usually beginning about the sixth or seventh week, enlargement of the uterus, its consistency, however, being that of the non-pregnant organ. The most reliable sign of uterine pregnancy was found in the elastic area in the median line of the anterior wall of the body of the uterus, above the junction of the body with the cervix. In tubal pregnancy, while the uterus was enlarged, the elastic area in the anterior wall was never present except where the disintegration of the decidua did not take place before the removal of the gravid tube when there was an absence of bleeding and the decidua was subsequently expelled in the form of a cast of the uterus. In this series of 245 cases in all there had been but three decidual uterine casts. A further sign was the presence of a distended tube on one side. Two negative signs of great importance were the exclusion of uterine pregnancy and the absence of elevation of temperature. The leucocyte count and the hemoglobin test were of no value in the unruptured variety; after rupture there might be an increased leucocyte count and reduced hemglobin percentage. It was a fairly safe rule to think of ectopic gestation in every patient who had had amenorrhea which was followed by irregular bleeding and pain on one side. In ruptured tubal pregnancy the additional local and constitutional signs of internal hemorrhage attendant on rupture were pathognomonic of the condition. The symptoms caused by rupture would depend for their severity on the extent of the rupture and displacement of the ovum and the amount of internal hemorrhage and would range and merge from a state of syncope to that of shock, collapse, and, occasionally, unconsciousness. The anemia, blanching of the mucous membranes, thirst, air-hunger, shallow and rapid respiration, feeble pulse, and subnormal temperature varied according to the degree of the hemorrhage and the resisting power of the patient. Locally the abdomen might be distended and tender, and palpation would elicit a fluid wave. Bimanual examination would, as a rule, reveal a soft boggy tumor on one side or the other. When the gravid contents had become entirely detached and floated in the peritoneal cavity, or when perforation had taken place during the early months of pregnancy, especially in the isthmal type, no localized pelvic tumor would be palpable, and the only evidence of rupture would be the presence of free fluid in the pelvic and abdominal cavities. Exploratory vaginal section for diagnostic purposes, except in pelvic hematocele and hematoma, was absolutely uncalled for in ordinary tubal pregnancies and was an unnecessary procedure. The only rational treatment of ectopic pregnancy was operative. It was undeniably a fact that both the mortality and the morbidity of this disease were greatly increased by delayed operation. In this series of 245 operations to date, there were four deaths and these had been reported in detail in his previous report. In one of these, death followed a simple salpingectomy in an unruptured tubal pregnancy; the other three were undoubtedly due to a delayed operation. Hemorrhage from a ruptured tube must be regarded in the same light as hemorrhage from any other source and should be checked as quickly as possible regardless of the severity of the shock. It was Dr. Ladinski's belief, justified by the results obtained in the cases of extreme collapse, that if the operation was performed with ordinary skill and rapidity, the additional shock would be so slight that it could not possibly be held responsible for a single death, especially if infusion or transfusion be resorted to as soon as the abdomen was opened. Every case of profound shock operated upon by him recovered; no case was refused the benefit of operation as long as there was a cardiac beat. The technique employed was practically identical with that employed by him in his first operation twenty-one years ago. He could not subscribe to the doctrine of deferring operation and trusting to chance, the inevitable result of which was to rapidly diminish the margin of reserve strength of the patient. He could not see the wisdom of the rule of watching the patient to see if she improved or lost ground with the view of waiting without operation when the patient was improving, and operating if she grew worse. If the patient's condition improved without operation, there could be no question that she would be better off because of the operation; but to wait until the patient grew worse meant the unnecessary loss of very valuable and precious moments and possibly the sacrifice of life. He had no hesitancy in saying that the operation for tubal pregnancy was attended by no greater surgical risk than opening the abdomen for other conditions, and shock was assuredly no contraindication to the immediate operation for ruptured tubal pregnancy.

Sacral Suspension of the Uterus.—Dr. JOHN VAN DOREN YOUNG presented this paper, which was illustrated by lantern slides. (See MEDICAL RECORD, December 4, 1915, page 980.)

The Nerve Supply of the Lower Abdominal Wall as Related to the Pfannenstiel Incision.—Dr. DAVID W. TOVEY read this paper. He said that the nerves with which they were concerned in the Pfannenstiel incision were the anterior divisions of the twelfth dorsal and the hypogastric branch of the first lumbar. After describing in detail the course of each of these nerves, he said that in the Pfannenstiel incision, after the aponeurosis had been separated from the muscle and the linea alba divided and the upper flap retracted, two or sometimes four large nerves could be seen coming up from the rectii about an inch from the median line and piercing the anterior fascia. These were the anterior divisions of the twelfth dorsal nerve. They were often half as thick as a match, double, and accompanied by blood vessels. They should not be cut, as in retracting the upper flap they could be drawn out sufficiently in nearly all cases. If scissors were used, these nerves might be taken for connective tissue and cut. In the writer's opinion this would account for some of the cases of hernia which had been reported as following a Pfannenstiel incision. If looked for, these nerves could be seen in every operation. The upper part of the anterior division of the twelfth dorsal nerve was not seen and, if care was taken to split the oblique muscles in the direction of their fibers, there was no danger of cutting it even with the extended incision used in large tumors. When a very large opening was required, the incision through the skin could be made from one spine of the ilium to the other. The incision through the aponeurosis was then prolonged over the lateral edge of the rectus muscle and the oblique muscles were split along the lines of their fibers, if necessary, out to the iliac spine. The detachment of the aponeurosis from the rectii could be effected upward as far as the umbilicus and downward as far as the symphysis, the pyramidal muscles remaining upon the flap of the aponeurosis. The rectii muscles were separated and the peritoneum severed in the midline. This made a very large opening suitable for the removal of the largest tumors and made it easy to operate deep in the pelvis. For a smaller opening, the incision was made in the pubic fold which occurred in all women at all fat. It should be made almost straight and with only the slightest curve, not crescent-shaped, as it was often described. In young women when a small incision was all that was needed, the skin incision could be made below the line of the pubic hair, the skin and fat were then pushed up and the aponeurosis divided at a higher level. There was no danger to the bladder if the peritoneal incision was started high, and in cutting toward the pubes one could tell when he was near the bladder by the thickening of the tissue and the little bleeding points encountered. It made little difference in medium-sized incisions whether the pyramidalis were left attached to the rectus sheath where they acted as tensors of the fascia, or were separated and left on the rectii, or whether the peritoneum was entered at the outer side or between them. Hemostasis should be carefully looked for before closing the incision. At the Polyclinic Hospital they had used this incision even for large tumors and in infected cases and found that it healed with less danger of hernia than the vertical incision.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

Oklahoma State Board of Medical Examiners.

January 11 *and* 12, 1916

(*Concluded from page* 676.)

OBSTETRICS AND GYNECOLOGY.

1. Give differential diagnosis of pregnancy at the sixth month.
2. What is ophthalmia neonatorum? Give prophylactic treatment of same.
3. What is pituitrin? How and for what do you use it in obstetrics? What are your methods of controlling hemorrhage in accouchement?
4. Give your treatment of puerperal infection.
5. Give your management of a face presentation.
6-7. Give in full, etiology, diagnosis, treatment, and prognosis of gonorrhea in women.
8. Under what conditions is uterine curettage indicated, and under what conditions contraindicated?
9. Give diagnosis and treatment of carcinoma of the uterus; prognosis of same.
10. Name the arteries and describe the circulation of the internal generative organs of the female.

SURGERY.

1. Give symptomatology, differential diagnosis, and treatment of abscess of brain.
2. Give etiology and treatment of acute otitis media purulenta.
3. Give technique of operation for drainage of mastoid abscess.
4. Give treatment for compound fracture of tibia.
5. Describe two well-known dressings applicable to fracture of clavicle.
6. Describe in detail the various movements in reducing iliac dislocation of head of femur by manipulation.
7. Give symptomatology, diagnosis, and treatment of acute appendicitis.
8. Give symptomatology, diagnosis, and treatment of recent tuberculosis of the knee. Give treatment after abscess formation.
9. How would you treat burns of the first, second, and third degree?
10. In case of anterior poliomyelitis, paralysis of what muscles result in talipes varus? Give treatment.

TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. Define civil and criminal malpractice.
2. Give two or more tests of personal identity.
3. In a suspected case of criminal abortion how would you determine whether pregnancy had existed?
4. What are the postmortem findings in drowning?
5. Define rape, and tell what three conditions are necessary to be produced by medical testimony to prove rape.
6. What is the first thing you would do in being called to a case of poisoning?
7. Name two reliable emetics; give dosage.
8. Give symptoms of cocaine poisoning; fatal quantity?
9. Distinguish between opium poisoning and acute alcoholism.
10. Describe physiological antidote and chemical antidote and give an example of each.

HYGIENE.

1. How is malaria transmitted? How may it be prevented?
2. What disease carriers are propagated in and about stables?
3. State the best means of disposing of and disinfecting sputum.
4. How long does a diphtheria patient remain infective? How can the termination of this period be determined?
5. What is *Trichina spiralis?* Where most commonly found?

ANSWERS.

OBSTETRICS AND GYNECOLOGY.

1. Pregnancy at the sixth month is diagnosed by the presence of the fetal heart sounds and active and passive fetal movements. In no other condition are these present.

2. Ophthalmia neonatorum is a conjunctivitis of the newborn caused by the gonococcus or some other pyogenic microorganism; the secretions of the mother contain the infecting agent, and transmission may occur directly during parturition, or indirectly by the fingers of physician or nurse, cloths, instruments, etc. *Symptoms.*—Swollen eyelids, with copious purulent discharge; ulceration of the cornea may ensue. *Prophylaxis.*—Whenever there is the possibility of infection, or in every case, wash the eyelids of the newborn child with clean warm water, and drop on the cornea of each eye one drop of a 1 per cent. solution of nitrate of silver, immediately after birth.

3. *Pituitrin* is an extract made from the posterior lobe of the pituitary gland, and is used for the relief of uterine inertia. It is best administered intramuscularly in the gluteal region in doses of 1 c.c., which may be given two or three times at intervals of half an hour. Its use is not without danger.

The hemorrhages that may affect a parturient woman are those caused by: (1) Placenta prævia; (2) premature separation of a normally situated placenta; (3) relaxation of the uterus; (4) laceration of the cervix; (5) rupture or inversion of the uterus; (6) retained secundines; (7) displaced thrombi; (8) fibroid tumors; (9) hypertrophied decidua; (10) carcinoma.

"In the presence of actual hemorrhage the treatment varies according as the placenta is still within the uterus or has already been expelled. In the former case the uterus should at once be grasped through the abdominal wall and firmly kneaded. If firm contractions come on all is well, but if the hemorrhage continues and the uterus relaxes as soon as the kneading is stopped the placenta should be expressed by Credé's method; and if this cannot be accomplished and the patient's condition is alarming, manual removal may become necessary. . . . If the hemorrhage does not cease after the delivery of the placenta, the cause should be ascertained and suitable treatment instituted. Tears should be located and their edges brought together by sutures. On the other hand, if the hemorrhage is the result of the retention of placental tissue, the carefully disinfected hand should be carried up into the uterus in order to seek for and remove the retained cotyledon. Under such circumstances the hand acts as a most efficient irritator, causing the uterus to contract energetically. After separating the retained portion of the placenta the hand should not be withdrawn at once, but should be allowed to recede gradually as it is forced down by the contraction of the fundus. If the hemorrhage is due to atony the uterus should be vigorously kneaded and from 40 to 60 minims of ergot or of ergotol administered hypodermically. . . . If these measures are not attended with the desired result a very hot intrauterine douche of several liters of sterile salt solution should be employed. . . . If the hemorrhage persists in spite of the douche our only hope of controlling it is by packing the uterus tightly with sterile gauze. Before resorting to the use of the pack it is always advisable to palpate the interior of the uterus, as occasionally a portion of the placenta may have been retained, even though immediately after expulsion the organ may have apparently been entire." (Williams' *Obstetrics.*)

In case of *post-partum hemorrhage:* Grasp the uterus at once, through the abdominal wall, and massage it firmly. Anything in the uterus should at once be cleaned out. Pass one hand into the uterus, and with the other on the outside make firm pressure. A hypodermic of ergotin or ergot can be given by an assistant. An intrauterine douche of hot sterilized water (about 115° F.) may be given. Sometimes a very thorough packing and plugging with gauze of uterus and vagina may be necessary. Whatever is done must be done promptly; and everything likely to be needed for this emergency should be prepared beforehand in every labor.

4. "*The treatment of puerperal sepsis* is both local and general. Locally a thorough disinfection of the whole genital canal is called for in every case. It may appear unnecessary, and may prove, on actual experience, to be even harmful, but no one can tell beforehand how necessary this procedure is. In the vast majority of cases it is productive of the greatest good. It is only occasionally useless, and very rarely actually harmful. It should precede all other treatment for puerperal infection. The method of disinfecting the genital canal may be described as follows: A double tenaculum, a large, dull curette, a placental forceps, and an intrauterine catheter are boiled for fifteen minutes. The operator disinfects his hands and arms and wears

sterile gloves. The patient is placed in the dorsal posture across the bed, with her buttocks resting on a rubber pad. The external genitalia and the vagina are scrubbed with tincture of green soap and pledgets of cotton; the vagina is douched with a sublimate solution, 1:2000. The operator then seizes the anterior lip of the cervix with a tenaculum. An intrauterine douche of sterile water, at least a quart, is administered. Then, with the placental forceps, and, if necessary, with a dull curette, the uterine walls are gone over thoroughly but lightly in all directions, six to twelve times, until nothing is brought away but bright blood. A second intrauterine douche concludes the treatment. If the womb is flabby and large, with a tendency to flexion, so that the drainage of the uterine cavity is not good, it is advisable to pack it with iodoform or sterile gauze. In addition to cleansing the uterine cavity, false membranes or areas of inflammation and localized infection on the cervix or vagina should be treated by the application of a solution of nitrate of silver, a dram to the ounce. It may be necessary to repeat the intrauterine douches several times—in fact, several times a day for many days; in this case plain sterile water only should be used. The general treatment is stimulating. The patient should have as much food of an easily digestible character, chiefly milk, as she can assimilate, and as much alcohol as she can consume without showing the physiological effects of it. Digitalis is useful as long as the pulse is above 110. Strychnine may be combined with it in suitable cases. To tide the patient over emergencies, carbonate of ammonium in large doses, by the bowel, and nitroglycerin, hypodermatically, may be required. Inhalations of oxygen may be of service. Absolute rest and freedom from all disturbances, mental and physical, must be insisted upon, and the patient should be given the best nursing that the family can afford." (Hirst's *Obstetrics.*)

5. *Management of face presentation:* If the chin is presenting anteriorly, expectant treatment may suffice; but care must be taken to observe that the chin does not rotate backward. Spontaneous version may occur and the presentation become a vertex one. Failing this, or as a means of favoring this, postural treatment, such as Walcher's position, has been recommended. If, in spite of this, engagement has not occurred, cephalic version is indicated, care being taken not to rupture the membranes. If this is not successful, podalic version should be tried. If, after all these manipulations, the child is still alive and the head is engaged, symphyseotomy is indicated; if the child is dead, craniotomy should be performed.

6 and 7. GONORRHEA: *Etiology.*—The gonococcus of Neisser. *Symptoms.*—Pain and burning in the vulva; pain and burning on micturition; dyspareunia; yellowish or greenish discharge, in which the gonococcus can be found; the vagina is hot, red, swollen, and tender. *Possible results.*—Cystitis, urethritis, vulvitis, endometritis, salpingitis, septic peritonitis, sterility, condylomata of vulva, abscess of Bartholin's glands. *Diagnosis* is made from the symptoms, particularly from finding the gonococcus in the discharge. It is *so serious* on account of the possible results enumerated above; it often leads to chronic invalidism, and may be the cause of death. *Treatment.*—Rest, if possible in bed; freedom from alcoholic or sexual excitement; a mild and unirritating diet; salines and diuretics; plenty of water to drink; a warm sitz bath; douching of vagina with about a gallon of a 1:5000 bichloride solution, or of borax (1 dram to the quart), or of potassium permanganate (1 per cent. solution); the douche is to be taken in the recumbent position.

8. *Curettage is indicated:* (1) For removal of placental débris, (2) in hemorrhagic endometritis, (3) in some forms of dysmenorrhea (membranous), (4) for diagnostic purposes, (5) in some cases of puerperal sepsis, (6) sometimes to check hemorrhage due to fibroids. *Contraindications:* (1) The least suspicion of even the possibility of pregnancy, (2) menstruation, (3) acute endometritis, (4) malignant disease of the uterus or vagina, (5) acute pelvic inflammation.

9. *Carcinoma of the uterus is diagnosed* by the history, symptoms, physical signs, and microscopic examination. It is a disease of advancing years, and generally occurs after the menopause; nulliparæ and multiparæ are equally liable. The chief symptoms are hemorrhage and discharge with an offensive odor, pain, and cachexia. The cervix is soft, the uterus enlarged, and tender. The uterus must be curetted, and the scrapings examined by the microscope.—*Treatment* consists in thorough removal at the earliest possible moment. This is often impracticable, because of the delay in seeking advice. *Prognosis* depends upon the time at which the diagnosis is made; in cases unsuitable for operation life is rarely prolonged beyond from three or four to twelve or eighteen months.

10. "The blood supply of the *uterus* is derived from the uterine artery, a branch of the internal iliac, and the ovarian, from the abdominal aorta. The uterine artery reaches the uterus at a point opposite the supravaginal portion of the cervix and crosses in front of the ureter at a distance of ¾ inch from the cervix. It then bends upward and runs close beside the body of the uterus, between the folds of the broad ligament, giving off a number of branches which supply the uterine wall, and at the angle of the uterus anastomoses with the ovarian artery. The spiral course of the uterine artery is for the evident purpose of allowing for the increased size of the uterus during pregnancy without causing tension of the vessels. The *veins of the uterus* take their origin in the venules of the mucosa and muscularis. The branches which traverse the muscularis are by far the most important. In the pregnant uterus they undergo enormous development and form the uterine sinuses. The uterine veins terminate in the venous plexuses of the broad ligament and anastomose with those surrounding the base of the bladder, the vagina, and rectum. The *ovary* is supplied by the ovarian branches of the abdominal aorta, which enter the pelvis in a fold of the broad ligament, and thence continue to the attached border or hilum of the ovary. They anastomose with the uterine arteries. The *veins* form a plexus near the ovary and empty into the ovarian vein, which in turn empties into the renal vein on the left side and into the inferior vena cava on the right. The *blood supply of the Fallopian tubes* is derived from the branches of the ovarian arteries which run along the lower border in the folds of the mesosalpinx. The veins communicate with the venous plexus of the broad ligament." (Campbell's *Surgical Anatomy.*)

SURGERY

1. ABSCESS OF THE BRAIN. *Symptoms:* "The symptoms in traumatic cases are acute, and, as there is usually diffuse meningitis, there is intense pain, fever, and rigors, coma quickly supervening. In the more common chronic cases the symptoms are often vague in the early stages, but when well marked consist in signs of intracranial pressure. 1. The headache and tenderness are severe and localized to the site of the abscess. 2. The temperature is subnormal, unless there is associated meningitis. 3. The pulse is markedly slowed, even down to 30 or 40. 4. The patient is quite intelligent, but cerebration is very slow; vomiting and optic neuritis are usually present. 5. Motor symptoms may occur if the abscess is in the anterior part of the temporo-sphenoidal lobe, either irritative or paralytic. If the cerebellum is affected, there is giddiness both while walking and lying down, together with weakness of the hand-grip and increase in the knee-jerk on the side affected. Lateral nystagmus often occurs.

"*Diagnosis:* From *meningitis*, by the fact that in meningitis there is fever, great restlessness, delirium, photophobia, pain and spasm in the muscles, especially at the back of the neck. An *extradural abscess* is always accompanied by fever. In *lateral sinus thrombosis* there are rigors and profuse sweats, and there may be a hard tender cord in the situation of the internal jugular vein. Chronic abscess and tumor are often indistinguishable in their symptoms, but the presence of chronic otitis media suggests abscess.

"*Treatment:* The abscess must be opened as soon as possible. Unfortunately, many cases are only diagnosable when it is too late for evacuation to produce a cure. As cerebellar abscess is more common, it is as well to explore the cerebellum first, unless focal symptoms point to the temporo-sphenoidal lobe as the site. A flap is turned down and a piece of bone removed with a trephine. The dura is then incised and the abscess punctured with a trocar and cannula or sinus forceps. These should be passed in various directions till the pus is found, and then the opening must be enlarged, the pus gently washed out, and a drain left in for several days. For a temporo-sphenoidal abscess the trephine opening should be made ¾ inch above the posterior root of the zygoma, and directly above the posterior border of the bony meatus; for a cerebellar abscess, 1½ inches behind the center of the external auditory meatus and 1 inch below Reid's base line. In most cases the mastoid antrum should be first explored; by removing the bone behind it the lateral sinus can

be exposed, and by working above or below it the cerebrum and cerebellum can be explored."—(*Aids to Surgery*).

2. *Acute purulent otitis media* is caused by pharyngitis, tonsilitis, diphtheria, scarlet fever and other fevers, adenoids, and the passage of pathogenic germs from the nasopharynx to the middle ear. *Treatment:* "Dry heat allays the pain. Warmed water or warmed carbolic acid solution (1:40) may be used. Inflations, aspirations, etc., should be avoided. If the nares are filled with tough secretions, a spray of Dobell's solution may be used. If the pain continues over six hours in a child or over twelve hours in an adult without spontaneous perforation of the tympanic membrane, paracentesis of that structure should be performed. The concha and meatus should be smeared with petrolatum to avoid chapping, and the secretions should be gently mopped off as they appear. Under this treatment the ear usually returns to normal in two to three weeks." (*Pocket Cyclopedia of Medicine and Surgery.*)

3. *For drainage of mastoid abscess:* "A curved incision is made over the mastoid about a quarter of an inch behind and parallel with, the attachment of the auricle. The periosteum is detached and the auricle turned forward until the posterior and superior walls of the osseous meatus are exposed. If a sinus is found it should be enlarged by means of a gouge, as it almost certainly communicates with the antrum. If there is no sinus, the gouge should be applied in the supra-meatal triangle, which is bounded above by he posterior root of the zygoma, below by the upper and posterior segment of the bony external meatus, and behind by an imaginary line joining these. The instrument should be directed forward and inward to avoid injuring the sigmoid sinus. If the opening be carried too high, the middle fossa of the skull may be opened. The antrum and cells having been freely opened up, the cavity is irrigated and packed with iodoform gauze, which is renewed daily till the discharge ceases, and the cavity is filled in by granulation." (Thomson and Miles' *Surgery.*)

4. "In the treatment of compound fractures the main object is to render the wound aseptic and to give efficient exit to the discharges. For this purpose the patient should in all cases be anesthetized, and limb shaved, and thoroughly purified, and the wound enlarged and thoroughly washed out with some reliable antiseptic. It may be advisable to excise torn and dirty fragments of skin, muscle, and tendon, especially when dirt has been ground into them. Loose fragments of bone are removed and portions denuded of their periosteum may be taken away lest necrosis should ensue; where fragments retain any considerable connection with the soft parts they may be left without fear. When a sharp end of one of the fragments is protruding through a small opening in the skin it is first purified thoroughly before attempting its reduction and then replaced, after enlarging the wound in the skin, or a portion sawn off. Hemorrhage is dealt with in the usual way, and the fragments are placed as nearly as possible in their normal position. If the fragments can be brought accurately into position it is well to fix them by some mechanical appliance; but where the ends of the bone are much comminuted the small portions must be arranged in position as well as possible, and no attempt made to wire them. A good-sized drainage tube is inserted, and, if need be, counter-openings are made; the external wound is closed or not, according to circumstances, and dressed and suitable splints are then applied. Under such a régime the majority of cases do well. Immovable apparatus may be used after a time, windows being left in the plaster casing to allow wounds to be dressed."—(Rose and Carless' *Manual of Surgery.*)

5. *Sayre's method for fractured clavicle:* "Sayre's dressing consists of two strips of adhesive plaster three and a half inches wide and two yards in length. The first strip is looped around the arm just below the axillary margin and is pinned or sewed with the loop sufficiently open not to constrict the arm. The arm is then drawn downward and backward until the clavicular portion of the pectoralis major muscle is put sufficiently upon the stretch to overcome the action of the sterno-cleidomastoid muscle, and in this way draws the sternal fragment of the clavicle down to its place. The strip of plaster is then carried completely around the body and pinned or stitched to itself on the back. The second strip is next applied, commencing on the front of the shoulder of the sound side; thence it is carried over the top of the shoulder diagonally across the back, under the elbow, diagonally across the front of the chest to the point of starting, where it is secured by pinning or sewing. A slit is made in this strip to receive the point of the elbow. Before the elbow is secured by the plaster it should be pressed well forward and inward."—(Wharton's *Minor Surgery and Bandaging.*)

Another method is to place a wedge-shaped pad in the axilla, raise the elbow by a sling, and bandage the arm to the side, with the hand placed on the opposite side of the chest.

6. In posterior luxation of the hip joint the patient should be placed on a mattress on the floor and then be anesthetized. The leg is then to be flexed on the thigh, and the thigh flexed on the abdomen; adduction is to be increased so that the knee is beyond the middle line of the body; then abduct, freely circumduct outward, and finally extend the limb so that it is parallel with the other.

7. *Catarrhal appendicitis with localized plastic peritonitis* begins suddenly with pain about the umbilicus or right iliac fossa, vomiting, constipation, and slight fever. There is some tenderness at or about McBurney's point. A swelling, due to matted coils of intestine, may be felt, and there is always rigidity of the muscles in the right iliac fossa. There may be pain at the end of micturition, due to stretching of inflamed peritoneum as the bladder is emptied. The attack usually subsides in three or four days, leaving adhesions.

Appendicitis with a localized abscess begins in the same way, but one or more of the signs—pain, vomiting, tenderness, and temperature—is more severe. A well-marked swelling is usually present, and the pulse steadily increases in frequency. There is also a steadily-increasing leucocytosis. A persistently high temperature, or a subnormal temperature with an increasing pulse-rate, are strong indications as to the presence of pus.

Diagnosis.—The cardinal signs are pain and tenderness in the right iliac fossa, vomiting and constipation, with some rise of temperature. If a swelling and localized rigidity are present, there can be no doubt.

Treatment.—The cases, as regards treatment during an attack, fall into two groups: (1) Where there is only plastic peritonitis; (2) where there is suppuration. In the first group the patient should be kept at rest, with hot fomentations to relieve the pain. Fluid diet should be given, and the patient not disturbed for several days by purgatives or enemata. On no account should morphia be given, as it masks the symptoms of the onset of suppuration. Where pus is present or suspected, the abdomen should be opened over the swelling, and in most cases it will be found that there are adhesions to the anterior abdominal wall, shutting off the abscess cavity from the rest of the abdomen. A finger should be gently inserted to feel for and remove a concretion or the appendix; but no prolonged search should be made for the appendix for fear of breaking down the adhesions. A large rubber drainage-tube should be inserted, and the cavity will soon become clean and heal by granulation. If, when the abdomen is opened, no adhesions to the anterior abdominal wall are found, the cavity should be protected with gauze packing. The abscess will then be found among a mass of matted omentum and intestine, and can be opened by gently separating them. A drainage-tube is inserted, and the gauze packing is left in for three days. By that time firm adhesions have formed and the peritoneal cavity is safe from infection. When general peritonitis is present, the abdomen must be opened and drained and the appendix removed; but these cases are almost always fatal. In any case in which the symptoms are excessive, especially with a rapidly increasing pulse-rate, an operation should be done, as this gives the only chance in cases where there is suppuration without adhesions, especially in those cases due to perforation or gangrene, —(From *Aids to Surgery.*)

8. In *tuberculosis of the knee* there will be slight pain, limping, some limitation of motion, swelling, the joint is spindle-shaped and the skin over it is white; palpation imparts a doughy sensation; night cries may be noticed, the knee is held in a position of flexion. Diagnosis is aided by the *x*-ray, an examination of the aspirated fluid, and (possibly) the tuberculin test. Treatment consists of immobilization of the joint with plaster of Paris or a splint; injections of iodoform are useful; erosion or excision may be indicated. Constitutional treatment includes fresh air, good food, sunshine, and tonics.

9. *Treatment of burns.—General:* If carbonic-oxide

poisoning is present, artificial respiration and administration of oxygen. For shock, opium and stimulants. *Local:* For burns of the first degree, powder with boracic acid. Puncture blisters, and cover the part with an antiseptic dressing. Burns of deeper degrees than the second must be made aseptic with 1 in 1,000 perchloride of mercury. Carbolic acid is absorbed readily, and must not be used. Antiseptic gauze dressings should then be used. Picric acid (20 grains to 1 ounce of water) is used as a dressing. It lessens the pain, and can be left on two or three days. The continuous bath may be used. If the burn be of any size, it should be skin-grafted, as the scars of burns contract very much, and may produce deformities. (*Aids to Surgery.*)

10. In case of acute anterior poliomyelitis talipes equino-varus is due to paralysis of the peronei, tibialis anticus, and the extensors of the toes. The treatment varies in different cases. If the deformity is easily corrected, and the paralysis is confined to the peronei and extensors, tendon transplantation may be performed, the tendon of the tibialis anticus being attached to the cuboid, and a strip of the tendo Achillis to the dorsal aspect of the tarsus. If the condition is more severe, it may be necessary to divide the plantar fascia and ankylose the various joints involved. The after-treatment includes massage, exercise and electricity.

TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. *Malpractice* is a failure on the part of a medical practitioner to use such skill, care, and judgment in the treatment of a patient as the law requires, and thereby the patient suffers damage. If due to negligence only, it is *civil* malpractice. But if done deliberately, or wrongfully, or if gross carelessness or neglect has been shown, or if some illegal operation (such as criminal abortion) be performed, it is *criminal malpractice.*

2. "When a body entirely unknown is found, the decision as to identity may be simplified by exclusion, so that such general questions as those of sex, race, age, height, and weight, are first settled; then with the help of the clothing, vocational stigmata, and the circumstances under which the body is found, much may be learned as to the individual and the class of life from which he came. The color, amount, and character of hair, color of eyes, the condition and number of the teeth, and general type of features, the presence of deformities, tattoo marks, and cicatrices, will, in the entire and fresh, unmutilated body, give us a basis on which to rest a thorough and complete identification. It frequently happens, however, that bodies of unknown dead are found after the lapse of days or weeks, or, when found in water or in the woods, may be so disfigured as to make useless most of those means of identification which are most commonly used. In such instances one makes the most of those points which are at his command. When from decomposition, or for other reasons, it becomes necessary to bury or in other ways dispose of the body before identification is complete, proper photographs should be taken, and the contents of the pockets, and other possessions found on or about the body, which may assist in identification, should be retained for future reference."—(Dwight's *Medical Jurisprudence.*)

3. The presence or absence of the usual signs of pregnancy. The condition of the breasts may be of some importance. Much will depend on: (1) the time that has elapsed between the abortion and the examination of the woman, (2) the period of pregnancy when the abortion was performed, and (3) the manner in which the abortion was performed.

4. *In death by drowning:* The surface is pallid, the face appears tranquil, the eyes and mouth being partly open. The skin often has the appearance known as gooseskin, and, if the body has lain upward of twelve hours in the water, that of the hands and the feet is sodden by inhibition. The most important external sign is the presence on the mouth and nostrils of a fine froth (possibly blood stained), composed of air, mucus, and the medium in which drowning took place; if the body remains three or four days in water, the froth disappears. Exceptionally, fragments of weeds or other small objects may be found tightly grasped in the hands. On opening the thorax the lungs, gray in color, with reddish staining are seen to be very voluminous, a condition known as ballooning, partly due to infiltration of the lung tissue with some of the medium in which drowning took place, and partly to true edema. The lung substance is inelastic and pits on pressure. On section, fluid and froth resembling that found on the lips exude from the divided air passages. Minute subpleural hemorrhages are not infrequently present, and the pleural cavities may contain fluid. The stomach often contains water or other liquid which was involuntarily swallowed during attempts at respiration. Occasionally some of this fluid is forced by vital action into the intestines. With one exception, the remaining appearances are those met with after death from asphyxia. The exception is constituted by the blood, which is not only dark colored and fluid, as is usual after death from asphyxia, but is also diluted by the imbibition of water from the stomach and lungs.—(Quain's *Dictionary of Medicine.*)

5. *Rape* has been defined as being the carnal knowledge of a woman against her will. But the element of will may or may not enter into the case; consent if it be obtained by fraud or from one mentally deficient, or under age, does not relieve the criminal from the charge of rape. Rape may also be perpetrated when the victim is unconscious or in such other condition as to interfere with the action of the will.

Medical evidence is usually based on: (1) The presence or absence of bruises, wounds, or other signs of injury upon or about the genital organs. (2) The presence or absence of seminal stains or blood-stains upon the person or clothing of those concerned, and the presence or absence or spermatozoa in the vagina. (3) The presence of venereal disease in either party.

6. *In case of poisoning,* the following rules have been suggested: (1) Lose no time; (2) use the best remedy available at the moment; (3) get rid of the unabsorbed poison; (4) stop the action of such poison as has been absorbed; (5) remedy such mischief as has been done; and (6) keep the patient alive, if possible.

7. *Two reliable emetics:* Apomorphine hydrochloride, gr. 1/10, by hypodermic; zinc sulphate, gr. xv.

8. *Symptoms of cocaine poisoning:* Fulness of head, general sense of oppression, nausea, vomiting, headache, giddiness, rapid pulse and respiration, nervous excitement, dilated pupils. *Toxic dose:* Half a grain has caused death.

9. In *poisoning by opium:* The symptoms are of slow onset, drowsiness is followed by stupor and lethargy, the muscles are relaxed, the patient cannot walk, the face is pale, and the pupils are contracted, respirations are very slow.

In *acute alcoholism:* There is a stage of excitement prior to the stupor which comes on rather suddenly, the face is flushed, and the pupils are generally dilated, respirations are regular.

10. *Chemical antidotes* act as such by uniting chemically with the poison and thus converting it into a harmless or insoluble compound; as magnesium sulphate in lead poisoning, which converts the lead into insoluble lead sulphate.

Physiological antidotes act as such by combating the physiological action of the poison; thus opium will counteract the dilated pupil caused by atropine.

HYGIENE.

1. *Malaria* is *transmitted* by the bite of the anopheles mosquito. *Prophylaxis of malaria:* Individuals should use mosquito netting around their beds and wire gauze in doors and windows so as to keep out the mosquitoes as much as possible. During residence in malarial districts quinine should be taken every morning before breakfast. All pools, stagnant water, etc., where *anopheles* may breed, should be removed. All mosquitoes, larvæ, etc., should be destroyed as far as possible. By staying indoors during dusk and darkness, opportunities for infection may be avoided. Occasional fumigation with formaldehyde or sulphur is also beneficial.

2. Flies (which may carry typhoid, cholera, dysentery, tuberculosis, and possibly scarlet fever, smallpox, measles, pellagra and anterior poliomyelitis); and rats (the flea on the rat carries bubonic plague).

3. The best way to dispose of sputum is to burn it; the best disinfectant is probably 5 per cent. carbolic solution or 2½ per cent. cresol.

4. A diphtheria patient remains infective so long as any membrane or discharge remains, and while any bacilli can be found on bacteriological examination; generally about four weeks. The infective period may be believed to have been passed when the patient is free from all signs of congestion or rhinitis, and when continued bacteriological examination is persistently negative.

5. *Trichina spiralis* is a nematode worm which, in its adult stage infests the intestinal tract of man and other animals (chiefly mammals); the larvæ are found in the muscles. The worm is most commonly found in man, hog, rat, guinea-pig and rabbit.

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Original Articles.

PERIOSTITIS AND OSTEITIS

AS A CAUSE OF LOCAL PAINS AND SO-CALLED NEURITIS AND NEURALGIA.

BY CHARLES L. DANA, M.D.

NEW YORK.

PROFESSOR OF NERVOUS DISEASES, CORNELL UNIVERSITY MEDICAL COLLEGE.

ABOUT seventy-five years ago, Valleix wrote a treatise on neuralgia and described its painful points. He used a classical grouping of neuralgias which has continued in literature ever since. I have myself paid obeisance to the Valleix points and the well ordered arrangements of the academic neuralgias. But as experience has increased and neuropathology become a more accurate science I have come to doubt and finally quite disbelieve in the merit of these old neuralgic formulæ.

If by neuralgia is meant a chronic or subacute malady, functional in nature and characterized by pain along a nerve, one must ilmit its existence to a few types and call it a rare disease.

Its place has been taken in a degree by the term neuritis, which has of late become a common, one might almost say, a "smart" disease. But unfortunately neuritis is a term now used with as little real definiteness of knowledge as neuralgia. It is often only the refuge of a confused diagnostician. One may see patients with almost every painful neurosis from tabes to myelitis who say that they have been told they had neuritis. Inflammation of nerves, to be sure, is not so very rare, but one can not have neuritis without some of the cardinal symptoms: muscular weakness, wasting, reaction of degeneration, objective sensory disturbance, and tenderness along the nerve.

Reflex pain is frequent and is a legitimate diagnostic term but it has not the darting paroxysmal character of neuralgia or the objective symptoms of neuritis.

In recent years some neuralgias, notably sciatica, have been shown to be of arthritic origin and character, and the routine treatment of sciatica now is to bind and immobolize the limb and pelvis. A genuine sciatic neuritis is a rather rare disease.

As we pass along the list of classical neuralgias we can easily more than decimate it. Thus trigeminal neuralgia holds its own as a clinical entity but it has an organic basis usually, and is probably an anginal neurosis. Cervical neuralgia, so-called is usually only a migraine, or a myositis, or something allied thereto. Brachial neuralgia is usually a low grade of neuritis. Intercostal neuralgia is almost never seen and when it exists is due to tabes or an acute posterior ganglionitis, being then an abortive herpes zoster.

We find that most of the lumbar and pelvic neuralgias are due to pressure, reflex causes, arthritis and bone disease. In fact most of the chronic and apparently functional pains are now to be attributed to the disorders of joints, muscles, and tendons. And we have mostly nowadays to deal not with varieties of typical neuralgia but with *local pains* of occipital, brachial, intercostal, lumbar, crural, or sciatic distribution.

It has been found that some of these are due to infections attacking joints, muscles, and tendons.

I wish to offer to-night evidence that in certain cases these persistent pains are due to osteoperiostitis of acute infectious origin. I have no anatomical proof of my thesis; and this is only a clinical paper; but when one finds cases in which the *x*-ray demonstrates periostitis; when the clinician finds a source of infection and the toxin of this infecting organism reacts in the blood; when one makes autogenous vaccines and administers them with relief, it makes a fairly definite and logical proof that ordinary infection from the tonsils and the teeth and other sources may sometimes lodge upon the bones and cause local forms of periostitis and osteitis, causing often excruciating pain. All this is admitted in so far as the joints are concerned and we know perfectly well that certain dental, tonsillar, and prostatic infections will cause chronic inflammatory processes about the joints.

What I hope to show is that similar infections cause not so very infrequently local areas of periostitis, non-articular in site, and give rise to pains which are called sciatica or intercostal, or brachial neuralgia and other forms of painful neuroses.

It is well known that the chief causes of periostitis are tuberculosis and syphilis; also that it follows acute infections like typhoid fever and may be due to rickets and to direct trauma with infection.

I am assured by surgeons and by workers in *x*-ray that evidences of periostitis and ostitis are found quite frequently in their *x*-ray work, and that they often cannot explain them. So I infer that unexplained forms of osteoperiostitis are not so very rare. Finally, there are a great many obscure and persistent pains which are met with by the practitioners and which often reach eventually the neurologists or the orthopedic surgeons. These pains are usually first attributed to rheumatism, then to neuritis or some form of myositis or arthritis, or they are called neuralgia or reflex pains. Some of these, I think, may be explained on a periosteal theory; for periosteal and bony irritations are extremely painful affairs.

I do not like to read a paper made up of reports of cases, but I see no other way of proving my point, and I will be as brief as possible.

*Read before the New York Academy of Medicine, March 16, 1916.

Case I.—Mrs. B., age 42, married, no children. The family history is negative. The early history presents nothing of importance. There was no tonsillar, rheumatic, or luetic history and no tuberculosis.

The patient's trouble began about four years ago and it had lasted for about two years when I first saw her.

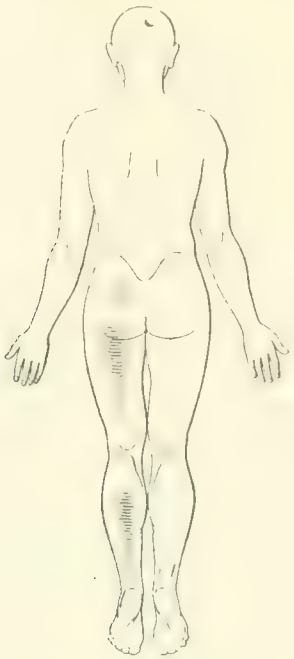

Fig. 1.—Case I. Mr. B.

The symptoms came on without any special cause, although they were attributed to weak arches. They consisted of pains in the foot and calf of the left leg extending up gradually to the hip. These pains were increased by walking and standing and they became more extensive, so that they finally involved the whole of the leg, at times. For a while she had some pain in the right leg. These pains caused her a great deal of suffering and incapacitated her from an active life. She was obliged to lie down and be in bed a large part of the time.

During the course of the two years previous to my seeing her, she had some short intervals of partial relief, but nothing more. During this time she consulted many surgeons, neurologists, and general practitioners, and she spent some time in a sanatorium. She had arches made for her feet, and her legs were strapped and she

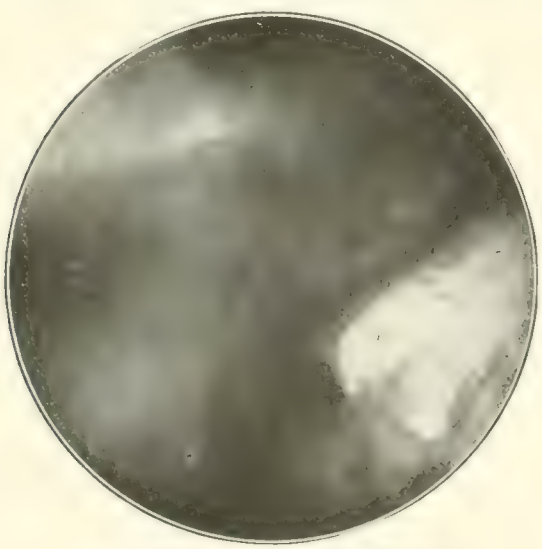

Fig. 2.—Case 1 Showing periostitis

had plaster casts made for her pelvis and thighs. She had many forms of medication, including injections of novocaine into the region of the sciatic nerve and injections of mercury and cacodylate of soda, injections of stock vaccines and of quinine and urea. She received also large doses of iodides and was treated with heat and massage.

The diagnosis first made was that of weak arches and later that of sciatica, neuritis, arthritis of the sacroiliac and other pelvic joints.

The patient's condition varied, but on the whole remained about the same. She was growing worse, however, when she consulted me in May, 1914.

Patient was a fairly well nourished woman, weighing about 130 lbs. She as able to stand and walk, but walked with her body bent forward and unsteadily as though her leg was weak and the walking hurt her. She said that walking would cause at first pain in the calf of the left leg and this would increase and extend up and involve the thigh as far as the crest of the ilium and become so severe she had to lie down. The central areas of pain were in the lower part of the left leg above the tendo Achillis and in the upper part of the back of the thigh. Sitting down caused pain in the left buttock. (Fig. 1.)

Examination showed that the left leg was slightly smaller than the right but the difference was not abnormal. There was some incapacity to flex the foot on the leg, owing apparently to a drawing-up of the tendo Achillis. There was exaggeration of the ankle and knee jerks, left being more lively than the right. There was a slight pseudo-clonus in the left foot but no Babinski. She could not straighten out the leg or lie perfectly flat on the floor or stand up perfectly straight without its causing some pain in the leg and hip. This pain finally reached the left sacroiliac joint which was slightly tender. There was no tenderness over the nerve, no anesthesia, cutaneous or deep, no paralysis or weakness of the segments of the limb.

The hip joint was perfectly free and mobile and movements of it caused no pain. She could raise the two legs from the bed when the knees were straight but only with difficulty, and it caused pain to extend the legs fully on the thigh. Above the waist there was no abnormal disturbance found; the trunk muscles were normal, the arms and their joints were normal, and the cranial nerves were normal.

Dr. Thomas W. Hastings was called in and he made examinations of her blood, of pus found in the roots of the teeth, and of the urine. The blood was found to be negative to lues, the gonococcus, and 12 strains of streptococcus, but positive to *Streptococcus viridans*. The pus from the teeth showed the presence of *Streptococcus viridans*. There was no anemia or leucocytosis.

Examinations of the other organs and of the urine were negative. Cultures were made of the streptococcus and the vaccines were prepared and she was treated with these vaccines at varying intervals during the following year and a half.

The patient almost immediately began to improve. She had some relapses, but never got back to the point where she was when I first saw her.

In July, 1915, it was decided to remove all the teeth in which the abscesses existed. Improvement followed this partial removal of the teeth in July. In November, 1915, all the teeth were removed. Since then the patient has been practically well.

The *x*-ray made in the spring of 1914, when I first saw her was reported to be negative, but that made in November, 1915, by Dr. L. G. Cole showed irregularity of the surface and *periostitis* of the pubes and ischium. (Fig. 2.) The hip joint and sacroiliac synchrondrosis were normal. There was evidence of a slight osteoperiostitis of the lower end of the tibia and fibula with enlargement of the sheath of the tendo Achillis.

The conclusion from this history is that the patient had an infection which produced a low grade of osteoperiostitis involving the lower bones of the left leg and later the bones of the pelvis, but not involving any of the joints. The general infection caused also some Achillis tenosynovitis. The osseous invasion must have been slight and yet it caused very persistent pains and incapacitated the woman from standing or walking very much for two years.

The fact that no other lesion was demonstrable and that the patient responded to the use of vaccines and the removal of all foci of infection make the conclusions that this long case of painful invalidism had the origin and pathology which I have described.

The history of the case is supplemented by laboratory examinations of the blood and of the urine

and bacteriological examinations and reports of the *x*-ray men.

The *x*-ray examination made in May, 1914, by Dr. Caldwell showed only positive evidence of abscesses at the roots of two of the teeth.

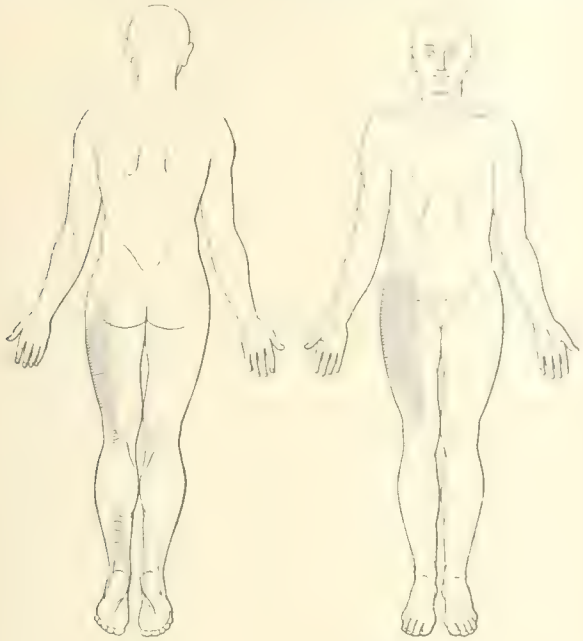

FIG. 3.—Case II. Mrs. K.

A nitrogen partition made by Dr. Hastings in May, 1914, was practically negative. There was a slight trace of indican.

The nitrogen partition made by Dr. Hastings in June, 1914, again was negative except for an increase in indican.

Examination of the stools by Dr. Hastings in May, 1914, showed nothing abnormal.

The examination of the blood for hemoglobin and cell-count made in 1914 and in 1915 showed that the blood was normal with no increase in leucocytes.

Examination of the blood for Wassermann by Dr. Kaplan in May, 1914, was negative.

CASE II.—Mrs. L. K., married, aged 25. The family history is not very complete. The mother died at forty, the cause being unknown. The father is alive and well.

FIG. 4.—Case II. Showing areas of osteosclerosis at point marked X and neighborhood. (Dr. William Klein.)

The patient has always been well up to the time of the present illness. She married in 1911 and gave birth to a healthy child in March, 1912.

In July, 1912, she complained of pain in the right thigh, and a tentative diagnosis of sciatica was made.

She came to see me in June, 1913, in consultation with Dr. William Klein. Her statement was, however, that in July, 1912, she woke up in the night with pains in the right groin. These, later, extended into the back and buttocks and ran down to the knee. They seemed to run largely in the course of the lower lumbar and sometimes in the anterior crural nerves and extended down below the knee on the right side. The pains were increased by standing and walking. She had been treated for sciatica for a number of months, and had received subdural injections of saline solution without benefit. She was then taking 45 grs. of aspirin a day, which temporarily gave her relief. She was also relieved by rest.

Examination showed no objective disturbances of the parts affected. The knee-jerks and ankle-jerks were normal. There was no disturbance of gait or station; no atrophy or paralysis of the legs; no tenderness, particularly in the course of the nerves; no anesthesia; no disturbance of the sphincters. The patient complained of severe and more or less continuous pain in the right thigh about in the region indicated by Fig. 3.

There was no tumor or evidence of growth either by external or rectal palpation.

The various bodily organs and the blood were normal. The Wassermann test negative.

I concluded that the case was one not of nervous but of bony disturbance and advised an *x*-ray. This showed certain peculiar spots on the ischium. The *x*-ray photographs were made by three men, all with the same results.

The patient was finally taken to Mr. Sinai Hospital, where she was operated upon by Dr. A. A. Berg.

Dr. Berg writes me that when he operated, the patient presented a tumor-mass corresponding on the right ischium near the symphysis pubis. He cut down upon this region and removed a considerable part of the apparently diseased part, which had been thought to be sarcoma; but Dr. Berg states that the bony tissue at the time of operation did not appear to be of sarcomatous or of tuberculous nature.

The pathological examination was made by Dr. Mandelbaum who writes me that the bone removed showed simply eburnation with no suspicion of any tumor or tuberculosis.

The relief from operation was immediate and the patient has been well ever since, and it is now a period of two years.

The accompanying slide shows the appearance of the pelvic bones in the *x*-ray photograph. (Fig. 4.)

No one seems able to interpret exactly the nature of this bony trouble, but it is certain that there was some inflammatory or sclerotic process of the pelvis, which produced pains radiating down the groin and along the back and outer side of the hip in the region superficially of the ilio-inguinal and genito-crural nerves.

The part most affected was the ramus of the ischium. The muscles attached to this part are the external obturator, the gracilis, and the adductor muscles of the thigh, which, however, were not involved in any apparent irritation or spasm. The muscles here are supplied by the 2nd, 3rd and 4th lumbar and the sensory nerves which were involved in pain correspond about with the distribution of the 1st, 2nd and 3rd lumbar segments on the back and side of the thigh, so that it is easily understandable that a local irritation at the points of lesion would cause pains in the region where the patient did, in fact, suffer. For the pains, in fact, were in the distribution cutaneously of the 5 lumbar segments.

I mention these facts since some suggestion has been made that the pains were psychical, because of their rapid disappearance after operation, and because of the benign character of the condition found on operation. The locality of the pains, however, and the absence of other symptoms show that the pains were due to the lesion that was attacked so effectively by the operation.

No dental or blood examinations for infection were made in this case.

CASE III.—Mr. T. A. P., aged 55, married. The father is living and healthy. Mother died of Bright's disease. There has been no rheumatism in the family.

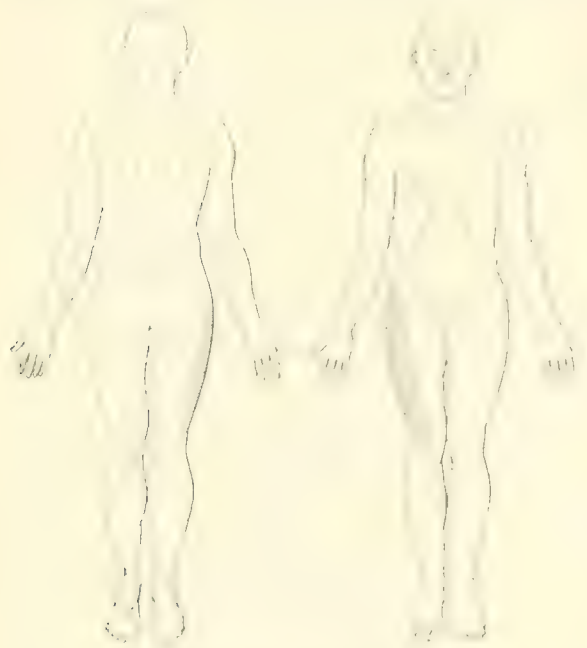

FIG. CASE III. MR. P.

Patient had gastric ulcer when a young man. He has been active, hard-working, very temperate and regular in his habits, with no record of tuberculosis or lues. He has never had any attack of acute or chronic rheumatism, or of tonsillitis. He has had pyorrhea for a number of years, and he has suffered at times from attacks of dyspepsia.

About six months before I saw him, in the summer of 1915, he began to have pains in the right thigh. These caused some difficulty in walking. The pain has been gradually increasing and finally has become practically chronic, but lessened by rest and increased on walking, sitting down, or on rotating the thigh.

When I saw him in October, 1915, he appeared as a strong, well-nourished man, walking with a good deal of stiffness on account of pain in the right thigh.

The general examination showed nothing of importance. Heart and lungs and kidneys were normal.

FIG. 6.—Case III. Showing periostitis.

The station, reflexes, and objective sensation were normal. The cranial nerves were normal.

The pain from which he suffered was located in the front and side of the right thigh and knee and he had to keep changing his position to get relief. Walking would make it more severe; and in sitting he had to shifting his position often to get relief. It was relieved in the main by lying down. (Fig. 5.)

Examination showed that he was unable to extend the trunk fully on the thigh or rise from a low step, or step up a high step with the right leg without pain. He had some difficulty in freely abducting and adducting the leg and he could not flex the thigh fully on the abdomen. Nevertheless, the hip did not seem to be definitely involved. The thigh could be manipulated quite freely, and there was no tenderness on jarring him or on pushing the thigh against the pelvis. He had no atrophy of the thigh. The knee-jerks were present and lively, the left a little more so that the right. The limbs showed no anesthesia, superficial or deep.

The case seemed to be one of pain due to bony disease and he was sent to Dr. Lewis G. Cole, who made the following report:

"The frontal and maxillary sinuses and ethmoid cells show no evidence of involvement. The roentgenograms and films of both sides of the jaws show distinctly the contour and structure of the alveolar process, and the teeth, their roots and fillings. There is no evidence of an abscess around any of the teeth. There is, however, a pericementitis and some recession of the alveolar process around the shaft of the teeth. This is especially marked in the center of the lower jaw, where there is a destruction of the bone between the teeth, but not around the apices. Roentgen Diagnosis:

"Steresocopic roentgenograms of the hips show distinctly the contour and structure of the bones and the muscles and soft parts. I am unable to detect any change in the head or neck of the femur. However, there is a periostitis of the inner surface of the pelvis, and particularly of the inner surface of the horizontal ramus of the pubes, on the right side. This is evidenced by the raising and the thickening of the periosteum. This is the second case of this sort that we have had inside a week [referring to Case I].

"Roentgenograms of the lumbar spine show distinctly the bodies of the third, fourth and fifth vertebræ and the sacrum. The bodies of the vertebræ are normal in size, shape and position, and the spacing between them is adequate. I am unable to detect any lesion in this region to account for the symptoms." (Fig. 6.)

The patient was also sent to Dr. T. W. Hastings who made a Wassermann test of the blood which was negative, and fixation for the gonnococcus and 12 strains of streptococcus, which was also negative. Examination of pus from the gums showed the presence of *Micrococcus albus* and *Streptococcus viridans*. Examination of the feces by Dr. Hastings showed nothing but an excessive protein putrafaction and excess of urobilin. A nitrogen partition was also made of the urine without any very definite results.

Here again is a case of periostitis and ostitis involving the bones of the pelvis but not the hip joint and causing very severe and agonizing pains. Here, too, the cause of the infection was not discovered; but it is plainly not due to the ordinary causes of periostitis. The pains were so severe and so difficult to relieve that it was feared there was a malignant growth. Eventually these proved to be the case and the periostitis must have been due to cancerous irritation.

CASE IV.—Mr. J. B.; aged 25; single; teacher by occupation. The family history showed evidence of arteriosclerosis, but not of any form of rheumatism.

As a boy was rather delicate, and in the first two or three years of his life he had rickets. He had diphtheria at the age of six, and received antitoxin. Later he had some enlarged glands in the neck which disappeared. He had appendicitis and was operated on at the age of twelve. As he grew up he developed into a fairly strong man and indulged actively in athletics.

He had never had an attack of rheumatism, but he had had two attacks of tonsillitis and his tonsils were removed. He has very good teeth and has never had any luetic or gonorrheal infection. He was temperate in his habits except that he was inclined to overdo his work, both mentally and physically.

While a junior in college after playing squash, he noticed in the course of the evening that his left leg was painful and weak, though he had not been hurt during the game. He kept it tightly bound up in

flannels and in a few weeks he got well. The pain returned some months later, and it has been with him at times ever since, but in the last year it has become worse and distressed him very much. It was at first not very well defined, but finally centered over the left thigh. About a year before my examination he had de-

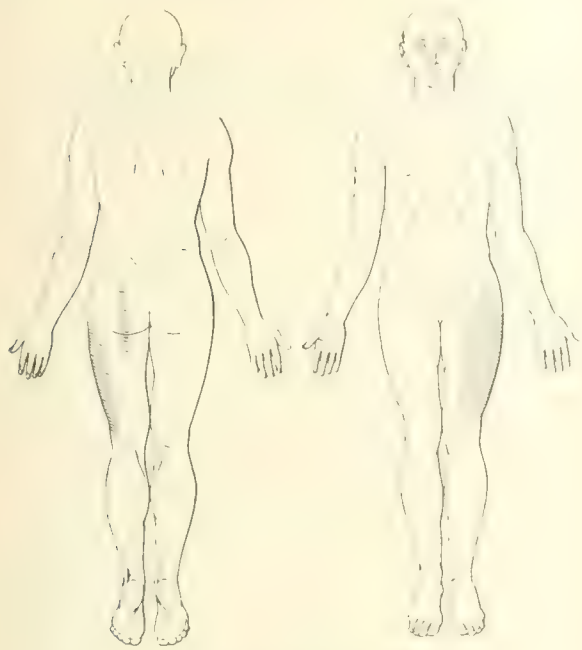

Fig. 7.—Case IV. Mr. B.

veloped a certain amount of depression and neurasthenia and lost weight.

I saw him first in February, 1913, about four years after the pain was first noticed. At that time he was feeling well, except that he suffered from the pain in his left thigh; and it was for this that he especially consulted me. He was a well-developed, active young man, sound in all his organs, with no had habits and no lues. The pain was rather diffuse and was located about the anterior and external part of the thigh. (Fig. 7.) The pains in his legs were relieved by rest and brought on by active exertion. There was no tenderness of the muscles; no atrophy; no weakness; no anesthesia or hyperasthesia of the parts. The gait and station were normal and the reflexes were normal.

Examination of the blood and heart and kidneys showed them to be normal.

The patient had been treated for neuritis, for myositis, and for neuralgia without any result. I could find no evidence of any objective disorder of the nerves or muscles, and I had an *x*-ray taken by Dr. Caldwell. This showed a thickening of the upper part of the left

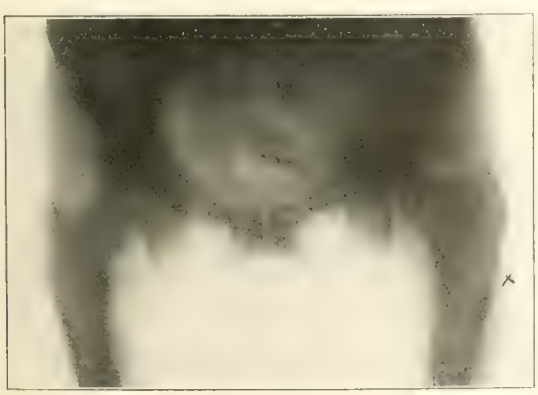

Fig. 8.—Case IV. Showing periostitis of upper part of the left femur at point marked X.

femur with a condition which was regarded as an osteitis, more than a periosteitis. (Fig. 8.) I could not discover any cause of the trouble. There was no tuberculosis and no syphilis, and no evidence of trauma or local infection.

Tests made of the blood made by Dr. Hastings failed to reveal any complement-deviations; and the teeth were sound.

The patient was put upon tonic measures and given moderate outdoor work and massage. He gradually improved, and for the past year he has had very little trouble with the leg. He is still, however somewhat conscious of it and the pain will come in this part after any severe exertion.

The second *x*-ray made three years after the first examination shows the condition of the bone to be practically the same.

In this case, I am obliged by process of exclusion to attribute the pain to osteoperiostitis. I am unable, however, to say what is the cause of the trouble. We can certainly exclude ordinary causes such as tuberculosis and syphilis and trauma with infection. I am unable to exclude, however, an infection by some microbe like the *viridans*.

It is possible to suppose that during violent muscular effort the periosteum was torn up or ruptured and an osteitis supervened. This is a somewhat farfetched theory, however, because the muscular attachments in the joint where the ostitis is present are very few. The vastus externus and the gluteus maximus and minimus are attached near this region, also the upper part of the crureus. The direct action of these muscles, however, produces no pain and it was only by a general and more violent and continued exertion that pains were brought out.

The conclusions which I draw from these experiences are:

1. That acute infections from the teeth, tonsils, and other foci may cause local forms of osteitis and periosteitis.

2. That this fact must be reckoned with in diagnosticating neuralgia and other persistent and distressing local pains.

3. That the joints are not the only regions attacked by acute infection; and that the arthritis explanation of pains in the back and extremities has been perhaps overdone. So-called "sciatica" for example, is not always arthritic or myositic or neuritic.

4. That further study is needed to corroborate these findings of mine, and to determine the source and nature of the infections that produce them.

5. That syphilis and tuberculosis do not play so large a part as supposed in the causation of these minor types of ostoperiosteitis.

6. That "neuralgia" as usually defined is a very rare disorder, and its diagnoisis is to be made only after careful examination of muscles, bones, nerves, nerve centers, and sources of reflex irritations.

I am indebted to Dr. Wm. Klein for notes of one case and to Dr. Hastings for much helpful cooperation in this work.

53 East Fifty-third Street

Treatment of Rabies with Quinine and Phenol.—Frank S. Fielder, after reading the report of a case of rabies treated successfully with quinine and urea hydrochloride, receiving 90 grains intravenously, decided to try the treatment on a child who had been treated irregularly by the Pasteur method and who developed the typical symptoms of the disease. The drug had no apparent effect and the necropsy showed the Negri bodies in the brain. Four additional cases treated by either intravenous or subcutaneous injections of quinine and phenol were likewise unaffected by the treatment. The writer concludes that the case reported as cured was probably not one of rabies and that these drugs have no specific effect on rabies.—*Journal of the American Medical Association.*

AUTOSENSITIZED VACCINES.*

By M. C. Wohl, M.D.,

Omaha, Neb.

Much has been done in the field of vaccine therapy, yet this method of immunization before and during disease is not being fully appreciated by the practitioner. It is true that a great deal in vaccine therapy is not based upon established scientific data, yet the results obtained by vaccines have been so brilliant in cases bacteriologically diagnosed and carefully guided, that it becomes imperative to approach the question unbiased to recognize its limitations and to understand the theory upon which the employment of vaccines depends.

The prophylactic use of vaccines has been known since the time of Jenner and Pasteur. Recently its usefulness has been demonstrated in immunization against typhoid fever.

The application of vaccines for treatment of already existing disease has been given wide popularity by the work of Wright and his pupils. It is this phase of vaccine therapy that we propose to consider in the present writing.

When an infectious disease attacks the organism a contest ensues between the offensive properties of the germ and the defensive mechanism of the body; the factors upon which the combat depends have been variously explained. Yet, the theory put forth by Vaughan is the simplest and most rational.[1]

The infecting agents as we know them, bacteria, moulds, yeasts, and protozoa, are living proteins, which are capable of growth and multiplication. Like all living units, in order to exist they must get food of proper kind to fit into their structure. Germs that cannot utilize the protein of an animal are not pathogenic for it. So that the mere presence of a microorganism is not enough to produce disease.

Organic units live by means of ferments. There are ferments of two kinds, analytic and synthetic. The analytic ferments split up the food into proper building stones, "Bausteine," while the synthetic arrange them in the cell molecule. These ferments are usually spoken of as extracellular and intracellular.

The extracellular diffuse through the medium, while the intracellular remain within the cell and do the constructive work. The ferments are specific in the sense that they can split up a certain protein; besides this there are a number of other factors which regulate the relationship between ferments and substrate, such as temperature, environment, etc.

This explains why some animals are susceptible to certain diseases, while others remain immune. For example, ordinary sheep are easily infected with anthrax, while Algerian sheep are immune to it. Or, as Koch has shown, the bacilli of mouse septicemia and cocci that induce necrosis multiply simultaneously in the white mouse, while the field mouse, when inoculated with mixed cultures, responds to the latter and the former fails to develop.

The introduced foreign protein provokes the formation of ferments which act now on the defensive and break up the foreign substances, *e. g.* bacteria, into several groups, a primary group (archon, keystone) with which are connected secondary and tertiary groups.

*From the Pathological Laboratory of the Nicholas Senn Hospital.

It is also Vaughan's idea that the primary group is set free by the ferments and is responsible for the symptoms of disease, for it constitutes the poisonous group of atoms of the molecule. The secondary and tertiary groups are non-poisonous; they stimulate the body cells to the formation of ferments or enzymes, which have the power of rapidly digesting a homologous protein. Thus, according to Vaughan, the pathogenicity of a virus is determined by its ability or inability to grow in the body of an animal. Its inability to do this may be due to the fact that it either cannot utilize the body protein for its food or because the ferments of the body cells digest the invading bacterial protein. To cause the formation of such ferments is being aimed at by the administration of vaccines. Vaccination is brought about by the introduction of dead bacteria, either sensitized or not, or attenuated live bacteria.

Immunization by live bacteria is more substantial, yet there is danger of the vaccine proving too virulent and causing the actual disease; or the individual may become a carrier.

Vaccination with killed bacteria is the method adopted at present in human medicine. Immunity

Fig. 1.—M. R., before treatment: had been subject to furunculosis for a number of years.

established by killed germs is durable, lasting from three to six months or even longer. However, during the process of immunization, local or general symptoms may arise. In our experience with autogenous vaccines we have found that if the patient develops a marked local reaction (redness, induration at the site of the injection), and moderate constitutional symptoms, such as slight rise in temperature, slight discomfort, etc., the ultimate results derived from the vaccines are more satisfactory than if the vaccines are not followed by any temporary local or constitutional changes. We have learned to welcome "reactions" during immunization rather than to fear them.

The modus operandi of bacterins, then, is to stimulate the body cells to the formation of protective ferments, which consist of amboceptor and complement. The amboceptor of the ferment sensitizes the bacteria and when the complement acts upon them they are digested.

When dead bacteria are used as vaccines they should retain as much as possible the potencies that they exhibit in the human body, for bacteria

may undergo different transformations upon different culture media. For example, the pneumococcus hardly ever exhibits upon artificial culture media the capsule formation, or, as Rosenow[2] has shown that hemolytic streptococci may become con-

Fig. 2.—M. R., after treatment with autoserobacterin.

verted into streptococci mucosi, pseudopneumococci, etc.; therefore, vaccines should be made up from bacteria which are changed as little as possible.

We prefer to use primary cultures whenever possible for the preparation of our vaccines, and we subject them to as little artificial change as we can possibly help. A point which is of great importance and most frequently overlooked is the too rigid sterilization of bacterins. It should be borne in mind that too high a temperature destroys the antigenic properties of vaccines. It is our rule, therefore, to sterilize vaccines from thirty to forty-five minutes at a temperature which ranges from 56° to 58° C.

If vaccines are used at all the autogenous should be preferred. Of course, the use of vaccines makes a prerequisite of a bacteriological diagnosis. This is really the only scientific method of approaching the treatment of infection. The practitioner who uses a mixed vaccine often accomplishes little; on the other hand, he adds the danger of introducing into the body foreign proteins.

Vaccines are of value in chronic and subacute localized conditions, where complete healing is prevented, which is probably the result of lack of protective ferments (antibodies) in the blood; for little of the antigen is absorbed. The stimulation of healthy tissue by the specific germ (autogenous vaccine) is followed in such cases by the formation of bacteriotropic substances. When these are brought to the lesion the result is accomplished. It is our custom during immunization with vaccines to apply hot wet dressings to the part affected for the above reason.

The employment of vaccines in bacteriemias, although contrary to scientific principles, yet has been found very useful by different observers. The class of cases in which we found vaccines of great service will be enumerated later as we are using a somewhat modified method for their preparation.

Sensitized vaccines have proved very efficacious. They were introduced into medicine by Besredka in 1902.[3] By sensitized or serobacterins we understand a suspension of bacteria which is mixed with immune serum and allowed to macerate a few hours, after which the serum is removed, the bacteria washed in a physiological salt solution, and again suspended in saline, standardized, and dilutions made accordingly.

During the process of sensitization the bacteria become saturated with their specific antibodies, as Ehrlich and Morgenroth have shown that bacteria mixed with their corresponding antibodies unite to the exclusion of all other substances present in the serum. When the serobacterins are injected into the body they are immediately acted upon by the complement and bacteriolysis results. The liberation of the non-poisonous group of the bacterial protein occurs, and it stimulates the body cells to the formation of defensive ferments. Sensitized vaccines are generally recognized to be superior to the unsensitized. They have been used in typhoid fever, rabies, cholera, and other infectious diseases.

Besredka himself reports the application of sensitized vaccines in ten thousand cases, without any

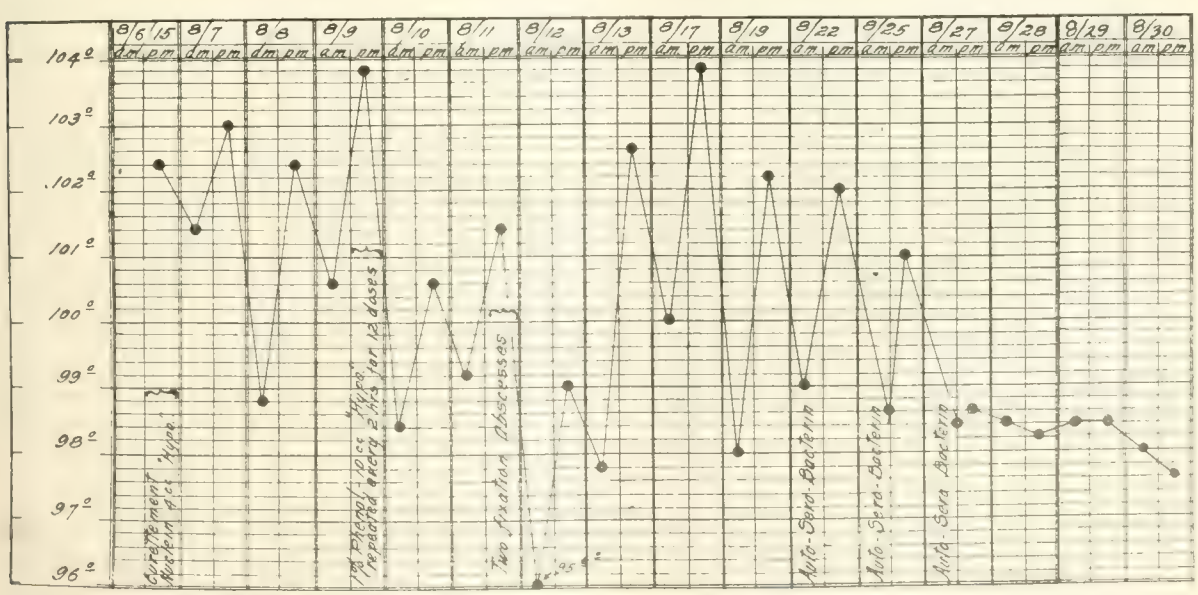

Fig. 3.—Case of puerperal sepsis. Chart showing improvement following upon the administration of autoserobacterin. Streptococcus pyogenes was found in the blood.

serious results following their administration. The advantage of sensitized vaccines is a more rapidly acquired immunity. The immunity acquired is durable and lasting.

The method employed for sensitization of bacterins, we believe, is not without its faults. As it is generaly admitted, the failure of many bacterial sera in therapeutics is because they are produced in the lower animal and do not find suitable conditions for their action in another species, such as man.[4] The antibodies of such a serum are beyond question somewhat different from those in the patient. Therefore, it seems rational to assume that the action of a sensitized vaccine would be enhanced if we used the patient's own serum for sensitization, as under these conditions the patient's own antibodies would be brought into contact with the specific virus.

Working on this basis we are at present using, at the Nicholas Senn Hospital, autogenous vaccines sensitized with the patient's own serum. Although our cases treated by this method are too few to warant any definite conclusions, yet the results have been so gratifying that we cannot help believing that they are superior to ordinary sensitized vaccines.

Another rather technical point, which is, however, of great importance, is the freeing of bacteria from the immune serum. By washing the bacteria with physiological salt solution, we are apt, I believe, to disunite the antibody from the active substance and thus fail to accomplish the desired result. Besides, as we have pointed out elsewhere,[2] it has been shown that complete absorption of antigen by antibody is impossible; therefore, by washing the bacteria we discard some antibodies which are of importance in raising the resistance. On this account we do not separate the serum from the bacteria, but are injecting into the patient the entire mixture of vaccine and serum.

Although several men have used a mixture of serum and vaccine, in certain diseases, *e. g.* in hog erysipelas (Lorenz[6]), in plague (Calmette and Salimbeni),[7] yet, according to Friedberger,[8] working with rabbits, the immune serum after sensitization shows an inhibitory action. This was not the case with our patients. On the contrary, the action of the autosensitized vaccines proved superior to the sensitized.

The technique for the preparation of autosensitized vaccines has been given elsewhere.[5] (A somewhat similar method, though independent of ours, is being employed at the Murphy clinics.) The cases treated by the above described vaccines at the Nicholas Senn Hospital included the following: Otitis media chronica, 3 cases; Cystitis, 2; Furunculosis, 6; Erysipelas of the face, 1; Acne, 1; Gonorrheal vaginitis, 2; Infected compound fracture, 1; Puerperal sepsis, 1 (in this case commercial antistreptococcic serum was used for sensitization, on account of inability to obtain sufficient blood from the patient, because of her severe anemia); Rabies, 1 (ten usual doses of Pasteur anti-rabic vaccine was given and then blood obtained for sensitization).

In cases where the agglutinin content of the patient's serum is low, immunization with simple autogenous vaccine is followed for two or three doses and then serum is withdrawn for sensitization of subsequent doses. The accompanying illustrations show the effect of the autosensitized vaccines.

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TRANSPORTATION OF THE WOUNDED ON THE AUSTRO-RUSSIAN FRONT.*

BY E. KILBOURNE TULLIDGE, M.D.,

MIDDLETOWN, CONN.

FORMERLY CAPTAIN-SURGEON, AUSTRIAN ARMY; MILITARY SURGEON FRENCH RED CROSS.

GREAT improvement in the transportation of the wounded from the front has been made since the war first began, and now, instead of the crude trucks and empty freight cars used during the first days of the war, thoroughly equipped ambulance trains are in operation. Each of these trains is provided with a staff of not less than two surgeons and one physician, the latter to care for those cases of infectious and contagious diseases met with, and from three to four female nurses.

The most complete of these trains comprises from ten to forty coaches. Two for the surgeons', physicians', and commandants' eating and sleeping quarters, two for attendants' cooking and eating quarters, one for an operating room, one for a magazine and medical store room, and the remaining equipped for the transportation of the wounded.

The operating room is of the latest and best type, containing all the necessary requirements for the most intricate operations which are performed after bringing the train to a stop upon a siding. Here food is prepared and reading matter distributed to those able to read and every comfort of the soldier is attended to. The trains of the Maltese Ritter Orden, Von Ostreicher und Boheme are equipped with an automobile ambulance, which is used to transport those wounded at a distance from the railroad upon which the train has taken up its station.

Two operating tables enable two operations to be performed at the same time. This is often necessary when from 500 to 1,500 wounded men are brought in during the course of a day.

The beds are attached to upright iron columns wedged together to a degree of absolute immobility and attached to the floor of the car, thus allowing the patient to rest with ease and comfort until the base hospital is reached. The spring mattresses are furnished with clean linen and blankets each trip, and every possible sanitary convenience has been thought out and installed. The beds are detachable and can be used as stretchers, being carried, if necessary, right onto the field.

The base hospitals are filled with young and old, all eager to help. Some of the women work very hard and go with the trains, making at times good nurses. Others, however, unfortunately play the lady and are hard to manage.

These surgical trains, as they are called, are of great service, as are also the ambulance motor cars, but unfortunately it is impossible to use them every-

*Read before Central Medical Society, Middletown, Conn.

where, especially in the Boukovina and Carpathians, because of the mountainous character of the country and the terrific snowfalls which, in many regions, completely prohibit traffic of any kind. Horses are the only available means of conveyance, and the

Fig. 1.—Wounded soldiers awaiting transportation from the field after the battle of Stanislaw

most suitable abode or shelter is commandeered for surgical and medical purposes. Often this is but a farm house, stable, or railroad station in ruins. If time permits, these are first whitewashed and cleaned.

A bench, ordinary household table, or wooden stand answers the purpose of an operating table. On one occasion I was forced to use the head-board of an old wooden bed from which we knocked the legs and covered the body with a rubber sheet. Shelter for the wounded was many times inadequate and they were forced both before and after the operation to lie in the open, snow-covered fields upon crude stretchers or blanketed boards.

One instance of this I shall long remember. It occurred at Delatyn in the Carpathian Mountains. We arrived in a blinding snowstorm of already three days' duration to find over two thousand wounded Austrians, Hungarians, Russians, Poles, etc., lying in the open field with no shelter save a blanket between them and nature's snow-clouded sky. Many of these poor chaps were found, upon inspection, frozen to death as they lay. Others died from the lack of attention and many of those who were fortunate enough to receive care were too weak from exposure to withstand the treatment.

The first-aid treatment of wounds of the head or cranium is confined principally to stopping the hemorrhage, treating the shock, and binding the head, after it has been cleansed, as well as the circumstances will permit, in a skull-tight bandage secure enough to remain in position during transportation until a suitable operating hospital is reached, where after-care can be administered. Wounds of the head occur in the ratio to other wounds of the body as one to twenty and are most commonly met with in the trench form of fighting, although shrapnel plays a big factor in the etiology. This is especially true upon the Russian front.

Unfortunately facilities for speedy, rapid, and proper transportation are not common, long periods elapsing at times between the infliction of the injury and the time when it is operated upon and the symptoms relieved. In this interval, sometimes as long as five to ten days, infection develops rapidly with severe sepsis, attending convulsions, internal hemorrhage, coma, etc.

In one of the largest clinics in Vienna the mortality for skull and brain involved wounds ran as high as 89 per cent.; in another 78 per cent.; in Budapest, however, it dropped to 65 per cent.; while still nearer the front, in Miskolcz, Kolomea, and Krakow, it went still lower, to 52 per cent.

The results of trephining for penetrating wounds of the skull, with much laceration of the cerebral substance, especially with foreign body involvement, do not confirm the high hopes that were originally felt in earlier campaigns. At the battle front, even in the most serious cases, operations immediately performed (in the first twenty-four hours) with the removal of bone splinters and antiseptic cleansing of the wound may and often do give results which exceed all hopes. Prostration, stupor, coma, and even partial paralysis may disappear, fever and vomiting cease or diminish, the mind clears up, and there is every indication of a return to a normal condition. However, although considerable improvement is obtained by trephining immediately in both serious and light cases, the success lasts but a short time, slow or rapid encephalitis arises and carries off the patient as do other unexpected complications.

With the work upon the field the field hospitals are of necessity constantly changed or transferred great distances and the wounded forced back to safer quarters quickly, without regard for person, nature, or condition of wound, time, or distance. Some go in autos, some in carts, some on foot, and others in freight cars, lying upon straw-covered floors that jar and jolt the remaining endurance into an unconsciousness from which there is many times no awakening.

The transportation of the wounded and their immediate care is of the most importance and the greatest care of the medical military authorities. Operations under primitive conditions, as those performed by the regimental surgeon, who is forced to

Fig. 2.

work in hastily transformed stables, churches, railroad stations, sheds, and caves, cannot be censored, criticised, or expected to produce results other than those following temporary relief.

Not only wounds of the head, but those of the

abdomen suffer because of these crude, ill-provised operative surroundings and transportation.

Bouvier states that "thirty-two laparotomies performed by Caudrelier and himself comprised seventeen cases of perforation or laceration of the small intestine and five cases of perforation of the large intestines, etc. Altogether, these thirty-two laparotomies resulted in fourteen recoveries and eighteen deaths, that is, forty-five per cent. of recoveries." This is a very good percentage. It may be said that Bouvier and Caudrelier were much favored by the exceptional situation of their ambulance in proximity to the trenches. This is true, but, on the other hand, they also had the disadvantage of the situation. They operated systematically in all cases no matter how serious they were. Certain patients who had lesions such as a severed external iliac artery or renal artery, a rupture of the liver, eight cases of severed small intestine with three cases of severed transverse colon, etc., would certainly have not been operated on if they had had to undergo transportation for any distance whatever. They would have died early without operation and would not have burdened the statistics of an ambulance placed a little further in the rear. While its statistics have not benefited by delay, by transportation, or by selection, it is true that the ambulance benefited from its proximity to the trenches, which not only permitted the patient to be brought promptly to the surgeon, but also avoided the evil results to a patient with a perforated intestine from long transportation, which would have permitted the diffusion of fecal matter in the abdomen. Operation does not seem to have directly caused death in any case. It was perhaps useless in three cases, but it saved at least eleven or twelve lives. The question of early operation depends entirely on the character of the battle, possibility of relief, and the rapidity and suitability of the means of transportation.

In an effort to overcome unwholesome, unsatisfactory operative surroundings, and to insure early operations under suitable conditions, with proper provision for after treatment, the heads of many of the different Medical Army Corps have decided that the motor operating theater is of the most value.

These theaters can be taken immediately on the firing line and equipped with all the modern conveniences, being of extreme advantage in rupture of the liver, severed hepatic, iliac, renal, and other arteries, involvements of the small intestines, and dumdum wounds of the colon, all of which would not and could not have survived were it necessary to transport them for any distance.

Such a theater should carry all of its personnel, be compact, thoroughly dust-, dirt-, and wind-proof; in fact, in other words, a complete thoroughly equipped operating-room upon wheels. It is a highly convenient and necessary item and can be taken almost anywhere that its requirements are most needed. The fact that it can be made of a reasonable size and still be of a reasonable price makes it of more value. To describe fully the pattern which I found of best service and compactness: The body is 10 feet long and 6 feet 6 inches wide; it contains a cab 3 feet long and 6 feet 6 inches wide, the height of both being 7 feet; it weighs, including equipment and five persons, about 2½ tons, and has suitable arrangements regarding steering facilities and a clear space of at least 2 feet 9 inches and more if required available for a stretcher way. All boiling, sterilizing, and wash drying is done in the cab or partly outside of the theater by paraffin burners.

The cab is separated by an air-sliding door from the body of the theater, which thus eliminates all gases, a most important point as regards the efficiency of the personnel. Cold sterile water is obtained in the body of the theater roof either by tabloid hypochlorite in fifteen minutes or by filling the four vessels carried from the boiler. The cab contains two large closets, providing for towels, gowns, wool, gauze, bandages, and instruments. In addition a minimum of 16 full-sized drum shelves and one drum stool containing plaster of paris if needed. Seven cubic feet are available under the operating table if desired and the above-mentioned water tanks, two in number, carry twenty gallons each. If necessary, electric light can be run for six hours off the accumulators, a minimum time of fifteen minutes being available for recharging from the engine between operations. Ventilation is obtained by windows and an electric fan. The tail board is arranged ingeniously so that the outer surface is always outside and dirt, mud, and filth are not tipped into the theater when it is closed up. Regulation ambulance canvas covers it completely when traveling. The chassis may consist of any 30 to 40 horsepower motor in the market. So long as supplies arrive regularly the theater can be kept in use to deal with grave cases of abdominal, head, and limb injuries. The cost is nominal and the equipment varies as to its proficiency. Although these operative field theaters are known to be of estimable value in the treatment of the wounded, not one has, up to this time, existed in the medical department of the United States army. It has been but recently that Major Williams, U. S. A. M. C. supply depot, has endeavored to devise and construct such a theater. He will probably realize its efficiency and necessity to the medical corps in times of war.

POSTOPERATIVE TREATMENT OF PEPTIC ULCER AND CHOLECYSTITIS.

By J. RUSSELL VERBRYCKE, JR., M.D.,

WASHINGTON, D. C.

INSTRUCTOR IN GASTROENTEROLOGY IN THE MEDICAL DEPARTMENT OF GEORGETOWN UNIVERSITY, MEMBER OF THE HOSPITAL STAFF, VISITING GASTROENTEROLOGIST TO THE WASHINGTON ASYLUM HOSPITAL, WASHINGTON, D. C.

THE writer was stimulated to prepare this paper by observation of the bad results often following operations, generally skillfully performed, when after-treatment based on a consideration of the etiology and pathogenesis might have produced better results. When the skilled surgeon and trained internist combine forces in the treatment of these patients there should be an imporvement.

We shall consider first the postoperative treatment of ulcer of the stomach and duodenum. We do not know absolutely the cause of ulcer. There can be little doubt, however, that it is a septic infarct. We may never know why some people are prone to the affection. It is probably a lowered resistence to a certain organism, not a specific one; and where a small infarct of one of the other organs might readily heal, when it occurs in the duodenum or stomach and the necrotic area is digested by the action of the gastric juice, it may be kept from healing. Another theory to be considered is Rosenow's specificity of localization. Rosenow believes that certain strains of organisms have a specific affinity for certain organs, and some of our experiments would tend to confirm this.

*President's address before the Hippocrates Society, Washington, D. C., May 13, 1915.

Often the original focus of infection can be demonstrated as alveolar abscess or diseased tonsils. At times the condition is secondary to ileal stasis. In fact, it is stated that Lane goes so far as to recommend operation for the latter condition and not the ulcer. There are too many ulcers occurring after rheumatism to be purely coincident, and so on with other conditions. Organisms can be recovered from the majority of ulcers. Rosenow demonstrated this fact last year by means of his technique of macerating the tissues and culturing.

Before Rosenow's report, I, with the collaboration of Stimmel of the Army Medical School, had been working at the same thing for some months, and we had, in addition to making cultures, demonstrated the presence of organisms in situ imbedded in the ulcer. We have slides showing organisms in all parts of the ulcer, some being completely surrounded by fibrous tissue in the scar formation. The organisms may be of different sorts, probably most often streptococci and less often staphylococci and others.

Therefore our first step in the postoperative treatment begins at operation. Whenever possible the ulcer should be excised, kept from contamination, and examined for organisms from which autogenous vaccines can be prepared and administered during convalescence. I have secured some very remarkable results in the treatment of ulcer medically by vaccine, but here we are handicapped by not knowing definitely with what organism we are dealing. Results should be more constant under these circumstances where it is isolated. The vaccine therapy will be considered more in detail later.

There can be no routine treatment after operation for ulcer. We must treat the individual patient, bearing in mind the possible cause of the trouble, the character, and position of the ulcer found at operation, and the nature of the operation itself.

Whenever possible we know that it is best to excise the ulcer. When this has been done the after-treatment is much more simple than otherwise. Often a posterior gastroenterostomy has been done at the same time. I believe this is usually unnecessary and should be done only to meet some special indication.

In these cases of excision we have simply (1) to regulate the diet for from 10 to 14 days; (2) to administer atropine or belladonna to prevent spastic contraction of the pylorus which would tend to produce further trouble; (3) to make and administer autogenous vaccine; (4) to avoid irritating purgatives; (5) before the patient is discharged to make search for the original focus if it has not already been located and take steps to eliminate it, and (6) to instruct patients to report at least every two months for a year with a specimen of stool, while on meat free diet for 3 days, to be examined for occult blood.

Diet.—Two hours after the anesthetic nausea has ceased the patient may start taking water. In fact I believe it not unwise to begin even earlier to wash the ether out of the stomach, as by lavage, if the patient vomits, for the reaching is not as bad as that occurring on an empty stomach. When the water is well borne we may start with albumins, not too acid, followed by buttermilk. It is best not to proceed further with the diet until the postoperative gas has subsided. After this a soft diet with plenty of milk can be ordered through the second week, avoiding strong acids, spices, and extractives. After the second week, at all events, firm union must have occurred in the stomach wound and a full diet may be allowed, omitting only the most indigestible articles. Most ulcer patients have been pretty heavy meat eaters. They should be cautioned against eating meat more often than once a day and then only in moderate amount.

The administration of atropine or belladonna serves two useful purposes, first helping to diminish the flow of acid, and secondly, by its action on the nervous system, relaxing pylorospasm which might occur from the irritation of the wound in the stomach and so tend to produce another ulcer. The first doses should be administered with the morphine which is given hypodermically for postoperative pain. Later tincture of belladonna may be given by mouth for several weeks.

Irritating purgatives should be avoided. The bowels had best be left alone for several days as a rule. Postoperative gas is usually pretty troublesome as a result of the handling of the viscera. This is controlled by the passage of the rectal tube, followed later if necessary by saline or perhaps purgative enemata. If anything is given by mouth it should be mild salines, preferably Carlsbad salts.

The Use of Vaccines.—This work is yet in its infancy. To the best of my knowledge I believe that I was the first to make systematic use of vaccines in the medical treatment of gastric and duodenal ulcer, about 18 months ago. I have during that time used them in many cases though in but few operative cases. The results have been so good in some cases that I am still persisting in their use. One of my patients who had a recurrence a few months after operation for duodenal ulcer was apparently completely cured after four injections.

The search for the focus of infection is unfortunately not always attended with success. It is our duty, however, to try and eliminate all factors which might further the production of another ulcer or prevent the healing of the one operated upon, providing it has not been excised.

In regard to the patients reporting at intervals for examination of the stool, it may be said that occult blood often appears in the stool, from a recurrence of ulceration, weeks before symptoms declare themselves. I am aware that many observers do not attach so much importance to the occult blood test as I, but after an experience of over one thousand tests I am firmly convinced of the great value under proper precautions. To secure reliable statistics as to results we should use as great care in determining the cure as in making the original diagnosis. For at least a year the result should be noted "Apparently Cured". We know that the ultimate results in ulcer cases, generally speaking, are deplorable. Younger surgeons are much more enthusiastic than those of greater experience. Some think it sufficient to say "Ulcer? Then let's operate and cure it." It would be a blessing if we could be so sure, but as a matter of fact, Joslin's statistics, presented at Atlantic City in 1914, cause us to pause and think. In his series of cases treated at the Massachusetts General Hospital and in private practice but 39 per cent. of those operated upon were well after 15 years.

In view of these failures it has impressed me forcibly that there is need for something new in the treatment of ulcer, a getting down to basic etiological factors; and I believe that the practice of the measures indicated above will cause us to come a little closer to our goal of all cures.

I have gone into the postoperative treatment after

excision rather fully and will in consideration of other operations simply give points of difference.

The treatment after gastroenterostomy varies somewhat according to the location of the ulcer. In the first place, it may be stated that gastroenterostomy is not in any sense of the word a curative procedure. It simply creates certain conditions which favor nature's healing of ulcers in certain locations.

In duodenal ulcer with closure of the pylorus and gastroenterostomy little else need be done. Neither food nor acid touches the ulcer and so ideal rest is secured. The diet is that of any operative case. The patient should be cautioned, however, against violent exercise and should be instructed to lead a simple quiet life for some weeks so that the ulcer may have a chance to heal, although healing will not always take place. Symptoms may be absent but examination reveals that the ulcer is still open and oozing blood. I have had three cases of duodenal ulcer in which marked symptoms have recurred after operation. There is then little to be done except to try another operation or a medical treatment. We should always try the vaccine treatment, although we may not hit the organism right. The writer's vaccine is a special stock made of a number of strains of streptococci isolated from ulcer and pyorrhea cases. If no result is obtained, or there is no sign of a local reaction to fairly good-sized doses, the presumtion is that we have not hit the right organism and a combination of colon and staphylococci is then used. This may be said to be hit-or-miss therapy, but enough cases have been affected almost miraculously to prove conclusively to my mind that proper vaccine for the individual case is going to be a great help.

After gastroenterostomy for ulcer at the pylorus we must use greater care in the postoperative treatment. Food and acid can still come in contact with the ulcer. The operation has simply allowed better drainage, eliminated in large measure bad effects from pylorospasm, and has allowed the alkaline intestinal juice to enter the stomach. It used to be the practice of some surgeons to allow the patient to eat anything after he recovered from the immediate effects of the operation and to be up and about after ten days or two weeks. This was horrible practice, though many patients did get relief from symptoms and gained in weight. These patients should be treated after operation medically for ulcer just as strictly as if operation had not been performed. The diet for the first three days should be the same as that outlined above for excision, but after that time should progress differently. Milk and barley water should be used exclusively for at least ten days, after which eggs, custard, butter, olive oil, cereal, gruels, and crackers are gradually added until finally at the end of three weeks the patient is on a soft, unirritating, non-acid-forming but very nutritious diet, which is kept up for several weeks more. Strong acids, spices, and broths should be prohibited for a year. These patients have usually been pretty heavy meat eaters. They should be cautioned against eating meat more often than once a day.

Bismuth or silver nitrate should be administered three times a day before meals from about the third day for several weeks, and liberal amounts of alkalies after meals. The patient should not sit up for from two to three weeks, and then gradually.

What has been said of ulcer at the pylorus is even more true of ulcer of the lesser curvature. Where the ulcer has not been excised the combined resources of medicine and surgery are very often unavailing.

Not only does the location of the ulcer influence the after-treatment, but also the conditions found at operation. A large callous ulcer of many years' duration, if ever curable by rest will certainly take longer than a small nonidurated one.

Perforated ulcers naturally demand certain other treatment which comes purely under the domain of the surgeon, such as (in acute cases) the Murphy salt solution and the Fowler position, which need not be considered here. For some reason perforated ulcers seem to tend to heal without much difficulty after the perforation is closed. The medical treatment after the operation will fall under one of the above headings. One of my cases of perforated ulcer was hastened greatly in convalescence and, in fact, the scales seemed to be turned from impending death from toxemia to recovery through the use of vaccine.

Postoperative Treatment of Cholecystitis.—Ordinarily results in gall-bladder cases may be said to be decidedly better than those following operations for ulcer; however, the number of secondary operations required and the not inconsiderable number having a continuance or recurrence of trouble after drainage or even removal of the gall-bladder would indicate that there is room for improvement in our treatment. The writer believes that the reason for many of the poor results lies in the fact that the original factors which caused the trouble have not been influenced.

A brief consideration of the etiology of gallstones may be in order. It is well known that the small stones may be either hepatic or cystic in origin, so that removal of the gall-bladder will not guarantee against future trouble, although it tends to minimize the chance, since most stones probably attain their size in the gall-bladder.

Since 1885 the bacterial origin of gallstones has been recognized. We know that the three organisms most commonly causing trouble are the typhoid bacillus, colon bacillus, and streptococcus. It seems reasonable to suppose that organisms infecting the biliary tract constitute the most essential factor in the production of stones. Cultures of broken-up stones will often demonstrate the presence of viable organisms at the very center. There are probably other factors of which we are ignorant, but biliary stasis and inspissation of the bile, while probably not sufficient *per se* to produce stones, must be among the predisposing factors. When the nucleus is once started the stone grows perfectly naturally by the deposit of more salts. The salts may be of various kinds, but in the case of cholesterin we have probably another factor added which is some disturbance of fat metabolism, perhaps of two varieties, either from excessive ingestion of fat and too little exercise or from a deficiency of thyroid secretion. We do know that a considerable number of gallstone cases are to be found in the over stout.

Some years ago I devised a medical treatment for certain forms of cholecystitis, one of the principal features of which is the reduction to a minimum of the fat ingested. This was based on clinical grounds alone, but during the past few weeks I have learned that Epstein of New York has found that the cholesterin content of the blood can be modified by restriction of the fats and good results have been obtained in gall-bladder cases, in his experience

also, by this procedure. Much work has also been done by Henes, who has shown a marked increase in the cholesterin content of the blood in gallstone disease.

From a consideration of the foregoing it would appear evident that we have not done enough when we remove the gallstones and drain the gall-bladder, or even when we remove the gall-bladder if the same conditions which originally caused the trouble still obtain.

How long the gall-bladder should be drained and other purely surgical questions will not be here considered. We will merely consider the medical after-treatment in these cases.

I will describe my treatment. I believe that no other form of diet will suffice, but in other details there may be other means just as effective if based on etiologic grounds.

The patient should have an individual diet list based upon the condition of digestion and the weight, but in all cases the fat should be restricted to a greater degree than the other food products. In the obese fat reduction should be practically absolute for a time so that the patient may use up some of his own. I believe that some control should be kept over the fat ingested for at least a year. If the bowels tend to become sluggish from the absence of fats mineral oil which lubricates without being digested may be given.

Next to the fats the carbohydrates should be restricted. Judgment is required in determining how far this may be safely carried. Proteins are allowed in sufficient quantity to maintain nitrogenous equilibrium. All of the vegetables that are desired may be taken and also fruit, provided the chemical condition of the stomach does not contraindicate.

The bowels should be kept open. Plenty of water will help with the addition of Carlsbad Sprudel salts when required.

After convalescence exercise should be prescribed. Outdoor exercises, such as walking and golf, are especially desirable, as also special abdominal exercises which tend to reduce the fat, stimulate the circulation, and correct sluggishness of the biliary as well as the whole digestive tract.

There are two drugs used in my medical treatment for cholecystitis and I believe the same treatment is indicated after operation; then an hexamethylenamine and bile salts. If I remember correctly, Crowe of Baltimore was the first to recommend large doses of hexamethylenamine in gall-bladder affections and I then incorporated it in my treatment. Recently considerable doubt has arisen as to the efficacy of this drug in various parts of the body and a number of experiments would seem to show that it is useless, yet the clinical results from the treatment as a whole have been so good that I have hesitated about dropping this part of it. Postoperatively 15 grains a day should be given for a number of months, unless contraindicated by some untoward action.

The bile salts act by keeping the biliary secretions more fluid. One five-grain tablet of sodium glycocholate or its equivalent two or three times a day should be administered for some months.

Thyroid extract for its action on fat metabolism should be used temporarily in the cases in which it would seem that there was deficiency of thyroid secretions with poor oxidation. Small doses should be used at first and close attention be paid to the blood pressure and pulse.

Cases resulting from a previous typhoid infection should, perhaps, have several injections of typhoid bacterin. I would advocate in other cases the administration of a stock mixture of streptococci and colon bacillus with a view to the prevention of further trouble in the gall-bladder and the sequelæ which often follow, such as appendicitis and ulcer.

The attempt to eliminate any causative focus of infection is as important in the gall-bladder cases as in ulcer.

The majority of patients do well without such particular attention being paid to the after treatment, but we are interested in the others who have future trouble; as we have no means of determining which these will be, it would seem advisable to give to all the advantage of such a treatment, based upon etiological grounds, which can at least do no harm and which I feel would give infinitely better end-results to the operative procedures in these cases.

THE ROCHAMBEAU

SOME CLINICAL PHASES OF THE VASO-MOTOR NEUROSES.

BY WILLIS E. HARTSHORN, M.D.,

NEW HAVEN, CONN.

IN the routine examination of patients there are certain physical conditions noted at times which are atypical and difficult to associate with any distinct pathological lesion. It is probably true that recent legislation affecting compensation has multiplied this class of cases. To determine the exact status of these individuals from a clinical standpoint is difficult without the most thorough physical examinations and careful observation over a considerable period. The following interesting case was referred recently for examination:

CASE I.—Patient G. M., aged 27, works in a steel mill. In October, 1914, while wiping his hands on waste he felt a sharp prick in the second finger of the right hand. He thought at the time that a small piece of steel had entered the finger, so went to his physician, who thoroughly cleaned the wound and removed all fragments of metal. Moderate swelling of the finger and hand followed. This gradually subsided. He has, however, been on short time, receiving compensation, during the past eight months owing to the fact that as soon as he attempts to do heavy work the forearm and hand become swollen. An interesting feature of this, however, is the fact that this swelling has never been observed by the family physician, as it occurred only during his working hours. The patient had appendicitis three years ago. Was married at twenty-one years of age. No venereal history. Two children both well. Not alcoholic. Physical examination May 17, 1915. Patient well developed and nourished. Appears very excitable. Hands have a distinct tremor when outstretched. There is a decided nervous diathesis. Circulation in both upper extremities seems sluggish. There is no sign of swelling in either. Sensory and motor reflexes are normal. The urine contains neither sugar nor albumin. Blood pressure is 150. Abdominal examination negative. Knee jerks exaggerated. Marked urticarial rash. *X*-ray negative. The patient was advised that the condition was a nervous disorder, not of a serious nature, and that the free use of the extremity would have a favorable effect on the swelling of the forearm and hand. Since then he has reported once for examination and states that there is no more edema or pain and that he is able to do his work very much better. Just how much the desire for compensation had to do with this case would be interesting to determine.

CASE II.—A woman 45 years of age, well developed and well nourished. Generally healthy. Not neurotic. When first seen she stated that at intervals she was troubled with sudden swelling of the tongue, which made it difficult to swallow and also interfered with her speech. Examination shows the tongue to be markedly swollen and slightly sensitive to pressure. Teeth in good condition; Riggs' disease latent. Peculiar numbness of the tongue complained of. This patient

reported on the next day that the swelling had disappeared. Six months later she again noticed a similar swelling of the tongue on arising in the morning. At this time she was not in good physical condition and had endured considerable nervous strain. The swelling was associated with constipation and urticaria. No pain or discomfort except from the size of the tongue. This reached the normal condition again within a few days. There has been no recurrence of the symptoms since that time.

In the consideration of the two cases noted the following points are worthy of mention: (1) Transient edema occurs under certain definite conditions. (2) There is a nervous diathesis. (3) There are associated urticarial symptoms often of the giant type or other skin eruptions. (4) A number of the cases give a history of a very chronic venereal infection which has depleted the nervous system. (5) Abdominal symptoms are common, either acute abdominal pain associated with constipation or a previous history of intestinal stasis. The vasoneuroses present a most interesting group. Under this heading should be classed: (1) Angioneurotic edema with its associated skin lesions; (2) erythromelalgia or red neuralgia; (3) endarteritis obliterans or thromboangiitis obliterans of Buerger; (4) intermittent lameness or claudication, the crural angina of Walton; (5) epidermal changes and peripheral sensory neuroses of the trophic type.

Angioneurotic edema is a condition with which familiarity is important, otherwise the cause of the edema will puzzle the physician as well as it does the patient. These cases may be called comparatively rare. The symptom complex presents sudden swelling of either an extremity, the genitalia, the face, the tongue, or the lips. This will continue for a length of time varying in different instances; at times it is very transient, at other periods very difficult to relieve.

Weil[1] reports five cases with the following sequence: (1) Edema of the scrotum. Excitation chronic venereal infection. (2) Edema of the lips and vulva. Erythematous eruption on the arms and fingers, associated with abdominal pain localized about the gall-bladder. Operation revealed hourglass gall-bladder with stones. (3) Edema of the lips. Associated abdominal attack simulated appendicitis. (4) Edema of the genitalia. Associated lesions were abdominal pain, Von Recklinhausen's disease (multiple neurofibromatosis), tuberculosis, mental deficiency, and neuroses of varying character. In practically all of the cases reported we have the combination of the edema associated with the skin lesions usually of the urticarial type with intense itching, gastrointestinal symptoms, and various nervous manifestations. It is difficult to decide on the exact etiology. Its occurrence reported in successive generations suggests a possible hereditary origin. Like uticaria, with which it is so closely related, angioneurotic edema may be due to the absorption of toxic poisons from the intestinal track. One very interesting case occurs to the writer in which 1,500 units of tetanus antitoxin was administered as an immunizing dose following a punctured wound. There occurred in a few days an intense edema of the extremities which gradually extended to other parts of the body, presenting a severe complication. This patient was very seriously affected and found it necessary to give up his regular vocation for about ten days. Only recently a patient with a marked nervous diathesis recovering from a grippe infection noted a sudden swelling of the right foot and ankle. This extended up the leg, causing considerable discomfort. It was associated with small red papules and elevated areas of a grayish character, several 5 or 6 cm. in diameter. Herpes zoster was eliminated by the lack of pain and the general distribution of the eruption rather than along the nerve trunks. The swelling disappeared along with the other clinical signs in a few days. The general appearance of the limb accentuated the nervous symptoms, as the patient felt sure she was suffering from blood poisoning. No swelling of the other extremity occurred.

What can be learned regarding the pathology of angioneurotic edema indicates that it is closely associated with urticaria edematosa and is a vasomotor disturbance of the spastic type affecting both the capillaries and the lymph channels, causing a paralysis of the vasoconstrictors or irritation of the vasodilators, and is produced according to Auspitz, by reflex irritation.

It is a peculiar fact noted by a number of observers that the exact time and place at which the swelling will recur can be accurately stated by the patient in some instances. This would again seem to indicate a closely associated neurotic element.

In this connection should be mentioned Raynaud's disease which presents a train of clinical events markedly different from angioneurotic edema. Three classical stages are always associated with this lesion: (1) Local syncope; (2) Local asphyxiation; (3) Necrosis with local or symmetrical gangrene. It occurs in neurotic young women as a rule. There may be complete ischemia of a finger of one hand, the so-called dead finger. The time of the attack varies from a few minutes to a few days. The pain is often very severe. Following this the finger and at times the entire hand becomes dusky in color. The sense of touch is diminished. The subsidence is gradual. The attacks may occur at about the same time on successive days. The lower limbs are often affected in the same way as the upper. The asphyxiation noted first in the toes extends gradually to the ankles, and in some cases to the knees. The second stage passes to the third or that of gangrene. This occurs either in the tip of a finger or toe and may involve gradually a still larger proportion of an extremity. It is very apt to be symmetrical. The fingers and toes are particularly liable to be affected. The nose and ears are also at times attacked. The pathology of the condition is not well understood. Vascular spasm of a vasomotor origin undoubtedly plays an important part in the etiology. Osler states that there are two totally different forms of congestion which may be shown in adjacent fingers: one may be swollen, of a vivid red color, extremely hot; the adjacent finger may be equally swollen, absolutely cyanotic, and stone cold.

Erythromelalgia or the red neuralgia should be mentioned as a probable vasomotor affection. Described first by Weir Mitchell in 1872 as a peripheral neuritis, it has been associated by various writers as a vasomotor neurosis or due to irritation in the cells of the ventral horns of the cord. The definite origin has not been determined. The disease is rare. The symptoms are quite characteristic. The lower limbs are more often affected than the upper. There is burning pain in the foot, which gradually extends to the leg accompanied with swelling and a dull reddish blush. There is considerable pain, which is worse on standing. There is local elevation of temperature. These

symptoms gradually subside, but the foot remains for some time of a purplish color. The burning pain and the red flush are really the most important symptoms. The disease is usually asymmetrical. To distinguish it from Raynaud's, Weir Mitchell emphasized the color play, that is the bright reddish tinge gradually merging into the purplish tint. The symptoms may persist for years in varying degrees. There is no gangrene. Sensation is preserved. While Raynaud's disease begins with anemia, in erythromelalgia, or the painful red extremity as it is frequently called, there is marked arterial pulsation. Osler quotes Weir Mitchell as reporting the following case in the *Philadelphia Medical Times*, Nov. 23, 1872. A sailor, aged 40, who after an African fever began to have "dull, heavy pains at first in the left and soon in the right foot. There was no swelling at first. When at rest he was comfortable and the feet were not painful. After walking the feet were swollen. They scarcely pitted on pressure, but were purple with congestion; the veins were everywhere singularly enlarged, and the arteries throbbed visibly. The whole foot was said to be aching and burning."[2]

Another curious condition which should be associated with those discussed previously is intermittent lameness or claudication. The etiology so far as known suggests a spasm of the arterioles due to a defect in the vasomotor control. This is usually indicative of a commencing sclerosis in the circulatory system. The term intermittent claudication is one employed by French veterinarians to indicate thrombosis of the iliac arteries in horses and has been recognized by them for a good many years. As a disease in man the condition was first described by Charcot in 1857. The symptoms develop somewhat as follows: After walking for some time there is first a marked weakness in the muscle of the lower extremity. This is soon followed by sudden cramps, which are so persistent as to compel rest. After a period of repose relief is experienced and the circulatory balance is regained. Attacks usually recur.

Endarteritis obliterans, while differing markedly in its origin from the conditions we have discussed, should be here mentioned as it presents a picture similar in some respects. It frequently occurs in Russian Jews addicted to the cigarette habit. This type of lesion has been termed thromboangiitis obliterans by Buerger,[3] who in a recent article considers it an infectious disease. Endarteritis obliterans is an entirely distinct condition from senile gangrene, which belongs to the arterial sclerosis of old age. It often occurs comparatively early in life and frequently follows as a sequence of the various systemic infections. Attention should be called to the fact that it also develops insidiously without any relation to any other pathological condition. Its onset is marked by pain in the toes and lower extremities. Usually this is unilateral and very persistent, causing the patient so much distress that he will spare no effort to secure relief, submitting even to amputation of the extremity. Next to the pain is noted the dusky color of the extremity with lack of pulsation in the dorsalis pedis and posterior tibial arteries. This passes on to a gangrene which, owing to its gradual extension, requires amputation; but this is often unsatisfactory, as the vessels continue to become thrombosed above the stump. Arteritis obliterans should be differentiated from Raynaud's disease by the fact that the onset is very gradual; men are usually affected, and there is no neurotic history. The three typical stages which follow as a sequence in Raynaud's disease are missing, that is, anemia, congestion, necrosis. It is asymmetrical. From senile gangrene by the age of the patient, the condition of the arteries in other parts of the body at a distance from the area affected, referring by this to evidence of arterial sclerosis.

The circulatory affection in thromboangiitis obliterans is a very serious one, amputation even, unless far above the site of the lesion, failing to give permanent relief. There is a constant tendency for recurrence about the end of the stump. The vessels show distinct pathological changes pointing toward the infectious nature of the disease. There is thickening of the intima, and Buerger states in his description that "the arteries and veins are filled with infective material. In many the walls are definitely infiltrated with leucocytes and the lumen completely occluded with red clots in which certain foci spoken of as military giant-celled foci make a striking picture. The purulent areas are invaded by leucocytes from the media and adventitia, which are not merely agglutinated and derived from the intravascular blood." This condition cannot well be mistaken; at the same time careful attention must be given to the history and symptoms in order to make the differential diagnosis. Diseases of the arteries are always the most difficult of the chronic lesions to combat. Arteriovenous anastomosis has been attempted without satisfactory results in arteritis obliterans and the problem of treatment up to the present time remains unsolved.

Other conditions which cause lesions involving the nutrition of the extremities can be traced to diabetes, chronic nephritis, the various lesions of the heart, and malnutrition. As they have a definite origin they do not present the obscure etiology of the vasomotor lesions and therefore respond more readily to treatment applicable to their especial needs.

In diabetic gangrene we have a condition based on the abnormal condition of the nutritive elements. It might be considered, owing to certain peculiar features, on the border line between the constitutional and the endarteritis associated with a peripheral neuritis. For this reason it perhaps deserves brief mention here. The onset follows trauma of some sort such as a bruise or blow. It commences as a small patch or gangrenous area without pain and without the usual odor which attends gangrene or other types. It is frequently accompanied with or preceded by other trophic disturbances. Diabetic gangrene is amenable to diabetic treatment if taken early. The patient, if neglected, will die from a combination of toxemia and diabetic coma.

Differential diagnosis is very necessary in vasomotor affections. A routine examination of the urine is a most important feature, in every case suggesting circulatory disturbance.

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1138 Chapel Street.

SHAKESPEAREAN CONCEPTIONS OF SOME MEDICAL TOPICS.

By J. A. HAGEMANN, M.D.,

PITTSBURGH, PA.

If we ponder the fact that Shakespeare wrote his immortal productions during the period when medicine had scarcely emerged from the realm of superstition, when the "barber-surgeons," whose dual function comprised the shaving of priests' tonsures and the performing of surgical operations, were universally held in contempt, we are led to the conclusion that his knowledge of medical themes was not only matchless, but that in spots it was almost predictive. From the days of Hippocrates, 470-361 B. C., and Galen, 131-201 A. D., no revolutionary medical progress had taken place. True, Paul of Aegina, Bouvé, and Rogerius had advocated giving nature a chance; Guy de Chauliac and Henri de Mondeville had published surgical works during the fourteenth century, which remained unrivaled textbooks for two hundred years, but the rank and file of the medical profession, if we can so dignify the healers of those days, were sadly incompetent. Shakespeare was born the year following Vesalius' death, and Ambrose Paré was flourishing while the youthful bard of Avon courted Ann Hathaway. Perhaps the elevating influence of these men penetrated the atmosphere of contumely which encompassed men practising the healing art and made a figurative rift in the clouds, through which Shakespeare was able to discern, more clearly than his contemporaries, the intrinsic worth of the honorable physician. Bacon, in "Hudibras," and Cervantes, in "Don Quixote," had seen fit to treat medical subjects flippantly, if not scoffingly, and the spirit instigated by them seems to have the doubtful quality of immortality, if one may judge from the attitude of many succeeding authors, even to the present day.

Although not a character in the play, Gerard de Narbon, a fictional deceased physician, is reminiscently commended. In "All's Well that Ends Well," the Countess of Rousillon pays him extravagant tribute when she says his "skill was almost as great as his honesty; had it stretched so far 'twould have made nature immortal, and death should have play for lack of work. Would, for the King's sake he were living! I think it would be the death of the King's disease." To which the aged Lord Lafeu, acquiescing, replies: "He was excellent, indeed, madam: the King very lately spoke of him admiringly and mourningly: he was skillful enough to have lived still, if knowledge could be set up against mortality." Shakespeare's impression of the guiding star which allures the conscientious physician is admirably voiced by Cerimon, a lord of Ephesus, one of the characters in Pericles, who says: "'Tis known, I ever have studied physic, through which secret art, by turning o'er authorities, I have—together with my practice—made familiar to me and to my aid the blest infusions that dwell in vegetives, in metals, stones; and I can speak of the disturbance that nature works, and of her cures: which doth give me a more content in course of true delight than to be thirsty after tottering honor, or tie my treasure up in silken bags, to please the fool and death."

The Second Gentleman, in making reply thereto, shares the popular misconception regarding communal gratitude which is presumed to be one of the emoluments of the philanthropic physician, but which is encountered sporadically, rather than epidemically, for he answers: "Your honor has through Ephesus pour'd forth your charity, and hundreds call themselves your creatures, who by you have been restor'd: and not your knowledge, your personal pain, but even your purse, still open, hath built Lord Cerimon such strong renown as time shall never raze."

In Macbeth a nice question of ethics is raised. The doctor, who is discussing the somnambulism of Lady Macbeth with one of her waiting gentlewomen, insists upon learning the trend of her babblement; and when the gentlewoman refuses to be disloyal to her mistress by repeating the unconsciously spoken words, he urges: "you may to me: and 'tis most meet you should." Evidently he is seeking enlightenment to aid him in arriving at the etiology of the illustrious patient's malady. Before the ethics of this delicate problem is determined, the lady herself enters upon the scene, and the physician has opportunity to make his own observations. Evidently, however, he feels need of the counsel of an alienist, for he frankly confesses: "This disease is beyond my practice." He fully appreciates the element of psychic disturbances in the causation of mental alienation, for he vouchsafes the opinion that "unnatural deeds do breed unnatural troubles: infected minds to their deaf pillows will discharge their secrets." How consistently the mental derangements of Shakespeare's mad characters are delineated! This must ever be a source of gratification to the reader or spectator of his plays. Hamlet, Ophelia, King Lear—all cameos in magnificent settings!

An edifying example of how well Shakespeare recognized the psychic effect of physical indisposition is afforded us by King Lear, who, tempestuously inclined to transmit an offensive message to the duke of Cornwall, reconsiders his impetuosity, and exclaims: "No, but not yet:—may be he is not well: Infirmity doth still neglect all office whereto our health is bound; we're not ourselves when nature, being oppress'd, commands the mind to suffer with the body: I'll forbear—." Conversely, Shakespeare was cognizant of the baneful physical effects of evil frames of mind or of lurid mental impressions. Iago, having aroused jealousy in the mind of Othello, says: "Dangerous conceits are, in their natures, poisons, which at first are scarce found to distaste, but, with a little act upon the blood burn like the mines of sulphur." In "The Winter's Tale," Leontes, king of Sicilia, admirably expresses the physical result of a nauseating mental process when he states that "There may be in the cup a spider steep'd, and one may drink, depart, and yet partake no venom; for his knowledge is not infected; but if one present th' abhorrent ingredient to his eye, make known how he hath drunk, he cracks his gorge, his sides with violent hefts." Of the beneficent effect of cheerfulness the author was equally aware. In "The Taming of the Shrew," a servant announces to Sly: "Your honor's players, hearing your amendment, are come to play a pleasant comedy: for so your doctors hold it very meet, seeing too much sadness had congeal'd your blood, and melancholy is the nurse of frenzy: Therefore they thought it good you hear a play, and frame your mind to mirth, and merriment, which bars a thousand harms and lengthens life."

In the second part of "King Henry IV" there occurs a lucid description of aphasia. Sir John

Falstaff, having been summoned before the Lord Chief Justice of the King's Bench, evades the question at issue by stubbornly dwelling on "his highness' whoreson apoplexy." His characterization of the significant mental hebetude which afflicts the survivor of an apoplectic attack is admirable, for he says: "This apoplexy is, as I take it, a kind of lethargy, an't please your lordship; a kind of sleeping in the blood, a whoreson tingling . . . It hath its original from much grief, from study, and perturbation of the brain: I have read the cause of his effects in Galen; it is a kind of deafness." He might almost have coined our modern expression "word—blindness." Of course, he is in error as to the etiology of apoplexy, but considering the fact that Galen is cited as his authority, and that dissection was performed only upon the cadavers of animals, his conception of the ailment is not to be harshly criticised.

The cherished family prescription, always secret, and always proven infallible by some ancestor, is familiar to every practising physician. Hence, we experience no astonishment at the statement of Helen, in "All's Well that Ends Well": "You know my father left me some prescriptions of rare and prov'd effects, such as his reading and manifold experience had collected for general sovereignty: and that he will'd me in heedfullest reservation to bestow them . . . Amongst the rest, there is a remedy, approv'd, set down, to cure the desperate languishings whereof the King is rendered lost." Although the King's physicians have persuaded him that any treatment would be futile, Helen proffers her kindly offices, and overcoming the King's expostulations, assures him that in two days he shall be restored to health. It goes without saying that the King recovers within the allotted time. We frequently see equally marvelous histrionic accomplishments on the stages of our modern theaters. Recognition of the circumstance that some diseases end by crisis is indicated by Cardinal Pandulph, in "King John," when he says: "Before the curing of a strong disease, even in the instant of repair and health, the fit is strongest; evils that take leave, on their departure most of all show evil."

The occasional necessity of employing heroic measures, is tersely expressed by the King, in "Hamlet," when he states that "Diseases desperate grown by desperate appliance are relieved, or not at all."

Every physician can cite examples of scant courtesy being accorded him when he has had to deny some unreasonable or preposterous request. We find an accordant case when Macbeth, being informed by the doctor that Lady Macbeth is "not so sick . . . as she is troubled with thick-coming fancies, that keep her from her rest," demands that the doctor "cure her of that; cans't thou not minister to a mind diseas'd; pluck from the memory a rooted sorrow; raze out the written troubles of the brain: and with some sweet oblivious antidote cleanse the stuff'd bosom of the perilous stuff which weighs upon the heart?"

When told that this is not feasible, he impatiently exclaims: "Throw physic to the dogs,—I'll none of it." We cannot help but sympathize with the poor doctor, when he mournfully soliloquizes: "Were I from Dunsinane away and clear, profit again should hardly draw me here."

In "All's Well that Ends Well," young Bertram, Count of Rousillon, solicitously and artlessly inquires of the aged Lafeu: "What is it, my good lord, the King languishes of?" To which Lafeu replies: "A fistula, my lord." Young Bertram makes answer: "I heard not of it before." But the old Lord Lafeu, having come into proximity with the King, had, perhaps, experienced olfactory evidence of the King's ailment, for he dismisses the subject with a disapproving: "I would it were not notorious."

To write this, Shakespeare must have known that the sphincter's kindly offices are circumvented by intestinal gases where a complete fistula exists.

The homeopathic doctrine, with its "similia similibus curantur," is amazingly foreshadowed in the second part of "King Henry IV," when the Earl of Northumberland says: "In poison there is physic: and these news, having been well, that would have made me sick, being sick, have in some measure made me well: And as the wretch, whose fever-weaken'd joints, like strengthless hinges, buckle under life, impatient of his fit, breaks like a fire out of his keeper's arms; even so my limbs, weaken'd with grief, are thrice themselves."

Atmospheric humidity is recognized as a factor in the etiology of rheumatism, when, in "A Midsummer Night's Dream," Titania, the fairy queen, says: "Therefore the moon, the governess of floods, pale in her anger, washes all the air that rheumatic diseases do abound."

The modern herb-doctor's office, as one still occasionally sees it, could not be more happily described than in the words which Romeo voices when speaking of the apothecary's bazaar: "In his needy shop a tortoise hung, an alligator stuff'd and other skins of ill-shap'd fishes; and about his shelves a beggarly account of empty boxes, green earthen pots, bladders, and musty seeds, remnants of packthread, and old cakes of roses, were thinly scatter'd, to make up a show." Even the Harrison narcotic drug law is foreshadowed, for when Romeo offers a bribe for "a dram of poison," the sorely tempted impecunious apothecary replies: "Such mortal drugs I have: but Mantua's law is death to any he that utters them." Notwithstanding this, he eventually succumbs to the lure of Romeo's gold.

Over the dead bodies of Romeo and Juliet the Friar Laurence tells he had administered to Juliet a sleeping potion which simulated death, yet would lose its force at a time which could be precalculated to a nicety. We note in this, as in some other instances, that Shakespeare's knowledge of the physiological effects of drugs was faulty, or that he adapted them to his histrionic needs.

The persistence of the belief in lunar influence upon the efficiency of vegetable remedies is indicated by Jessica's exclamation in "The Merchant of Venice": "In such a night Medea gather'd the enchanted herbs that did renew old Aeson."

That illusions may be produced by drugs, is lucidly expressed when Macbeth and Banquo have noted how the witches vanished before their open eyes, and Banquo excitedly asks: "Were such things here as we do speak about? Or have we eaten on the insane root that takes the reason prisoner?"

Where the ethics of medicine are to be violated, Shakespeare consistently assigns such rôles to persons who do not rank high in the estimation of their neighbors. The poison which Romeo purchased after offering increasing amounts of gold, was reluctantly supplied by a poor, starved apothecary, while Laertes, in Hamlet, having put poison

upon the blade of his sword, volunteers the information that he "bought an unction of a mountebank." Brabantio, father of Desdemona, in "Othello," attributes the miscegenation of his daughter to drugs supplied by disreputable practitioners, for he says: "She is abus'd, stol'n from me, and corrupted by spells and medicines bought of mountebanks."

These fragmentary extracts from the great dramatist's writings reveal a profound knowledge of medical subjects, and place the physician in the light of being an honorable member of society.

Highland Building

THE TREATMENT OF DISEASE BY INJECTIONS OF DEEP-SEA WATER AND RADIUM.

By FRANCIS E. PARK, M.D.,

Stoneham, Mass.

For a period of about fifteen years, René Quinton, the originator of the treatment of disease by injections of deep-sea water, rendered isotonic with the fluids of the body by the addition of spring water, has been carrying on in Paris his great humanitarian work. During this period he has saved thousands of lives, especially those of infants. His method was the object of a great deal of ridicule at first, but as time wore on and the uniformly splendid results of his treatment became known, more and more respect was accorded it, until, at the time I visited him, three years ago, it was customary to find his clinic crowded by physicians from all over Europe.

My attention was drawn to this method by reading a paper written by Dr. Robert Simon of the University of Paris and published in the "International Medical Annual" of 1910. In this such strong and apparently well-substantiated claims were made, that I was induced to try the remedy in a very grave case that was under my care at that time, and with such striking results that I gave it a wide and searching trial, and now, after five years of constant use, can say unhesitatingly that nowhere in medicine, so far as my knowledge goes, have we such a potent, yet safe, general tonic.

In Quinton's book, "L'Eau de Mer, Milieu Organique," there is a very careful analysis and study of the water of the ancient ocean as revealed in deep deposits in mines. The elements revealed there are easily divided into groups. In the first, which contains in bulk more than half of all the others combined, are chlorine and sodium. In the next the amount is very small, but still present in appreciable quantities, and the minerals are sulphur, magnesium, potassium, and calcium. In the next group the amount present is exceedingly minute but still demonstrable chemically, and comprises bromine, silicon, carbon, azote, iron, iodine, manganese, phosphorus, and lithium. Then there is a fourth group, in which the presence of the elements can be determined only by means of the spectroscope; this contains boron, arsenic, copper, silver, gold, zinc, strontium, barium, cesium, rubidium, aluminum, lead, and now later investigations add to the above list, radium.

According to Quinton's researches, all of these elements, in practically the same proportions, have been demonstrated in the body fluids by competent chemists. It was this remarkable coincidence, coupled with his belief that the first living organism was found in the warm waters of the primordial ocean, that led him to the conclusion that if life originated and developed in such a medium, then the same solution applied to diseased cells, that are in structure similar to the original one, could not fail to be beneficial, by furnishing them a pabulum which they could easily assimilate, and thus regain their lost energy.

It is hardly the place here to follow the steps by which he was ultimately led to apply his theory in practice; suffice it to say that the evolution occurred, and as a result we find to-day in Paris two large clinics where this work has been carried on for many years in the most careful and scientific manner possible, with all the data for this period open for inspection. The results obtained cover such a wide variety of diseases that one is at once forced back to the very essence of things, in order to reach an adequate explanation of the effects observed, for not only do we see desperately sick enteritis cases recover in a marvelous manner, but various other conditions extending even to chronic skin lesions as psoriasis and eczema.

At the time I visited Professor Quinton, in 1913, he was holding to his original belief, that in the deep-sea water was some element of life, which he called "marine plasma," for he had found the vital force in it was very unstable. He could neither boil the water nor keep it more than a few days without a total loss of its healing power. I suggested to him at that time my belief that he was dealing with a weak emanation of radium, but we could not agree. Within a few months, however, Professor Jolie's paper appeared claiming his discovery of rich deposits of radium in the deep-sea dredgings, and his subsequent assertion of the radioactivity of the whole ocean body. Thus we had in the administration of freshly prepared solutions not only a natural food, but also the dynamic force of radioactivity to stimulate the activity of the cells and increase their power of absorption.

So much for the prologue, now for the story; what will it do?

In the first place I will state how it is prepared, and then as briefly as possible outline the conditions where it has proved of benefit.

The water is obtained out in the open ocean, in a region free from the contamination of sewage, and out of the track of vessels. I use a sterile glass bottle of a gallon capacity, and with a very small neck. This is dragged rapidly down to the depth of about 100 feet by a heavy weight attached to the rope and several feet below the bottle. It remains at that depth for fifteen minutes, and is then drawn to the surface and sealed. In my laboratory it is diluted with pure spring water in the proportion of three parts of the sea water to five of the other, and in order to make it permanently radioactive, 5 micrograms of a solution of radium barium bromide is added to every 1,000 c.c. of the mixed solution. It is then passed through a porcelain filter, and afterwards sterilized by heat. The dose varies from 10 c.c. to 200 c.c.

It can be injected with any large syringe which can be sterilized, but the best way I believe is by means of an apparatus which I have devised, patterned somewhat after that used in Paris. The accompanying illustration, I think, explains itself. It consists of (*a*) a glass reservoir to hold the solution, having corrugations in each of the extremities, so that the rubber tubes will not slip off; (*b*) a common atomizer bulb which goes on the curved extremity to pump up the necessary air pressure to expel the solution; (*c*) the rubber tube, which slips onto the straight end and carries the needle and the

brass attachment onto which the needle is screwed; (*d*) a small tunnel, of agate ware preferably, with a flexible rubber tube which slips onto the curved end and is used to pour the solution into the reservoir. The injection can be given in the back, sides of the abdomen, or, and this is the location of preference, in the hollow space on the thigh, just back of the greater trochanter. If the flesh is grasped tightly and held so while the 24-gauge steel needle is quickly thrust straight in, there is almost no pain. I use the same area from start to finish on a case. Of course it goes without saying that surgical asepsis should be maintained throughout.

Quinton claims, and my own experience verifies it, that the sea water is practically an absolute specific in the enteric diseases of infants. He sees the worst types of the disease brought in from the slums of the city, and by this treatment saves almost every one. I shall never forget the first case of a fatal type that I treated in this manner. A child 6 weeks of age, suffering from acute gastroenteritis, was apparently moribund at the time of my visit. I hardly expected to find it living when I got back from a hasty trip to my office to get the sea water; 200 c.c. was injected and before it was all in the child began to grow warm and show signs of life. The improvement was most marvelous, for an experience of over twenty years assured me that the case was hopeless. Since then I have learned always to expect a recovery in these conditions when treated in this manner.

As a general tonic after a severe sickness, I believe it is without a peer, while time and again I have been able to build up a surgical case that on account of general debility was apparently hopeless, so that in a very short time my patient was able to undergo a major operation successfully. Again I use it as a routine practice in the convalescence following all my severe surgical work, and am sure that I derive great benefit from it. In simple anemia and chlorosis, and as an adjunct to thorium X in the treatment of the pernicious type it is of proved worth.

In various skin affections, especially psoriasis and chronic eczema, Quinton has done some very remarkable work, and has a collection of photographs of cured cases that cannot be duplicated. My own experience in this line has been small, but my results have been equally striking.

In elderly patients the effect of the treatment is very gratifying; in fact, they seem to respond a good deal as do the children, and were it not for taking up too much space I could narrate some very interesting illustrative cases.

Another class of disease where I employ it as a most satisfactory routine treatment, is neurasthenia, and every medical man can test this very nicely in his own experience. There are always times in our busy life when the work comes so fast that we are tired out, and it is hard to keep going. This is the condition that has steered so many of our profession into the use of alcoholic stimulants and drugs. The effect of the solution in this condition is simply magical, as I can testify from many personal experiences. In my own case I pass, in about twelve hours, from a condition of exhaustion, to one of perfect well being, and this condition persists.

As for contraindications, I know of none. In the five years that I have employed it, and I use it very largely, I have never seen the slightest harm come from its use, barring a small number of abscesses in the early days, that were directly traced to a septic needle.

In conclusion, I believe that the medical world owes a debt of gratitude to Prof. René Quinton which as yet it but little realizes, but some day will to the uttermost, as the treatment becomes more generally known.

Medicolegal Notes.

Burden of Proof of Negligence Is on Plaintiff.—In an action for damages against a physician for the negligent performance of a surgical operation, in that a gauze sponge was negligently left in the plaintiff's abdomen, it was held to be injurious error to charge at the request of the defendant's counsel that, "If you find that the gauze was left in the abdomen of plaintiff and the incision sewed up by defendant or allowed to heal over it, the burden of proof is on defendant to show that it was not left there by any carelessness or negligence of his." In an action for negligence, the burden of proving the negligence of the defendant is upon the plaintiff, and as a proposition of law for the jury's guidance at the close of the case, it never shifts to the defendant.—Niebel v. Winslow, New Jersey Court of Errors and Appeal, 95 Atl., 995.

Excessive Damages for Personal Injuries.—In an action for personal injuries in which the plaintiff recovered a verdict of $8,750, the liability of the defendant was admitted, but the case was appealed on the ground of excessive damages. In cutting the damages down to $2,000 the court said: "A careful study of the evidence shows that the verdict was unconscionably excessive. This case presents a typical illustration of the extremes to which reputable physicians will sometimes go in testifying in behalf of a patient, and the boundless latitude over which pathology, diagnosis and prognosis will permit them to range. To give an intelligent analysis of the evidence in this case would require a space beyond the confines of any ordinary opinion, and serve no useful purpose. Seventeen questions were submitted to the jury which, with the subdivisions, required thirty answers. The questions were all couched in medical language, and many of them were of a highly technical nature.

"To illustrate: Question 9. Did plaintiff receive an injury to pelvic floor caused by defendant's negligence? Question 16. Is the plaintiff's condition caused by the defendant's negligence such that an operation, to wit, hysterectomy, will have to be performed? Question 17a. Is she suffering from general traumatic neurasthenia and inertia of nerves controlling the blood supply of the uterus? Twenty-seven of the answers were in the affirmative. To sixteen the jury, to their credit, said, "Do not know." These questions were all taken, seriatum, from the plaintiff's specifications of her injury; the only change being the interrogatory form.

"It is not difficult to perceive that the jury, with these specifications before them in their room, were overwhelmed with the array of medical inquiries and technical terms. If they were bewildered, it is without wonder; and that their verdict might be exaggerated, upon affirmatively answering this array of questions, all indicating different forms of disorder resulting from injury, might well be expected."—Wingate v. Waterville F. & O. Ry. Co., Maine Supreme Court, 95 Alt., 882.

Degree of Care Required.—In an action for malpractice it appeared that an operation for pleurisy was performed on a child, and a tube placed in the incision to drain it and fastened by a safety pin to gauze wrapped around the tube. Through improper manipulation of the dressing by the child's mother the tube slipped inside the child's body and, when the defendant relieved another doctor in the treatment of the case, could not be found. The mother, though insisting that the tube might be in the child's body, denied that she had interfered with the dressing, and, in view of the impossibility of the tube entering the cavity unless the safety pin was removed, the defendant was misled into believing that the tube could not be in the cavity. It was held that, under such circumstances, the defendant exercised such care as ordinary medical skill and knowledge required by directing the mother to take the child to a hospital for an operation if she believed the tube was in the body.—Cyr v. Landry, Maine Supreme Court, 95 Atl., 883.

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THE OSSEOUS DYSTROPHIES SIMULATING BONE TUMORS.

WHEN Virchow, in 1877, systematically opened all the long bones of an aged woman who had died from diffuse lymphosarcoma and found in the right humerus a cyst the size of a large walnut which he considered due to the breaking down of a cartilaginous metastasis, he promulgated the theory of neoplastic origin of simple bone cysts. His observation attracted slight notice at that time, and but little attention was paid to these lesions until the development of the *x*-ray led to their occasional recognition in the attempt to differentiate various bone lesions. When operative statistics as well as autopsy findings and studies of their histological structure began to appear in the literature, it was found that many of these bone cysts did not at all conform to the neoplastic idea advanced by Virchow. Abroad, the reports of von Recklinghausen, Rehn, Mikulicz, Mauclaire, and others; in America, the studies of Bloodgood, the late Carl Beck, Barrie, and others have brought this type of bone lesion adequately before the surgeon, from the standpoint of both the diagnostician and the pathologist; so that now the progressive surgeon and the expert radiologist are on the lookout for simple bone cysts, especially in cases of spontaneous fracture in early life, as well as for tumors of a malignant nature.

The most recent contribution to this subject is that of Bérard and Alamartine in the *Revue de Chirurgie* for August, 1914-November, 1915. They report three personal cases and a résumé from the literature of twenty-five others which they considered to conform to the type (fibrocystic osteodystrophy) which they discuss in their paper. By way of introduction they first remind the reader that there occur in certain of the long bones—sometimes in the epiphysis, sometimes in the diaphysis—localized dystrophic lesions entirely independent of any neoplastic process, which are capable of simulating, clinically, tumors of the bone, and that these lesions are well known to-day, thanks to radiography and to the sufficiently numerous surgical interventions to which they have given place. According to the anatomicopathological form which they take on, they have been variously called simple cysts of the bone, spongy callus, fibrocystic osteodystrophies, but the authors believe these form only a single group, "pseudotumors of bone by osteodystrophy."

In considering the etiology the authors point out that the age of the patients varies within narrow limits and that the malady is one of the period of growth. They find that but rarely does the age exceed 30, and that if, in these latter cases, one examines minutely into the previous history, one usually finds that the affection is of long standing and dates from adolescence; in this they agree with Mikulicz. In the anamnesis of these patients one does not generally bring out a history of any previous osseous affection such as rickets, osteomyelitis, tuberculosis, or syphilis. By far the most prominent among etiological factors is the history of traumatism. This would seem to be shown by the fact that of eighty-four observations of bone cysts collected by J. Mutel, in twenty-four there had been one or more previous fractures and in twenty-six there was a definite history of one or many previous contusions, and eliminating the cases in the literature where the history was lacking, Mutel found that of sixty-three cases forty-seven, or about 80 per cent., followed contusion or fracture. Bérard and Alamartine, however, hold that traumatism as a causal factor is not always demonstrated, and that often it merely brings about examination by the surgeon which then reveals the presence of an already existing lesion.

There are four principal theories as to the pathogenesis of these cysts, namely, the neoplastic, the infectious, the traumatic, and the trophic. The authors discard the first two of these as based on errors of diagnosis or misinterpretation of findings, while their convictions as to the insufficiency of the traumatic theory have already been alluded to. Of the trophic theory they say that the histological characteristics of the lesions found compel adherence to it. In support of this they call attention to numerous facts, one of which is that these cysts are found near the epiphysis or the center of the diaphysis, and they state in explanation that at the level of the epiphysis the arterioles have the charatcer of terminal vessels and that the nourishment of the bone is equally precarious at the middle portion of the diaphysis, while they also consider that functional trouble in the glands of internal secretion which influence bone growth have to be taken into account, as seemed apparent in one of their personal cases.

As to treatment, we find that the most frequent intervention has been opening of the cyst and curetting its walls, packing, and wound healing by granulation. In some cases the periosteum and soft parts have been turned down and the cyst space obliterated by organization of blood clot or filled with Mosetig-Moorhof wax. These two types of operation apply more especially to the cases in which the cysts have been relatively small. For the more extensive cases with voluminous cysts, and for those with almost complete destruction of the continuity of the shaft, numerous operative procedures have been employed, including, in recent years, the transplantation of a portion of the clavicle (Delanglade), the fibula (Lexer), and the tibia, after resection of the diseased area. Since these lesions are nonmalignant, the treatment should be as conservative as possible.

Upon the basis of their extensive study of the

question the authors feel that the following conclusions are justified: "There occur in certain long bones of the extremities, sometimes in the juxta-epiphyseal region, sometimes in middiaphysis, certain dystrophic lesions capable of simulating, clinically, tumors of the bone. These lesions are met with in the anatomical form of a fibrocystic osteitis of central origin; they may take on rather variable microscopic appearances (solitary cyst of the bone, spongy callus, fibrocystic pseudotumors). These lesions are neither inflammatory nor neoplastic. They result from a derangement in the nutrition of the bone. The cause of this derangement is rather difficult to determine. The influence of traumatism has often been imputed. Insufficiency of the glands of internal secretion which regulate the nutrition of osseous tissue, notably the thyroid, likewise seems an etiological factor. Taking advantage of the clinical history of the patient and the radiographic findings, it is possible if not to be certain of the diagnosis at least to suspect it and avoid confusion with an osseous tumor. The interest in this diagnosis is considerable, the prognosis and the therapeusis being essentially different in the two cases. These lesions, in fact, are of a benign nature and essentially curable. The intervention will consist in as conservative an operation as possible. . . . Recurrences never take place and the functional results are excellent, at least whenever the extent of the lesions has not rendered considerable osseous removal necessary, which is exceptional."

We have given a somewhat extended review of Bérard and Alamartine's article, since the subject should be of very considerable interest to the surgeon and is one that has received adequate attention by comparatively few in this country. We have presented a review uncolored by our own theories or opinions; but we shall be surprised if some of the views expressed by the authors go long unchallenged.

THE CAMPAIGN AGAINST TUBERCULOSIS.

THE fact has been insisted upon frequently that tuberculosis will not be abolished by relying upon sanatorium and hospital treatment alone. In order to have a fair chance of fighting tuberculosis with success the disease must be attacked in its stronghold, the home. The recognition of the house as the breeding ground of tuberculosis led to the creation of the Tuberculosis Dispensary, and the urgency of the question, according to Sir Robert W. Philip (*Medical Press*, February 16, 1916), has been emphasized by the facts which the dispensary has unearthed.

For example, it has been shown that in 60 to 70 per cent. of the tuberculosis cases under the care of the dispensary there existed all the possibility for infection; that is to say, persons living in a given household had been for prolonged periods in close proximity to one case at least of advanced tuberculosis. It has been similarly recorded how in more than 65 per cent. of the cases studied in one center the tuberculous patient occupied the same bed with one or several persons, and that in more than 75 per cent. of the cases the tuberculous patient occupied, if not the same bed, at least the same room. Investigations in Edinburgh, and it may be said in all cities—New York, for instance—in which such have been undertaken, have revealed the hopeless ignorance which prevails among the masses regarding the treatment of the tuberculous patient and the need for avoiding infection. It has been proved that tuberculosis is essentially a house disease, and that in crowded centers numerous dwellings exist which may be best described as tuberculosis nests. They have pointed to the urgent need which exists for the hygienic education of the people at large by skilled and sympathetic teachers, and the training of fathers and mothers in the physiological principles which govern the rearing of healthy children.

The first step—or rather the most important step, for it has already been taken to some extent—is the provision of better houses. So long as people are massed together like sheep in unsanitary dwellings, just so long will tuberculosis flourish. But it is also necessary that knowledge be diffused as to the best use to be made of accommodation and resources actually at the disposal of the household. Knowledge with respect to tuberculosis in all its phases should be disseminated by word of mouth and by writings and posters throughout the length and breadth of the land. The New York City and State boards of health have set an example in this direction, and much good has been accomplished by the educational campaigns which have been initiated and carried on by their health officers.

SAWING OFF LIMBS.

JUDGING by most of the references to medical students and young doctors in fiction it might easily be supposed that these individuals spent the major portion of their waking hours amputating limbs. The medical student refers casually to the fact that he is just going to help saw off an arm and the genial family doctor remarks jovially that he must be excused, he is going out to cut off a leg or two.

In the present war there has been some tendency to revert to the methods of antiquity in amputations. It is much easier of course to perform a plain circular section than to do a more elaborate amputation and in field surgery where every moment must be utilized, anything which saves time is naturally considered. This method has been especially recommended for cases of gas gangrene, it being alleged that it leaves no recesses for the collection of poisonous matters. It has been therefore suggested that in many cases a plain circular section might profitably be made in the field and the case transferred to the hospital where later on another amputation could be done at one of the preferred sites.

Writing in the *Lancet* for October 9, G. A. Wright calls attention to some disadvantages of this method. In the first place it requires an inordinately long time for the stump to heal owing to the large area which has to be granulated over. The result too is not satisfactory, a large cicatrix being left with the bone pressing against it. The theory that the operation can be done as a temporary means to be succeeded later on by a more elaborate operation is all very well, says Wright, but in prac-

tice the patients often refuse a second operation. Having been subjected to one surgical procedure and passed through a long, tedious healing process, they are naturally averse to undergoing this ordeal again.

So it would seem that the disadvantages of this method outweigh the advantages and that it should not be used except in cases of great emergency. It would behoove then those physicians who are brushing up on their surgery, having caught the preparedness spirit, to devote part of their time to the latest and best methods of amputation.

LIFE-SAVING INTRACARDIAC INJECTIONS.

THE injection of cardiac stimulants directly into the heart muscle or ventricles of dying patients is doubtless an old procedure, but with little or no permanent benefit to report from it. Had results been attained which were commensurate with the kind and degree of the intervention, such resources as direct cardiac massage and simple needling of the heart would not be regarded as the very last resort in heart failure. Cases of life saving may have occurred in which intracardiac injection may have been one of a number of desperate remedies invoked.

Ruediger, in the *Muenchener medizinische Wochenschrift* for January 25, reports a case in which life was practically restored to an elderly woman by an intracardiac injection of a little strophanthin. The case occurred in the Marburg Medical Clinic. An elderly woman had been admitted in a state of cyanosis and edema of cardiac origin. There was double hydrothorax. The heart was dilated on both sides, pulse 140 and fluttering. The original lesion was apparently mitral, both obstruction and regurgitation. To the ordinary cardiac stimulants there was absolutely no response. The author tried to find a vein in which to inject strophanthin, but owing to the feebleness of the circulation none could be located. The injection was then thrown directly into the heart muscle and the response was prompt and decisive. The patient was now placed upon the indicated treatment and made a relative recovery. She remained in the clinic for five months and was in such a good condition when discharged that she may survive under favorable conditions for a number of years.

Animal experiments have shown that in intracardiac injections there is no danger of air embolism, because even if air enters the ventricles no harmful results can be noted. Again, the puncture made by the needle closes up so promptly that in a day or two no trace of it can be found. The author has performed the operation a number of times since 1909 and has evolved a technique. The injection should be aimed at the base of the heart, where motion is least. The upper part of the right ventricle seems to be the best site.

SUGAR AS A WOUND DRESSING.

WHILE glucose is used extensively by the mouth in hyperchlorhydria and gastric ulcer and is employed to some extent by the rectum after surgical operations, with the view of diminishing shock and preventing acidosis the topical application of cane sugar to wounds appears to result in nothing more than absorption of secretion in cases not yet infected. It would hardly be supposed to be of any more use than any ordinary dusting powder. Nevertheless there are special traumatic conditions in which sugar may give superior service. Thus Dr. Erich Meyer contributes a short article to the military supplement of the *Münchener medizinische Wochenschrift* for January 11, in which he relates his experiences as surgeon to a mining company. The miners frequently injure themselves and in practically all cases the wounds are contaminated with coal dust. In theory such lesions should be carefully cleansed. As ordinary granulated sugar is available in large quantities the author began to dress these dirty wounds with it, after merely flushing with hydrant water, using no other dressing except a simple compress. The sugar was renewed every second or third day, and in 70 per cent of these injuries no infection followed, while healing was unusually prompt and sound. The use of sugar completely prevented adhesion to the dressings and the resulting hemorrhage.

SURGICAL TREATMENT OF LUPUS VULGARIS.

THE most effectual remedy for lupus thus far discovered is the Finsen light treatment, which requires weeks and months of time. In military surgery this delay is quite impracticable. Soldiers who are admitted to the ranks with lupus usually have their malady much aggravated by warfare; and in such cases excision and plastic surgery become the indication of necessity. At the Royal Imperial Medical Society of Vienna last January (*Muenchener medizinische Wochenschrift*, February 15) Spitzer, of the Vienna Lupus Institute, reported the cases of 40 soldiers with lupus of the skin of years' duration treated with excision and plastic repair. The total number of such cases treated by this means at the institute now amounts to 630. The average duration in hospital is from two to three weeks for the simpler cases. In those who have been neglected, so that mutilating effects have been brought about, additional prosthesis is required, especially for the nose, ear, etc. Operation is done under local anesthesia. In diffuse lupus surgery is, of course, contraindicated.

News of the Week.

New York City Death Rate.—The death rate for the first sixteen weeks of the present year is given by the Department of Health as 15.57 per 1,000 of population, the lowest on record for the period; last year for the same time, the rate was 15.59. During the week ending April 15, the rate was 14.52 per 1,000, representing a total of 1,555 deaths, as compared with a rate of 17.01 and a total of 1,778 for the corresponding week of 1916. The reduction occurred chiefly in the mortality due to influenza, lobar and bronchopneumonia, and heart diseases; the mortality from measles, diphtheria, tuberculosis, and Bright's disease was somewhat higher than in the corresponding week of last year.

Deaths in Chicago.—During the week ending April 15, there were reported in Chicago a total of 767 deaths, giving a death rate of 16.1 per 1,000, the same as for the corresponding week of 1915, but an increase as compared with the previous week of this year, when the rate was only 13.9 per 1,000.

Fellowship Award.—The Mary Putnam Jacobi Memorial Fellowship, which was recently announced in these columns, has been awarded to Dr. Mildred Clark, a graduate of the Johns Hopkins Medical School in 1914. Dr. Clark will carry on researches in medical bacteriology under Prof. Theodore C. Janeway in the department of medicine at the Johns Hopkins Hospital.

Recruits for the Medical Brotherhood.—Dr. William J. Gies, first secretary of the Medical Brotherhood, has received a letter from the secretary of the Netherlandsche Vereeniging voor Heelkunde, informing him that this society had decided to enroll as a member of the Medical Brotherhood. In addition twenty-four well-known surgeons of Holland have already enrolled individually as members of the Brotherhood.

Personals.—Dr. William H. Dukeman of Los Angeles, Cal., for many years an occasional contributor to the MEDICAL RECORD, retired from active practice at the first of the year.

Dr. Elizabeth M. Baer of Philadelphia is a candidate for election as representative-at-large to Congress on the Socialist ticket.

Dr. William H. Steers of Brooklyn, N. Y., has been appointed major in the medical corps of the National Guard of the State of New York.

Centenarians in New Jersey.—Miss Celeste Yeandle of Hoboken, N. J., said to have been the oldest woman in the State of New Jersey, died at her home recently in her one hundred and second year, while Mrs. Margaret McCandless of Elizabeth, N. J., died on April 18, having just completed her one hundred and first year. Mrs. McCandless left four sons, twenty-one grandchildren, and five great-grandchildren.

Medals and Medicine.—The Army Medical Museum at Washington already houses a valuable collection, made by the late Dr. John S. Billings, of medals relating to medicine, and it is now desired that this collection should as far as possible be completed. The librarian of the Surgeon General's Office, therefore, requests the advice and assistance of physicians who are collectors of medical medals. The museum appropriations are sufficient to permit the purchase of individual medals not in the collection, the purchase of private collections will be considered, private donations of medals or groups of medals will be most welcome and will be duly credited to the donors, and the transmission of catalogues of medals for sale is requested. Communications on the subject may be addressed to Lieut-Col. C. C. McCulloch, librarian, Surgeon General's Office, U. S. A.

Tuberculosis Sanatorium for South.—The gift of 700 acres of land near Asheville, N. C., for a tuberculosis sanatorium was announced by officials of the Southern Sociological Congress in session at New Orleans on April 14. The donor is Mrs. D. B. Safford of Hot Springs, N. C., who has also given $20,000 as a nucleus for the building fund of the sanatorium.

New Home for Blind.—The Society for the Relief of the Destitute Blind, New York, having outgrown its present quarters at Amsterdam Avenue and 104th Street, will erect a new building at Grand Boulevard and 193rd Street. The new home, which, with the site, will cost about $400,000, will be a three-story fireproof structure, so planned that a fourth story may be added when greater accommodations are needed. It will be colonial in design, with walls of rough red brick with white trimmings, and will be built in two wings forming an L, the inclosed space being used for a garden. It is expected that the building will be ready for occupancy next November.

Reportable Diseases.—The Public Health Council of the New York State Department of Health, at a meeting on April 4, passed the following resolution: "It is the judgment of the council that laboratory facilities in the State, both within and without the department, being now adequate to make diagnostic examinations in diphtheria, typhoid fever, and tuberculosis, it is feasible and desirable for the department to enforce the sections of the sanitary code relating to prompt and uniform notification in these diseases by such means as will compel physicians at once to seek laboratory assistance in diagnosis in all doubtful cases."

Measles at Princeton.—Because of an outbreak of measles among the student body of Princeton University, the Easter holidays have been extended until May 1. About 300 cases of the disease have occurred in the town since the first of the year, and eight students are now in the infirmary.

Sick Poor Hospital.—The Nursing Sisters of the Sick Poor of New York City are collecting funds with which to erect a hospital for the free treatment of the poor of all classes. For thirty-eight years the Sisters have carried on work among the sick poor in their own homes.

To Study Health Insurance.—The New York State Legislature on April 17 passed the Mills bill, creating a commission to investigate the question of health insurance for workingmen and to recommend legislation on the subject to the Legislature of 1917. The bill carries an appropriation of $25,000 for the work, and provides that the commission shall consist of two senators, two assemblymen, and five other members to be chosen by the chairman.

New Hospital to Open.—The new Huntington (Long Island) Hospital will be opened for patients on the first of May. The building, which cost $100,000, is a gift to the town from Miss Cornelia Prime.

Gifts to Charities.—Mr. Henry W. Putnam of New York has given the sum of $90,000 to the building fund of the proposed new hospital at Bennington, Vt., as a memorial to his father.

The Albany Hospital, Albany, N. Y., receives a bequest of $5,000 under the will of the late Mr. H. T. Martin of New York for the endowment of a bed in memory of the testator's brother, Frederick Townsend Martin.

By the will of the late Jacob Frankenthal of New York, Mount Sinai Hospital, the Montefiore Home, and the Home for Aged and Infirm Hebrews receive bequests of $1,000 each.

By the will of the late Fanny Brown of Philadelphia the sum of $10,000 is bequeathed to the Presbyterian Hospital.

By the will of the late Sarah D. Cox of Philadelphia the sum of $5,000 is bequeathed to the Hahnemann Hospital and a portion of the residuary estate to the Germantown Hospital.

By the will of the late Samuel Hazard of Philadelphia, who died recently at Los Angeles, the sum of $1,000 is bequeathed to the Germantown Hospital.

By the will of the late Maria S. Wilson of Philadelphia the sum of $5,000 is bequeathed to the Episcopal Hospital of that city, to be added to the endowment fund.

Rice Memorial Hospital.—Because of the protests of the inhabitants of Irvington, N. Y., the plan

to establish in that town the convalescent home to be built as a memorial to the late Isaac M. Rice has been abandoned, and announcement is made of the choosing of a new site at North Tarrytown. An estate, comprising twenty-four acres, on New Broadway, has been purchased, and it is hoped that work on the buildings can soon be begun. The site, it is said, has cost $70,000, and an additional $200,000 will be expended for construction.

Medical Society Elections.—TENNESSEE STATE MEDICAL ASSOCIATION: The annual meeting was held in Knoxville during the first week of April, when the following officers were elected: *President*, Dr. C. F. Crowder, Nashville; *Vice-Presidents*, Dr. C. J. Carmichael, Knoxville; Dr. J. T. Moore, Algood, and Dr. John L. McGehee, Memphis; *Secretary*, Dr. Olin West, Nashville. The next meeting will be held in Nashville.

NEW LONDON COUNTY (CONN.) MEDICAL SOCIETY: At the one hundred and twenty-fifth annual meeting of this society the following officers were elected: *President*, Dr. George Thompson, Taftville; *Vice-President*, Dr. William M. Hill, Noank; *Secretary-Treasurer*, Dr. L. F. La Pierre, Norwich.

FAIRFIELD COUNTY (CONN.) MEDICAL SOCIETY: At the annual meeting in Bridgeport on April 11, the following officers were elected: *President*, Dr. Frank H. Barnes, Stamford; *Vice-President*, Dr. F. M. Tukey, Bridgeport; *Secretary*, Dr. Eli B. Ives, Bridgeport; *Treasurer*, Dr. H. B. Lambert, Bridgeport.

Tuberculosis Day Camp.—The report of the New York City Day Camp "Rutherford" for 1915, just issued by the Department of Health, states that during the year 274 patients were cared for, of whom 138 were adults and 136 children. Of the patients who remained for a month or more, 126 were discharged during the year, 3 because they were found to be non-tuberculous, while 5 were transferred to the Night Camp. Of the remainder, on admission 63 were classed as incipient, 48 as advanced, and 7 as far advanced, while in discharge 33 were apparently arrested, 33 were quiescent, 31 improved, and 21 unimproved. Over 75 per cent. of the pupils have been found to continue in good health, due largely to the "follow-up" work of the nurses attached to the camp. The Night Camp is conducted along the same general lines as the Day Camp, and is designed to care for patients who are able and obliged to work during the day and are in need of the opportunity afforded by the camp. At present it has accommodations for twelve male patients.

Medical Society of the Missouri Valley.—The spring meeting of the society was held in St. Joseph on March 23 and 24, under the presidency of Dr. John P. Lord, Omaha. Dr. Charles A. L. Reed, Cincinnati, made an address on recent developments in idiopathic epilepsy, claiming that the germ producing epilepsy had been discovered, and Dr. Mazyck P. Ravenel of the Missouri State University spoke on sera and vaccines. A number of other interesting papers were presented.

American Climatological and Clinical Association.—The thirty-third annual meeting of this association will be held in Washington on May 9, 10, and 11, in connection with the tenth congress of American Physicians and Surgeons. The scientific meetings will be held at the New Willard Hotel, under the presidency of Dr. James Alexander Miller of New York, and the annual dinner will be given at Rauscher's on the evening of May 10. Details of the program can be obtained from the secretary of the association, Dr. Guy Hinsdale, Hot Springs, Va.

American Gastro-Enterological Association.—The nineteenth annual meeting will be held in Washington on May 8 and 9, at the New Willard Hotel, under the presidency of Dr. Charles G. Stockard of Buffalo, N. Y. Dr. Franklin W. White, 322 Marlboro Street, Boston, is the secretary of the society.

Harvey Society Lecture.—The eleventh lecture of this course will be delivered at the New York Academy of Medicine on Saturday, April 29, at 8.30 P. M. by Dr. William H. Welsh; subject, "Medical Education in the United States."

Hospitals Chartered.—The State Board of Charities on April 12 approved the charter for the new Broad Street Hospital, New York, calling for a general emergency hospital and a nurses' training school, thus assuring the completion of the project of a hospital to serve the million and a half of people who are employed in lower Manhattan during the day. The granting of the charter was protested by Bellevue Hospital, the New York Hospital, the Volunteer Hospital and the Ambulance Board, on the ground that the existing institutions were sufficient to cover the territory; their protests were, however, overruled. Dr. A. J. Barker Savage will be the superintendent of the new hospital.

The State Board at the same time approved the incorporation of the Canandaigua Hospital, Canandaigua, and of the Bush Terminal Hospital, Brooklyn.

Colleges Cooperate.—Columbia University, New York, and the Long Island College Hospital, Brooklyn, which have already entered into an agreement by which the university offers certain courses at the college, so that the graduates of the latter receive the degree of bachelor of arts or bachelor of sciences as well as that of doctor of medicine, have extended their cooperation so that the university will in future give graduate courses in history and sociology in the medical college buildings. The medical school will lend the lecture rooms for the purpose, and the courses will be given by Columbia professors. It is hoped that the plan may soon be extended so as to include graduate courses in politics and English as well.

Mosquito Week.—The plans for the proper observance of mosquito week in New York are being pushed. The town of Forest Hills on Long Island has already raised a thousand dollars for the campaign, and Commissioner of Health Emerson has announced that the Gutman swamp, the chief breeding place for mosquitos in the neighborhood of Forest Hills and Jamaica, is to be drained by the construction of a temporary sewer. As the expense of mosquito extermination is slight in comparison to the results returned, the slogan of the campaign is to be: A dollar kills a million.

Obituary Notes.—Dr. ROBERT M. CURTS of Paterson, N. J., a graduate of Trinity Medical College, Toronto, Ontario, in 1892, and a member of the American Medical Association, the Medical Society of New Jersey, and the Passaic County Medical Society, died at his home, on April 16, aged 50 years.

Dr. ANDREW J. RICHARDSON of New York, a graduate of the New York Homeopathic Medical College and Hospital in 1870, attending physician at the Yorkville Homeopathic Dispensary and at the New York Christian Home for Intemperate Men, con-

sulting physician at the Baptist Home for the Aged, and a member of the American Institute of Homeopathy and the State Homeopathic Medical Society, died at his home, on April 17.

Dr. ORIN WARREN of West Newbury, Mass., a graduate of the Jefferson Medical College, Philadelphia, in 1858, died at his home after a short illness, on April 4, aged 83 years.

Dr. EMIL V. KLINKOWSTROEM of Denver, Col., a graduate of Rush Medical College, Chicago, in 1896, died suddenly at his home, on April 2, aged 62 years.

Dr. THOMAS W. DORSETT of Willacoochee, Ga., a graduate of the Atlanta College of Physicians and Surgeons in 1902, died at his home, on April 5, aged 37 years.

Dr. ALBERT L. MARDEN of Claremont, N. H., a graduate of the Dartmouth Medical School, Hanover, in 1874, died at his home, after a short illness, on April 2, aged 67 years.

Dr. HUGH SCHUSSLER, formerly of Chicago, a graduate of the Hering Medical College, Chicago, in 1897, and of the Northwestern University Medical School in 1903, died at his home in New York, on April 16, aged 40 years.

Obituary.

JAMES WILLIAM WHITE, M.D., LL.D.

PHILADELPHIA.

DR. JAMES WILLIAM WHITE, emeritus professor of surgery in the University of Pennsylvania, Philadelphia, and a trustee of the university, died at his home, after a long illness, on April 24. Dr. White was born in Philadelphia on November 2, 1850, and was educated in the Philadelphia public schools and at the University of Pennsylvania, from which he received the degree of doctor of medicine in 1871. Immediately after graduation he joined the staff of Prof. Louis Agassiz and accompanied him on the Hassler expedition to the West Indies, the east and west coasts of South America, and the Galapagos Islands. Returning to Philadelphia the following year he began the practice of surgery, and entered the department of surgery at the University in 1881 as a demonstrator. He was appointed successively professor of genitourinary surgery, professor of clinical surgery, and John Rhea Barton professor of surgery, the last appointment dating from 1900. During this time he served as attending and consulting surgeon at several of the Philadelphia hospitals, and was also interested in many civic enterprises. Dr. White was a member of the American Medical Association, the Medical Society of the State of Pennsylvania, the Philadelphia County Medical Society, the American Surgical Association, the Philadelphia Academy of Surgery, the Pathological Society of Philadelphia, the College of Physicians of Philadelphia, the American College of Surgeons, and the Association of Genitourinary Surgeons, and was the author of a number of books and articles on surgical topics.

RICHARD STEIN, M.D.

NEW YORK.

DR. RICHARD STEIN died suddenly of apoplexy on Tuesday evening of this week while reading a paper before the Metropolitan Medical Society in one of the halls of the Academy of Medicine. He was born in Bohemia in 1861, and after being graduated in arts from the College of the City of New York went to Berlin to study medicine, obtaining his degree there in 1884. He was a member of the New York County and State Medical Societies, the American Medical Association, the New York Academy of Medicine, the Metropolitan Medical Society, and the New York Pathological Society. He was visiting physician to the German and Lebanon Hospitals. He was a successful general practitioner and an earnest student of medicine, and was a frequent contributor to medical literature. The paper which he was reading when taken by death will shortly be published in this journal.

Correspondence.

THE USE OF SODIUM CITRATE FOR BLOOD TRANSFUSION.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Referring to Dr. Rueck's article in the MEDICAL RECORD of April 15, it is evidently impossible to convince him that questions of priority are determined by the date of publication (see MEDICAL RECORD, 1915, 87, 448).

However, even if Dr. Rueck's communication had appeared before and not one month after my preliminary report, my method would still be the first one which made the citrate method a safe and generally applicable procedure, for my method is the only one which can be used in small and large transfusions with perfect safety and satisfaction (see *Surgery, Gynecology & Obstetrics*, July, 1915, and *American Journal of the Medical Sciences*, December, 1915). RICHARD LEWISOHN, M.D.

[illegible] PARK AVENUE, NEW YORK

OUR LONDON LETTER.

(From Our Regular Correspondent.)

EFFECTS OF TEMPESTUOUS WEATHER—SIR A. KEOGH ON MEDICAL ARRANGEMENTS FOR THE ARMY—ADEQUATE PREPARATION—THE LONDON HOSPITAL—NURSES' HOME.

LONDON, March 31, 1916.

MEDICAL questions, like all others, have been little spoken of all through the week, the tempestuous weather preoccupying our attention. The month as a whole has been the worst March on record. Snow has fallen in some parts of the country on 22 days out of 30, accompanied on many by high winds leaving deep drifts. A number of deaths are reported more or less directly due to the storms, as *e.g.* several persons have been killed by falling trees striking them, others by the overturning of their vehicles, others again have become entangled in fallen wires. The railway traffic has been greatly disordered, and on the long journeys the delays have lasted for hours—two, three, four; some even eight. The mail to Dublin on Wednesday was 20 hours late, rail and seas together, a most unpleasant experience for passengers. From London to the North of England one or two trains got through, and in some parts hand-signalling was called upon to assist and safeguard. At Portsmouth a football club's headquarters was carried away; at Sandwich an iron coop weighing two tons was blown 200 yards from its position. In the London parks the gales have played havoc with the trees, not a few branches being wrenched off some and others being uprooted. We were kept many

hours in anxious expectation owing to the interruption of communication by road, rail, telegraph, and even telephone. The casualties are of the most varied character ever reported—ships in distress, street traffic suspended, houses and buildings unroofed, trains delayed for many hours (five to ten in some cases). In some localities the wind attained a velocity of 70 to 80 miles per hour in the fierce squalls—enough to impede the most powerful express engines. In London the squalls exceeded 60 miles an hour. Hundreds of trees have collapsed in the parks and public gardens, about 20 are prone between two gates in Hyde Park, and there are more in the neighborhood of the Round Pond. Trains to northern towns have been held up in a number of places through signal posts and telegraph poles being blown across the lines, and the delay at several stations was increased by a shortage of workmen. A party of about 50 Manchester people who set out for London on Tuesday returned the next day without having arrived here. They were stranded on the way, and procured food at farm houses near the line. Snowdrifts cut all communication, covering roads and rails—in some cases to a depth of eight or ten feet. A rise of two inches in the Thames and its tributaries has given an expansive sheet of water over six miles or more. In more exposed parts of the Surrey hills the drifts were reported to be seven feet deep.

Sir Alfred Keogh is in charge of the medical arrangements of the army here, in France, and the Mediterranean. Speaking in London on Wednesday evening, he said that at last they might look the public fairly in the face and say they were doing their best. During the last ten years, he went on to assert, the Government had made adequate preparation for war on the medical side, and that was why when the present campaign began they were in a fit shape to take on the responsibilities that fell upon them. It was only right and fair for him to say, he added, that the minister responsible for this adequate preparation was Lord Haldane. They had been told what they must prepare for, so as to be efficient for it—that was, a great European war. He did not think the public had fully recognized this, and he would impress it on them now.

At the meeting of the governors of the London Hospital the report of the committee states that during the past year the in-patients numbered 18,933, an increase of 600; the out-patients were 149,507, about 20,000 fewer. A satisfactory fact was that in over 19,000 cases anesthetics were given, with only two deaths. The hospital had supplied 120 nurses to the army during the war, 26 to the navy, and they had been able to provide every nurse asked for; ten of them had been mentioned in dispatches in the last quarter, and three were killed in the accident to *H.M.S. Natal*. For the new nurses' home, which Queen Alexandra wished named after Edith Cavell, £10,000 has been raised. The increased cost of provisions has added greatly to the expenditure of the hospital.

Treatment of Psoriasis with Horse Serum.—Perry has reported success with the subcutaneous injection of horse serum for this disease, stating that, among others, a case of six years' standing has been apparently cured by six subcutaneous injections at weekly intervals, the eruption having entirely disappeared. He suggests that this remedy should be extensively tried out, care being taken with regard to anaphylaxis.—*Boston Medical and Surgical Journal.*

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 13, 1916.

1. Progress of Nursing. William H. Merrill.
2. What Shall be the Attitude of the Public Toward the Recovered Insane Patient? H. C. Solomon.
3. The Relation of Syphilis to Mental Disease. Samuel T. Orton.
4. After-Care of Mental Patients. Henry P. Frost.
5. The Roentgenoscopic Examination of the Stomach and Duodenum. George W. Holmes.
6. The Incidence of Visceroptosis. I. H. Levy and J. L. Kantor.

2. What Shall Be the Attitude of the Public Toward the Recovered Insane Patient?—H. C. Solomon points out that the misconception of the meaning of insanity and the prejudice of the ages is responsible for the reaction of the public toward the recovered insane patient. He thinks that if we could disabuse the minds of many of the impression that insanity means a wild maniacal state, if we can make them understand that the majority of the insane are quiet and apathetic, that many of the so-called cases of nervous prostration "nervous break-down," etc., are in reality cases of manic depressive insanity, and that many of these patients recover to such a degree that they show no symptoms and retain their former characteristics and abilities, we shall have done a great deal toward the solution of the problem that confronts the patient recovered from mental disease. The difficulties which confront the discharged patient because of the attitude of suspicion, fear, and avoidance are productive of just those conditions which favor a recurrence of insanity, since it is important that the recovered patient be kept busy and occupied and should be free from worry. The attitude that is desired is that of fair play. When it comes to the question of employing the person who has recovered from an attack of insanity, the public should seek information from the experts as occasion requires rather than avoid the problems by drawing back. This attitude of dependence upon those of experience would lead to the avoidance of mistakes in other directions, as for instance, marriage with a recovered victim of insanity. It would also avoid the overlooking of symptoms of importance, whereby the patient suffers from the charitable interpretation of his associates.

5. The Roentgenoscopic Examination of the Stomach and Duodenum.—George W. Holmes describes a method of making roentgenoscopic examinations of the stomach and duodenum which is much less expensive than the methods usually employed and by which the results obtained were at least as good as those obtained by the more expensive methods. During the year 1914, 730 roentgen examinations of the gastrointestinal tract were made. Of these 209 showed evidence of organic disease of the stomach or duodenum; 144 were operated upon and the findings proven or corrected. The writer analyzes this series of cases in detail and concludes that this method, which is a modification of that of Barclay and Carman, offers the best chance of obtaining correct roentgen findings with the least possible cost, and in hospital clinics is the method of choice. The technique is as follows: The patient is allowed a glass of milk or a cup of coffee and a piece of toast at 7 A.M. At 10 A.M., after taking a brief history of the patient in order to enable the examiner to conduct the examination in such a way that the greatest attention will be directed to the symptoms of which the patient complains, an opaque meal, consisting of 75 gm. of barium sulphate and 8 oz. of potato starch gruel, is administered through a drinking tube, while the patient stands behind the fluoroscopic screen, and its passage through the esophagus and entrance into the stomach is noted. The first swallow is taken with the patient in

the oblique position, after which the antero-posterior position is assumed, and the examination continued. In this way the entire course of the esophagus is observed, the position of the stomach, and at times irregularity on the greater curvature. Pressure on the normal stomach will often force the barium through the pylorus and show an outline of the sphincter and cap. In many cases the examination may be concluded at this time, but should any of the findings vary from the normal, the examination is continued with the patient in the prone position. The writer has found that by placing the patient face downward, or a little upon the right side, upon the table (the tube under and small screen over the back) it is possible to demonstrate the duodenum and pyloric sphincter in the great majority of cases. Any defect in outline which can be reproduced on the radiographic plate can be seen upon the screen in some of the various positions and phases. The patient is next given a small carbohydrate meal and told to abstain from food and drink for six hours, at which time he reports for a second examination. This meal is essentially a test meal and should be constant in size and character. The absence or presence of barium in the stomach is noted, also the ileum, cecum, and that part of the colon which is filled, are observed and palpated for fixed or tender points. A third observation is made at 10 A.M. the following day, at which time the position, outline, and contents of the remainder of the colon are studied.

6. The Incidence of Visceroptosis.—I. H. Levy and J. L. Kantor present a study based on a series of 1600 consecutive private patients complaining of "stomach trouble." Of this total, 898 were subjected to a routine *x*-ray examination. Marked gastroptosis occurred in 46.4 per cent., and some degree of gastroptosis in 64.4 per cent. of these cases. The condition was only slightly more frequent in women than in men, the proportion being about six to five. The condition occurred more often in individuals under forty than in those over forty years of age, and this relationship held for both sexes. Gastroptosis was more frequent in single than in married women, in the proportion of 13 to 12. In this series practically all single women over forty were ptotic. In addition to gastroptosis many of these cases had ptosis of other organs as follows: Liver 77 per cent., right kidney 30 per cent., heart 22 per cent., both kidneys 3 per cent., spleen 1 to 2 per cent. The above clinical study does not support the view that visceroptosis can be ascribed to improper garments, the occurrence of pregnancy, or to any other incidental cause. It seems that the condition is intimately related to the structure of the body, and probably arises from some congenital predisposition. Ptosis is not in itself a disease. While in some of its milder forms it may cause suffering and discomfort leading to a state of chronic invalidism; on the other hand, the most marked types need not necessarily prevent the affected organs from performing their proper functions.

New York Medical Journal.

April 15, 1916.

1. Public Heath Laboratories. Roger G. Perkins.
2. Pyelocystitis and Metastatic Abscesses Following Tonsillitis. H. Brooker Mills and George A. Sowell.
3. Bloodletting in Uremia. Beverley Robinson.
4. Tuberculin in Surgical Tuberculosis. Ellis Bonime.
5. Episiotomy. George L. Broadhead.
6. Malnutrition. Ira S. Wile.
7. Anaphylactic Conditions of the Respiratory Tract. Alexander C. Howe.
8. A Little Physiology in the Consideration of Constipation. Albert C. Geyser.
9. The Disputed Point in Appendicitis. Clifford U. Collins.

1. Public-Health Laboratories.—Roger G. Perkins, in discussing the proper functions of the laboratory in the community, shows that in addition to its main duty, namely, the prevention of epidemics by acquiring and giving out information to aid in the control of disease already present, it has become customary not only to aid in the diagnosis of diseases but to offer means of curing and means of prophylaxis, and also to assume other functions as well, such as those relating to the adulteration of foods and beverages. In certain other activities the laboratory acts as a consultant. Examination of the air in public places and in common carriers, testing of disinfectants, school cultures for diphtheria carriers, and similar matters are examples of this sort. In order that the public may reap the full benefit from the public health laboratory there are certain principles that it is well to observe. First, in routine work outside of the diagnosis division, especially where there are places or outfits to be inspected, samples to be collected and examined, and a possible termination in a court procedure, the closer the collector of the samples to the analyzer, the better the results. Secondly, where the laboratory work of the individual worker is highly specialized there is a tendency for the individual to become a cog in the mechanism and to lose touch of the relations of the work, as, for instance, the man who diagnoses positive or negative in diphtheria slides without knowledge of the clinical relations. For these reasons the diagnostician should know whether the physician considers the case diphtheria or not, whether the culture is for diagnosis or release, and in the latter contingency, whether the presence of the organism is of long or short duration. There should be a certain amount of field work for each man so that the clinical side may not fade, and that where it is considered wise to isolate cultures and to test them on animals this should be done by the man who has followed them through the microscope. This same rule holds good in other divisions of the work. By this method the ultimate results to the community are better in that it gives the worker a square deal, puts him in a position for advancement, and does not lower him to the rôle of a mechanic who is fit for but one job. Moreover this arrangement in the various divisions seems to stimulate the whole group to better and more conscientious efforts. A third point upon which the writer expresses his convictions is with reference to the question of research work in public health laboratories. He believes that there are many problems requiring research work which can only be properly handled in a public health laboratory and that the difficulties of conducting such work may be solved by establishing a close relation between the laboratory and an up-to-date university, since there are always men connected with universities who are interested and have the time for research work.

3. Blood Letting in Uremia.—Beverley Robinson relates the case of a patient with chronic interstitial nephritis who was in coma and convulsions when he was called in consultation. He applied one dozen leeches to the mastoids with very satisfactory results. He feels confident that the use of leeches would save not a few lives and avoid many operations. In uremia, cerebral hemorrhage, and pneumonia they would often be invaluable. In acute aural and ocular inflammations many operations would be prevented; likewise in attacks of appendicitis. The local effect of leeching is preferable to venesection in all these conditions excepting pneumonia. The author says he has seen more than one instance, even when venesection was carefully done, in which the vein did not give out blood as it should. He deplores the fact that it is so difficult to get leeches in the drug stores of New York City, there being, so far as he knows, but one store north of Fourteenth Street in which they can be obtained.

4. Tuberculin in Surgical Tuberculosis.—Ellis Bonime outlines his method of tuberculin treatment in surgical tuberculosis. He points out that in applying tuberculin treatment we must aim toward two distinct effects: First, the elimination of the hypersensitiveness to the products of the tubercle bacillus; second, the production of the maximum amount of antibody substances in order to eliminate the tubercle bacilli faster than they can increase. The former can be attained by using minimized doses of tuberculin gradually increased, while the latter may be accomplished by giving the maximum amount of tuberculin consistent with the individual's hypersensitiveness. The writer's method is as follows: Treatment is begun by giving 0.10 c.c. of a certain dilution of the tuberculin. This dose is increased by 0.02 c.c. for each of the two following injections, giving 0.12 c.c. and 0.14 c.c. respectively. Subsequently the increase is made by 0.04 c.c., then by 0.06 c.c., thus increasing the amount of increase by 0.02 c.c. at every second injection until 1 c.c. of that dilution is reached, when the next dilution is begun and given in the same routine as the former. This method allows of the maximum of tuberculin being given compatible with the tolerance of each individual case, and if a reaction is reached, it will not be severe, as it is produced by the minimum of tuberculin necessary in that particular case. The dilutions are made in multiples of 10, and this is done in a Record tuberculin syringe, subdivided into 0.02 of a c.c. The diluent is half of 1 per cent. carbolic in normal saline. The first 0.90 c.c. of diluent is drawn in, followed by 0.10 c.c. tuberculin. An air bubble is then drawn in, the syringe is shaken and the contents are put in a receptacle, and labeled Solution No. 1. Then 0.90 c.c. of diluent is drawn into the syringe with 0.10 c.c. of Solution No. 1; this is well shaken and labeled Solution No. 2; 0.90 c.c. of diluent and 0.10 c.c. No. 2 is solution No. 3, and 0.90 c.c. of diluent and 01.0 c.c. of solution No. 3 is No. 4. In most surgical cases treatment is begun with the fourth dilution, except in acute joint tuberculosis where the filth dilution should be chosen. In the treatment of surgical tuberculosis the use of tuberculin does not obviate the necessity for the application of the usual surgical and orthopedic measures.

6. Malnutrition.—Ira S. Wile calls attention to the inadequacy of our knowledge regarding malnutrition among school children, and says that the extent to which malnutrition is productive of physical defects, or the degree to which physical defects are responsible for malnutrition, has not been determined. There interdependence seems to be certain. The solution of the problem of malnutrition is not at hand nor will be until medical inspectors give greater consideration to malnutrition. Considered as a unit defect, it possesses unusual significance in a constructive program for the establishment of the preventive and correctional measures necessary for the protection or the conservation of our school children. The mere placing of the word nutrition upon our blanks is insufficient. The concept should be positive and the defect to be recorded should be malnutrition.

Journal of the American Medical Association.

April 15, 1916

1. The Bacteriology and Experimental Production of Ovaritis. Edward C. Rosenow and Carl Henry Davis.
2. The Etiology of Common Colds: The Probable Rôle of a Filterable Virus as the Causative Factor: A Preliminary Note. George B. Foster, Jr.
3. Metabolism in Insanity. Frances X. Dercum.
4. Health Supervision in Small Town Schools. Creighton Barker.
5. Flagellate Protozoa as an Etiological Factor of Dysenteric Diarrhea: Report of a Series of Cases of Trichomonas Dysentery, Including a Local Epidemic with Seventeen Deaths. E. W. Rhamy and F. A. Mer[illegible]
6. Acute Syphilitic Nephritis, from the Standpoint of Diagnosis and Salvarsan Treatment, with Report of a Case. John H. Stokes.
7. The Diphtheria Toxin Skin Reaction: A Simple Method of Its Application. Henry Koplik and Lester J. Unger.
8. Reinfection in Syphilis. S. E. Sweitzer.
9. A Simple Method of Draining Empyema. Joseph Ransohoff.
10. Volvulus of Meckel's Diverticulum. Alfred S. Frasier.
11. Congenital Bilateral Caput Obstipum. Herbert K. Thoms.
12. A Case of Impassable Esophageal Stricture. Anthony Bassler.
13. A Modified Bronchoscope Pump. Charles W. Gosney.

1. The Bacteriology and Experimental Production of Ovaritis.—Edward C. Rosenow and Carl Henry Davis have made cultures in sixty-four cases of ovaritis, the patients ranging from 18 to 55 years of age, 26 being under 30 years of age. In fifty-six the records of the associated abdominal findings were quite complete; fibroids of the uterus were found in eighteen instances, salpingitis in eleven, chronic appendicitis in eleven, and chronic cholecystitis in eight. The technique of making the cultures was that used by the writers in connection with a study in other diseases. Two of the patients with tubo-ovarian abscesses showed pure cultures of *Streptococcus viridans* in countless numbers in the involved tissues. The pus of one of these was sterile, while the other showed a moderate number of the same streptococcus. The third acute case yielded the gonococcus in large numbers. In ten cases the cultures remained permanently sterile. In the remaining fifty-one cases in which the ovaries showed the usual fibrocystic degeneration, streptococci were isolated in twenty-nine, the number of colonies ranging from one or a few to countless numbers. They were present in pure culture in seven, and associated in the others with the Welch bacillus and a few staphylococci or colon bacilli. Welch bacilli were found in small numbers in twenty-one, diphtheroid bacilli in ten, a few colonies of *Staphylococcus albus* in nine, the gonococcus in two, the colon bacillus in three, and an aerobic streptothrix in one. In many instances cultures were made from both the cystic fluid and the tissue. The writers find that the following facts support the view that the streptococci isolated by them from the chronic lesions, when there was no history of a previous acute infection, as well as those causing acute infections of the ovary, are carried to these structures by the blood more often than is generally believed: 1. The occurrence of fibrocystic degeneration of the ovaries in which the usual streptococcus was isolated in pure form in a young woman with imperforate vagina. 2. The history of tonsillitis followed by symptoms of pelvic infection in a number of patients in this series. 3. The not uncommon occurrence of pelvic infection noted in gynecological practice following anginal attacks during the menstrual period. 4. The far more frequent occurrence of the idiopathic streptococcal peritonitis following anginal attacks in the female than the male, which, according to Wilder, is due to the occurrence of a primary hematogenous ovaritis and a secondary peritonitis. 5. The absence of colon bacilli in all but three ovaries in this series, a fact contrary to expectations if local invasion occurred commonly. 6. The frequent occurrence of appendicitis, cholecystitis, and arthritis in these patients, diseases proved to be due usually to streptococcus from a distant focus of infection. The authors think that the conclusion seems warranted that fibrocystic degeneration of the ovary, even in the absence of previous acute infection, is due commonly to a low grade hematogenous infection by streptococci having affinity for these two structures, and further that while excision and resection of ovaries is indicated in some instances, it should no longer be done without due regard to the eixstence of chronic foci of infection, which may serve not only as the place of entrance, but also as the place for the bacteria to acquire the pecu-

liar properties necessary to infect the ovary. The results in one of the cases reported suggests that the eradication of primary foci of infection in this type of patient may in some cases prevent the premature sclerotic degeneration of the ovary.

2. The Etiology of Common Colds.—George B. Foster, Jr., during the past winter has succeeded in confirming Kruse's observations, namely, that though he was unable to demonstrate living organisms in the filtrates from nasal secretions of those suffering with coryza, he found evidence that the causative organism should be classified with the filterable viruses. The results of the writer's recent investigations indicate that from the nasal secretions of persons, who exhibited the characteristic symptom of acute coryza, there has been cultivated *in vitro*, a living virus, and that Berkfeld filtrates of subcultures of this virus are capable of producing symptoms of acute cold in healthy persons. The author concludes that from the experimental evidence presented common colds—of a certain type at least—are infectious; that the causative virus occurs in the nasal secretions, and that this virus is capable of passing through a Berkfeld N filter which has proved impervious to ordinary bacteria. These observations confirm the belief in the transmission of colds from the infected to others through "droplet infection" or other means of direct or indirect contact. However, in the absence of ocular proof that microorganisms, definitely recognizable as such exist in the cultures, the writer reserves the assertion that a virus has been cultivated until additional evidence may accrue.

3. Metabolism in Insanity.—Francis X. Dercum states that it has become increasingly evident that in approaching the problem of the pathology of insanity, we are obliged to turn our attention more and more to basic physical, chemical, and biological facts. After discussing somewhat at length cell structure and cell metabolism he calls attention to Abderhalden's discovery that the serum of pregnant women always contains defensive ferments against placental protein, and that Fauser, realizing that the Abderhalden method must prove of great significance to psychiatry, has studied 250 insane and thirty non-insane persons. His results may be briefly summarized by the statement that defensive ferments were found in all cases in which organic changes existed, while in purely functional cases, such as hysteria, manic depressive insanity and paranoia, all examinations were negative; this was also the result in normal persons. The fact that in manic depressive insanity no lysis was ever found proved frequently to be of value in the differential diagnosis from dementia praecox, the diagnosis being confirmed by the further clinical observation of the cases. Similar results have been achieved by others and the facts revealed by the Abderhalden method appear to justify the following conclusions: (1) In all cases in which either as a result of defective or aberrant organization, or of other disease, abnormal substances find their way into the blood, defensive ferments are evoked. (2) The ferments produced by the defense reaction are frequently injurious to substances other than those which gave rise to them. Notably is this the case in the instance of the cortex in dementia praecox, and perhaps also in paresis. (3) In cases in which no defensive ferments can be found, it is safe to infer that the affection is one unattended by organic changes and that it belongs to one of the purely functional groups, namely, to manic-depressive insanity or to the psychasthenic psychoses. (4) Ferments may be absent in late organic or terminal cases, as in terminal dementia praecox; when the disease has run its course, a time may be reached when poisonous substances are no longer thrown into the circulation, and in consequence defensive ferments no longer formed. (5) The toxicity in manic-depressive insanity and in other functional states appears to be due to a quantitative change rather than a qualitative change in substances normally present. In all instances, however, the symptoms are due to toxic agents, for substances in excess or abnormally deficient have all the value of poisons. In discussing the hormones the writer states that an internal secretion may be changed or perverted, and when this happens it will lead to the formation of defensive ferments, just as in the case of a foreign substance introduced from without. In dementia praecox we have an instance of such a perverted secretion, namely, a qualitative change in the sex gland. Not only is there, in addition, the development of defensive ferments injurious to the cortex, but there are also present symptoms indicating that these ferments react on the sympathetic and autonomic nervous system. Among other symptoms are such as are referable to the circulatory apparatus, to the digestive tract, and to other very special forms of apparatus, such as the iris. Such phenomena are quite frequent in mental affections other than dementia praecox, and it is quite probable that they are always the result of the action of toxins on the sympathetic and autonomic nervous system. In closing the author suggests that in approaching the pathology of insanity the investigator should study the physics and chemistry of the colloids, he should investigate the interaction of the colloids among each other, both physical and chemical, that is, he should investigate the subject of ferments, and apply the facts acquired to the field opened by Abderhalden and Fauser, and he should include in his studies the actions of the ferments, toxins, or hormones, on the sympathetic and autonomic nervous system and under these circumstances and under given conditions, the reactions of the glands of internal secretions. Finally, he may study the brain tissue itself, but he must remember that the pathology of insanity is not a gross pathology.

The Lancet.

March 25, 1916.

1. The Harveian Lecture on Nervous and Other Medical Disorders as Seen at an Eye Hospital. James Taylor.
2. "Camp Jaundice" and the Paratyphoid Epidemic at the Dardanelles. A. Sarrailhé and J. Clunet.
3. Pain in Renal and Vesical Lesions: Its Characteristics, Its Anomalies, and Its Misguiding Manifestations, with Twelve Illustrative Cases. (To be continued.) David Newman.
4. A Splint for a Fractured Humerus. Colin Mackenzie.
5. Food Economies in Relation to the War. Harry Campbell

1. Nervous and Other Medical Disorders as Seen at an Eye Hospital.—James Taylor emphasizes the enormous importance of ocular and visual signs and symptoms as indications of general disease. He has had unique opportunity at the Moorfields Eye Hospital for seeing cases which illustrated this. In reviewing the cases seen during the past five years he finds that by far the largest group, 233 in number, has comprised those who came on account of failing vision, and in whom this failing vision was found to be associated with optic atrophy. In the great majority of these cases the optic atrophy was found associated with other conditions. In over 200 of these cases there were definite signs of tabes or general paralysis of the insane, sometimes only the Argyll Robertson pupil, sometimes only the absence of knee-jerks and lightning pains, sometimes both these conditions, occasionally gastric crises. This series of cases confirms what has long been known, namely, that ataxy rarely occurs in cases of tabes with optic atrophy. In only two of these 200 cases was ataxy complained of. In a few of these cases the optic atrophy

was the result of retrobulbar neuritis; the reason there were so few of these cases was that usually other signs indicative of interference with the motor system precede the ocular or visual signs. Optic atrophy was also present in a class of patients in which there was evidence of lesion at the optic chiasma, and in a few instances it was a toxic one, the result of tobacco, often with the addition of alcohol. The next largest class of cases were those that came because of some defect in the ocular movements. One would expect that diplopia would have been complained of in all these cases, but this was not so, for in a certain number of cases of third nerve paralysis, ptosis has been the first sign. Of these cases of ocular paralysis the writer has seen sixty-two during the period referred to and in by far the largest number the third nerve has been affected. In some of the cases of third nerve paralysis there have been definite signs of tabes; in most there has been good reason to suspect syphilis. Another condition causing diplopia is known as myasthenia gravis. Of such cases the writer has seen thirteen during the past five years. This disease is characterized by the greatest variability in muscular weakness and this would account for its having been regarded at one time as hysterical, though it often ends fatally. Myasthenia gravis should always be suspected in patients having this form of ocular weakness. Diplopia also occurs in Grave's disease, and much more frequently than is generally recognized, but the writer has only once known a patient with Grave's disease to come for advice on account of diplopia, though he has had thirty-one cases of this disease during the past five years. Of these four occurred in men and were well marked and unmistakable in every other respect, but showed no enlargement of the thyroid; on the other hand, goitre in women suffering from Grave's disease was extremely common. The writer has only once seen optic atrophy in Grave's disease. In cases of intracranial tumor ocular paralysis is frequently present, and in such cases the defects in ocular movements are frequently valuable indications as to the site of the tumor. Indirect pressure, resulting from ventricular distention, usually affects in a marked way one or both sixth nerves. In this series of cases there were forty-seven albuminuric and fifteen of glycosuric retinitis. In the great number of albuminuric cases the retinitis has been merely an incident, but often the first one which has caused the patient to seek advice. The writer further makes observations on twenty-two cases of hemopia, eleven of which were due to either valvular heart disease, or hypertrophied heart, or were the result of syphilitic vascular disease. The remaining thirteen could not be accounted for on these grounds or by the state of the kidneys; on twenty-six cases of retinal embolism and thrombosis, and thirty-eight cases of optic neuritis; this small number seems to him most unusual when it is recalled that during this same period he saw 233 cases of optic atrophy. He warns against jumping to the conclusion that all cases of optic neuritis indicate the presence of an intracranial growth. In closing the author urges upon ophthalmic surgeons the need for a broad general basis from which to work.

2. "Camp Jaundice" and the Paratyphoid Epidemic at the Dardanelles.—A. Sarrailhé and J. Clunet comment upon the conditions under which this epidemic had its inception, describe its course, and discuss its clinical features and bacteriology. They find that camp jaundice always appears under the same conditions, tired troops, restricted space, imperfect feeding, and unfavorable climatic conditions. In most instances it appears during an epidemic of febrile gastric derangements, or else it follows the latter; more rarely it immediately precedes it. Early in this epidemic paratyphoid B was isolated on 102 occasions and the typhoid bacillus on thirty occasions, but no paratyphoid A. Later in the epidemic an atypical bacteria presented itself which the writers have designated paratyphoid D. They remark that alongside of febrile forms where jaundice apears as a simple complication of septicemia a large number of attenuated forms are observed in which the fever is of short duration and even of forms completely apyretic, which might be confounded with ordinary catarrhal jaundice. To the writers the most interesting phenomena were the persistance of coloration of the stools, the absence of pruritus, the albuminuria and urobilinuria associated with the elimination of the pigments through the urine, the diminution of the globular resistance and the association of the affection of the gall bladder and liver. While the bacteriological study is by no means complete the following facts may be deduced: (1) The characteristics of the germ cultures and of their serum reactions vary directly as the diminution in virulence of the epidemic and with the frequency of the hepatic localizations—cholecystitis and jaundice. (2) More than one-half of the blood cultures practised during the two first days of jaundice are positive. (3) The germs isolated in the febrile jaundice attacks and in the febrile gastric derangements without jaundice during the same period appear identical. (4) These germs seem to have a selective action upon the liver, but may give rise to clinical manifestations in other viscera.

British Medical Journal.

March 25, 1916.

1. A Case of Bilateral Motor Apraxia with Disturbance of Visual Orientation. S. Smith and Gordon Holmes.
2. Mental Condition Following Strain and Nerve Shock. R. G. Rows.
3. Mental Symptoms Complicating a Case of Acute Tetanus During Treatment by Carbolic Injections. John Everidge.
4. A Case of Acute Gangrenous Cholecystitis with Spreading Peritonitis Occurring in the Epidemic of Jaundice, Gallipoli, 1915. John Morley and F. Battinson Smith. With Observations on the Pathological Findings in Relation to the Epidemic Jaundice of the Dardanelles by William Campbell.
5. Removal of Intracranial Foreign Body Under X-Rays. John Robert Lee.
6. Paracholera. Aldo Castellani.
7. A Case of Chronic Non-tuberculous Peritonitis in a Child. Cecil Worster-Drought.

1. A Case of Bilateral Motor Apraxia with Disturbance of Visual Orientation. — S. Smith and Gordon Holmes report this case because it is only within recent years that the motor disturbance known as apraxia has claimed attention and because even yet very few well-marked instances have been described in the English literature. They state that the condition is characterized by inability to combine simple movements into purposive acts. In the case here described the apraxia followed a wound in the head by a shrapnel bullet. The intellectual state of the patient was moderately good; there was no affection of sensation and no form of agnosia. Vision was affected, but it stood in no causal relation to the apraxia. There was no paralysis, and the range and the power of the movements of all the patient's limbs were normal. The right knee-jerk was, however, brisker than the left, and the plantar response on this side was extensor. Tactile and painful stimuli were appreciated naturally and correctly localized everywhere, and there was apparently no loss in sense of position and no optic neuritis. In spite of this the patient was unable to perform certain purposive acts and to use objects and instruments which were familiar to him and which he recognized correctly. With constant practice and steady application he relearned simple actions of which he had most need, as lighting a cigarette. There was at no time any trace of tonic perseveration or that difficulty in relaxing

muscles that he had contracted voluntarily, which has often been associated with apraxia, and it was only in the early stages of his illness that he showed any tendency to repeat actions which he had just performed when told to do something else. The most striking feature with reference to his visual disturbance was his inability to look straight at any object held before his face; he generally stared open-eyed in the wrong direction. His visual memory was not seriously affected, but his visual retentiveness, on the other hand, was very defective. There seemed to be a failure of objects that stimulated the peripheral parts of the retinæ to excite attention and the appropriate occular movements. In discussing the site of the lesion the writers think that if the ball took its direct course between the point of entrance and of exit, as is usual in similar wounds, the brain was entered in the posterior and upper part of the right supramarginal gyrus, and there is reason to believe that the track passed through the dorsal part of this hemisphere, perforated the falx 1½ cm. dorsal to and 1 cm. in the front of the posterior margin of the splenium of the corpus callosum, entered the left hemisphere in this position, passed just dorsal to Wernike's field in front of the knee of the optic radiations, and made its exit in the inferior part of the left supramarginal gyrus in front of the posterior end of the fissure of Silvius. In several of the recorded cases of apraxia the lesion corresponded more or less closely in position to that present in this patient.

4. **Acute Gangrenous Cholecystitis.** — John Morley and F. Battinson Smith report this case, which occurred among the troops during the epidemic of jaundice in Gallipoli in 1915. Cases of ascending infection of the bile ducts, liver, and gall bladder became extremely common at that time and this case appears to be of special value, since it shows that in a patient inoculated against typhoid fever a paratyphoid organism in the early days of infection may ascend from the intestine to the gall bladder and there settle without causing more than an initial and indefinite epigastric tenderness associated with anorexia and headache; that later its numbers and virulence may be so increased as to cause actual gangrene of the gall bladder; and that, therefore, it is not improbable that from the gall bladder, in cases of cholecystitis, a subsequent descending infection of the common bile duct with consequent jaundice may take place. This may explain numerous cases of jaundice which give a history suggesting a previous cholecystitis. William Campbell, in commenting on this case, says that it is likely that a close study of those organisms whose growth is known to be favored by bile may help to enlighten us as to the cause or causes of the jaundice with pyrexia, which occurred in the Dardanelles, and, although jaundice is not a common complication of typhoid fever, it is possible that the paratyphoid infections may play a much more important part than the *B. typhosus* in the production of febrile jaundice. He says further that the carrier problem also suggests itself and that for various reasons it seems highly improbable that the cases of jaundice occurring in the Gallipoli epidemic have, by any means, a uniform specific bacterial cause.

6. **Paracholera.**—Aldo Castellani recalls that he introduced the term paracholera some years ago to denote cases which, though hardly distinguishable from cholera clinically, are due to vibrios somewhat different from true cholera. The most important of these vibrios are the Finkler and Prior's organism, Pasquale's *Vibrio massahuæ*, Ruffer's vibrios, the *Vibrio kegallensis*, which the writer has isolated from cases in Ceylon, clincially scarcely distinguishable from cholera. This germ is microscopically and culturally very similar to *V. choleræ*, but is not agglutinated by true cholera serum in dilutions higher than 1 in 10 or 1 in 20; cholera vibrio is not agglutinated by *V. kegallensis*. The writer has been unable to reproduce the disease in the lower animals by feeding experiments, but considers that since the vibrio was present in the stools of the patients in enormous numbers and was the only species of vibrio present, it is probable that it is pathogenic.

Deutsche medizinische Wochenschrift.

February 10, 1916

Treatment of the Möller-Barlow Disease.—Peiper begins by stating that a surprisingly large number of general practitioners appear to ignore the existence of this severe and perilous affection. The latter is not of frequent occurrence and may pursue an abortive course. Whoever is ignorant of the nature of the disease will very likely in the absence of a careful examination fail to make a correct diagnosis. The author now relates a personal case in which he illustrates the hemorrhagic swelling of the gums and subconjunctival extravasations. The infant, aged ten months, had been living on milk which was sterilized at high temperatures with the view of preventing summer diarrhea. Eventually—after some five months of this diet—its health had begun to fail. It was found to be highly anemic, with swollen gums and tenderness low down in the femora. Mild rickets co-existed. No attempts had been made to give the infant extra food. The pains in the limbs suggested a rheumatic affection at first, while later periostitis or osteomyelitis was simulated. The scorbutus-like symptoms then appeared and served to prevent a diagnostic error. When the case reached the author he excluded in succession rickets, rheumatism, osteomyelitis, coxitis and Parrot's paralysis. The *x*-ray then readily revealed the subperiosteal swelling, so that the diagnosis was assured. If the disease escapes recognition or if the diet is not varied a fatal termination occurs, with bloody enteritis or final pneumonia. The mortality is high and the treatment is at the same time simple—an ideal affection for the medical man to show his powers for good. Spontaneous recovery is of doubtful occurrence. The disease yields to diet and may relapse if the latter is not maintained for a sufficient period. There is, no doubt, some predisposing element, for the disease only attacks bottle-fed babies. Oversterilized milk, ordinary boiled milk and prepared infant foods are chiefly to be accused. A mere diet of uncooked food is sufficient to cure and is at the same time the sole condition for cure. The best raw food is human breast milk, which should be used if possible in all severe and complicated cases; but the extreme sensitiveness of the infant makes application to the breast very difficult. Next in merit would come the best raw laboratory milk or its equivalent obtained as soon from the dairy as possible. At first the infant has no appetite and must be fed with the spoon. Soon it feeds with the greatest avidity from the bottle. All the drawbacks of raw milk may assert themselves so that dilution with water or cereal decoctions must be tested. If raw milk is impossible it may be brought just to a boil—to the rise of the first bubbles—and then offered to the infant. As soon as the milk problem is settled the infant should be placed at once on so-called anti-scorbutics, beginning with orange juice. The fruits and berries in season may also be used in the same way. The raw scraped pulp of apples, pears, bananas, etc., and fruit sauces (stewed fruits) and finally entire fruits may be eaten. Home-made meat juice is also an integral part of the diet. Vegetables, presumably

stewed, may be used if the other foods are not readily taken, and in time should form part of the diet—spinach, cauliflower, turnips, potatoes, asparagus tips. The disease attacks principally the children of the well-to-do.

Functional Tests of the Kidneys with Substances Alien to the Body.—Treupel says we can give a certain amount of work for the healthy kidneys to do and form some idea of the task imposed on them and of how they perform it. If the kidneys are diseased we cannot expect such accuracy, yet can obtain information upon which a judgment can be based. Tests with alien substances are chiefly color tests. Solutions are injected into the buttocks and should appear in the urine within a stated time. Phenolsulphonephthalein should be injected into a vein. Potassium iodide alone may be given *per os*. Of the tests in use by the author one only—sodium salicylate—is a reaction test. A general diagnostic test is, however, incomplete in the absence of a cystoscopic differentiation of the kidneys, which also gives a more prompt result. The author at great length discusses the results of Schlayer and conclusions drawn therefrom and is averse to applying these straightway to mankind. They are said to be verified in certain types of nephritis, although this has been disputed by von Monakow. The author thinks that individual cases of nephritis do not sufficiently resemble one another to justify a generalization in respect to insufficiency tests. Nevertheless Schlayer's recommendations are often useful in clearing up the diagnosis and prognosis of obscure cases. The technique is as follows: Patient is put on a uniform diet, including fluids, with a not excessive amount of salt; he then receives 1600 c.c. of water which the normal man should excrete in twelve hours. One-half a gram of potassium iodide given by the mouth should all pass through the body in from fifty to sixty hours at the most in the healthy subject. Then 10 grams of common salt are given and the urine tested by Schwartz's method for the salt content. Of milk sugar 20 c.c. of a 10 per cent. solution injected into a vein should be excreted in six hours at the most. The urine is tested with the polarimeter.

Deutsche medizinische Wochenschrift.

February 17, 1916.

Cachexia of Hypophyseal Origin. — Simmonds two years ago reported a case of a peculiar, severe and persistent cachexia which ended fatally after many years. Autopsy revealed no lesions save a high degree of destruction of the hypophysis. It was believed at first that the case was a typical deficiency disease. This view has been borne out in part by the experience of another case, as follows: Male, fifty-eight; always healthy until two years ago, when he became permanently weak, thin, and pale and suffered much from cold. A thorough examination revealed no organic disease. Diagnosis of occult cancer. Death occurred from pneumonia. Section revealed recent pneumonia and pericarditis. No evidences of pernicious anemia. Two tumors of the size of a hazelnut had replaced the hypophysis and its pedicle, causing great dilatation of the sella turcica. The two growths together resembled an hour glass. Microscopically they were basophile adenomata. No trace of hypophysis substance was left. The optic nerves were not compressed. The question is: "How could a benign tumor cause such a general disturbance?" Another question in reference to the absence of acromegaly can be readily answered because in the latter only the oxyphile cells of the hypophysis are involved. There were evidences of a lesion of the neurohypophysis in a distinct atrophy of the testicles and prostate, spermatogenesis having ceased. There was also a thinning of the beard and pubic hair. However, the patient retained his full masculine habitus. The author has also seen a third case in a girl, aged nine, who began to lose her appetite and to emaciate without apparent cause. Later there was polyuria. The diagnosis was occult tuberculosis. Autopsy revealed only a basophile adenoma of the hypophysis. All three cases agreed among themselves, although in the very first one mentioned the destruction of the hypophysis was due to an old embolic process. The cachexia could have but one origin—the loss of the hypophysis—as the result of a very slowly developing lesion. As a rule a lesion of the hypophysis is seldom an isolated manifestation. Apparently a very small portion of the gland can functionate, the cachexia appearing only when the gland is entirely destroyed.

Noma.—Peiper in an article on the treatment of infections of the buccal cavity in nurslings, touches upon noma, a condition not so often seen in young infants as in those of three years old and upward. It is seen rarely in healthy children, but is much more common in the cachectic and as a complication of acute infectious diseases. It is a for the most part unilateral gangrene of the cheek close to the angle of the mouth, at first circumscribed, hard and sensitive. The corresponding mucosa is similarly affected. Blebs form, the external portion of the lesion softens, and the process rapidly spreads peripherally. The cheek becomes much swollen and the lymphnodes enlarge. There is an ichorsous, bloody, very fetid discharge and severe sepsis develops. Nothing is known of the cause, and it has never been shown that a microorganism is responsible, although this is naturally inferred. The affection is hardly contagious and isolation is advised only because of the distressing odor. The author who has seen numerous cases would never temporize, but excise the gangrenous area and apply the cautery as soon as possible.

Synthetic Oxytocics.—Jaeger has made many trials of B-imido azolylethylamin, a constituent of ergot, which may be termed for short B.I. He found that it possesses oxytocic properties much like those of pituitrin if given in high dosage. But such dosage is very apt to cause unpleasant collateral manifestations. The author next combined it with another ergot constituent, to wit, P-oxyphenylethylamin (P.O.) and obtains now what is called the "full action" of ergot, which is a drug of known inconstancy when given in its more native forms. The unpleasant collateral activities of B.I. are entirely eliminated. The author has tested combinations of different proportions until he obtained an optimum. Of 100 women tested the result was negative in eight, which suggests somewhat the inconstant action of ergot *per se*. The remedy is synthetic throughout, both the active principles being synthetizable. It cannot be used by the intravenous method, but is given either by the subcutaneous or intramuscular route. The author does not seem overenthusiastic regarding it. The main question is "can it replace the older preparations of ergot?" Since digitalis has undergone a similar crowding out by its numerous derivatives, this synthetic may displace ergot.

The Surgical Significance of Constipation.—If constipation develop in an adult, exclude intestinal neoplasm before treating the condition as functional. Carcinoma of the sigmoid, for example, may exist for some time without any other symptom than constipation until obstruction or perforation suddenly develops. Sigmoidoscopy or bismuth *x*-ray examination will usually locate such a condition. These diagnostic measures should be employed, therefore, in cases of recent adult constipation of unknown cause.—*American Journal of Surgery.*

Book Reviews.

THE PRIMARY LUNG FOCUS OF TUBERCULOSIS IN CHILDREN. By Dr. ANTHON GHON, Professor of Pathological Anatomy of the German University in Prague. Translated by D. BARTY KING, M.A., M.D., M.R.C.P. Price 10/6 net. London: J. & A. Churchill, 1916.

THIS book deals with a subject which of late has aroused a good deal of interest inasmuch as at the present time more attention is being paid to the prevention of infection in childhood and contact infection of the adult is considered of secondary importance in the etiology of tuberculosis. The post-mortem material, which forms the basis of this work, originated in St. Anne's Hospital in Vienna.

In the first chapter the author cites a number of cases with lung focus and changes in the neighboring organs and comes to the conclusion that in 35 per cent. the adjoining lymphatic glands are involved, and that cases of lung focus without other changes are exceedingly rare (0.54 per cent.) In the second chapter an interesting group of 170 cases of primary foci are enumerated in which were found 123 cases with one lung focus each, twenty-five with two foci each, eleven with three foci each, and six with more than four lung foci each. The author devotes the third chapter to appearance and size of the lung focus which study reveals the fact that small sizes predominated and the highest number consisted of lung foci of the size of peas. The conclusions in the chapter show that practically all the sections had lung foci, but that, generally speaking, the anterior upper portions of the upper lobes and posterior lower portions of the lower lobes showed the greatest number, while in the middle lobe of the right lung these same sections seemed to be equally affected; also, that the right lung showed more foci than the left, and that finally the right upper lobe contained the largest number. The subsequent chapters are descriptions of more complicated findings—scars, adjoining lymphatic glands, and caseation, which study led the author to conclude that everything tended to show that the primary lung focus was never formed after the perforation of the altered bronchopulmonary or tracheobronchial lymphatic glands, but was always present before.

The whole book represents an interesting study and confirms the conclusions at which Knopf of New York arrived as the result of similar work (MEDICAL RECORD, Jan. 8, 1916), namely, that in childhood the primary infection of the lungs represents the usual form of tuberculous infection. If any criticism of the book can be made, it might be that the author contented himself in his anatomical researches with macroscopical findings only and never resorted to the microscope, which very often shows a tuberculous lesion which the naked eye had failed to discover. For those interested in this subject, the book cannot be too highly recommended.

A REFERENCE HANDBOOK OF THE MEDICAL SCIENCES, Embracing the Entire Range of Scientific and Practical Medicine and Allied Science. By Various Writers. Third Edition Completely Revised and Rewritten. Edited by THOMAS LATHROP STEDMAN, A.M., M.D. Complete in Eight Volumes. Volume Six. Illustrated by Numerous Chromolithographs and Four Hundred and Ninety Half-Tone and Wood Engravings. Price, $7.00, cloth. New York: William Wood and Company, 1916.

THE reviewer eagerly awaits each new volume of the Reference Handbook in keen expectation of finding among the titles of articles some that are entirely new in the reference literature of medicine. There are a number of these articles in Volume Six which has just appeared. Among these is one on "Pseudotuberculosis" of the Lungs, which is defined as a blanket term including those forms of tubercle formation in the lung that simulate the type disease but are not due to the tubercle bacillus. The article on Medical Licensing Boards is a particularly helpful digest of all information available as to the requirements for practice in the different States in this country and in the different foreign countries, Abyssinia and Zanzibar included. In both of the last there are no restrictions upon practice, a fact which may be of some comfort to those of our students who fail to pass their State Board examinations. Naval Hygiene and Naval Medical Service are discussed in two articles of twenty-two and six pages, respectively, which articles are commended to those who are interested in the campaign of national preparedness. The titles of the present volume range from Ligation of Arteries to Ozena. Among them appear important articles on the Liver, Lungs, Lymphatic System, Meninges, Mental Diseases, Metabolism, Muscle, Milk, Nephritis, Nerves, Neuroses, Nose, Old Age, Occupational Diseases, Ophthalmometry, Ophthalmoscopy, Optometry, Otitis Media, and Ovaries. There are interesting articles on Lip Reading, Massage, the Microscope and Its Accessories, Nanism and Organotherapy. The articles on diseases of the liver comprise a section of thirty-eight pages. Abscess of the Liver is discussed in an admirable manner, but there is ground for criticism in the fact that among the twenty-four references tabulated at the end of this article there is none published later than 1904. The section on Mental Diseases takes up sixty-six pages and includes separate articles by different authors on Classification, Examination and Diagnosis, Etiology, Pathology, Prognosis, Symptomatology, and Treatment, and also a special article on Dementia Præcox. The subject of Tuberculosis of the Lungs is handled in an eminently practical manner, the newer method of treatment by artificial pneumothorax being described in ample detail. There is a separate article on the Operative Treatment of Nephritis. The Neuroses are discussed under the separate headings of the Nasal, Pharyngeal, Occupational, Traumatic, and Sexual. Among the last there are described, apparently for the first time in medical reference literature, "Clitorism" and "Dyspareunia in the Male." Among the entertaining features of this volume are the short medical biographies, many of which are illustrated with a wood-cut portrait. On the whole, this volume maintains the standard already referred to in the reviews of the former volumes, namely, readability, and value for both reference and study. The illustrations are numerous and of artistic treatment, and the other mechanical features leave nothing to be desired.

AMERICAN SEWERAGE PRACTICE. Volume III. Disposal of Sewage. By LEONARD METCALF and HARRISON P. EDDY. Price $6.00 net. New York and London: McGraw-Hill Book Company, 1915.

THE purpose of this volume is twofold: First, to explain in simple, non-technical language the nature of sewage and the changes that take place in it when it is subject to different conditions, and, second, to describe the structures designed to produce these conditions, in order that the character of the sewage may be changed to the desired extent before it finds its way into some body of water. The authors describe the important advances in the art of sewage treatment that have been made during the past twenty-five years, and express the belief that further advances will continue to be made. Among the topics considered are the following: Progressive steps in sewage treatment; meaning of chemical analyses; bacteria and their relation to the problem of sewage disposal; plankton; composition of sewage; theories of sewage disposal and treatment; sewage disposal by dilution; grip chambers; racks; cages and screens; sedimentation, straining and aeration; tanks for sludge digestion; chemical precipitation; sludge; contact beds; trickling filters; intermittent sand filtration; irrigation and agricultural utilization of sewage and sludge; automatic apparatus for dosing; disinfection of sewage and sewage effluvia. There are 230 illustrations and 205 tables. The authors handle their subject in a most thorough and comprehensive manner and have produced a volume which will prove useful to everyone interested in the subject of sewage disposal.

HOSPITALS AND THE LAW. By EDWIN VALENTINE MITCHELL, LL.B., of the Faculty of the College of Law, University of South Dakota. Price, $1.75. New York: Rebman Company, 1915.

THOSE readers who are familiar with "The Doctor in Court" by the same author will need no special persuasion to become interested in this book. It was written "to supply a short analysis of the general propositions of law relating to health institutions, and to make it readily comprehensible to those who are professionally or otherwise interested in such establishments." It is an admirable work, much condensed and replete with illustrative cases which make the meaning of the law and the decisions as plain as it could be made to the lay mind. Our only criticism would be that the author has devoted so little space to the question of autopsies, one which, in a large general hospital, probably arises more frequently than any of the other problems which he mentions. It is a very interesting volume and a valuable one.

PRINCIPLES OF GENERAL PHYSIOLOGY. By WILLIAM MADDOCK BAYLISS, M.A., D.Sc., F.R.S., etc., professor of general physiology in University College, London. With 259 illustrations. Price, $6.00. London and New York: Longmans, Green and Company, 1915.

TIME was when the English physiologists led the scientific world by their discoveries, but with the restrictions imposed by the antivivisection laws on research in England and the rise in medical science in Germany under the leadership of Ludwig and his school, the laurels passed across the channel. Of late years a renaissance in physiological investigation has made itself felt in England, however, despite the stupid prohibitions on animal research there, and this book is one of the finest fruits of the new school. The breadth of view with which the author has approached his subject gives to the volume an extraordinary interest. He has, indeed, dipped with comprehensive grasp into the whole storehouse of science and seized many armfuls of interesting lore, so that at whatever page the volume opens one feels constrained to stop and read. After all, general physiology does mean life, in its more specialized sense, and there is hardly a department of science that is not touched upon in the modern study of its phenomena. Much of this material must, however, be sought for in sources quite remote from the general literature of biology and physiology, and it is with the idea of describing in detail and rendering more easily accessible this borderland of knowledge which surrounds the more precisely delimited provinces of biology and physiology that the present book was written. Accordingly, one finds much valuable matter devoted to such topics as energetics, mathematics in physiology, the effect of temperature on the rate of reaction and on equilibrium, the many phases of adsorptive phenomena, the colloidal state, the permeability of membranes and other aspects of osmotic processes, electrolytes and their action, catalysis, mass action, equilibrium and reversibility, etc., to choose but a few from the many subjects discussed. Naturally, the usual physiological processes, such as digestion, secretion, nerve action, respiration, etc., are also fully treated and illuminated by new side lights from the more abstract sciences. The book will primarily be useful to teachers in almost any field of medicine or biology, but will also be of great interest and value to advanced students or those having at least some knowledge of physics, chemistry, and biology. From the literary standpoint it is delightful and possesses qualities of style not often seen in scientific treatises. The historical introduction to the different subjects and the numerous portraits of men who did important work in developing new fields of research also contribute greatly to enliven the pages of a work that is unique in its scope and in the completeness with which the ground is covered.

THEORY AND PRACTICE OF BLOODLETTING. By HEINRICH STERN, M.D., LL.D.; Visiting Physician St. Mark's Hospital; Consulting Physician, Methodist Episcopal (Seney) Hospital; State Hospital at Central Islip; Deaconesses' Home; Port Chester and Glens Falls Hospital; Founder and Editor of the *Archives of Diagnosis*. Price, $2.50. New York: Rebman Company, 1915.

THIS is a scholarly monograph on one of the most ancient procedures in the healing art. For many centuries the heroic abstraction of blood was regarded as a panacea for almost all ailments. Like other valuable measures carried to an extreme, it finally fell into disrepute. But within recent years the therapeutic possibilities of bloodletting have again asserted themselves. These possibilities are set forth in the present volume by one who has given the subject considerable study, and who has had exceptional experience in the application of bloodletting and in the development of new methods for its performance. The subject matter of this book is divided into two parts, the first of which deals with the general fundamentals of bloodletting, and the second with the special clinic of local and general bloodletting. Under general fundamentals there are included chapters on historical retrospect, on functional changes following bloodletting, and on the present status of the technique of bloodletting. This technique comprises bloodletting proper and the so-called bloodless methods, such as phlebostasis in which a venous stasis is produced in the extremities by means of inflated elastic cuffs, a certain amount of blood being thereby removed from the circulation without any actual loss of blood to the body. In discussing the functional changes following bloodletting the author emphasizes the rôle which this plays in modifying the molecular concentration of the body fluids, and by a physicopharmacological action serving as a rational therapeutic agent in the presence of a disturbed osmotic equilibrium, a suspended transudation of blood plasma through the vessel walls, or capillary sluggishness. Under bloodletting proper the author describes scarification, wet cupping, artificial leeching, natural leeching, phlebotomy, and venepuncture. In the section on the special clinic of local and general bloodletting the author discusses only those disease conditions in which this procedure produces definite results, such as pneumonia, emphysema, plethora, edema of the lungs, certain diseases of the heart and blood vessels, acute and chronic uremia, puerperal eclampsia, ectogenous intoxications, chlorosis, cerebral hemorrhage, hemicrania, and certain skin diseases. While recognizing the wide sphere of usefulness of bloodletting, the author maintains a justly conservative attitude with respect to its therapeutic limitations. He reviews the literature of the subject in a thorough manner, detailing the work, among others, of Mackenzie, v. Jaksch, Lilienstein, Bajinsky, Eichhorst, Grawitz, Jürgensen, Osler, and Sacharjin. The paradox of the abstraction of blood as a remedial agent in chlorosis is explained on the basis of the well recognized fact in physiology that the sudden loss of blood serves as a potent stimulus of blood regeneration. There are many other phases of the therapeutic application of bloodletting that are discussed at length in this book, which may be recommended to the general practitioner as one that will repay reading. It is a substantial contribution to medical literature.

THE OBSTETRICAL QUIZ FOR NURSES. A Monograph on Obstetrics for the Graduate and the Undergraduate Nurse in the Lying-in Room. By HILDA ELIZABETH CARLSON. New York: Rebman Company.

IN this quiz-compend (or monograph, as the author prefers to call it) will be found such of the facts of obstetrics as a nurse is likely to require. Naturally, the book does not contain as much as the ordinary textbooks on the subject which have been written for nurses and which we have noticed from time to time in these columns; but what is here presented is, as a rule, accurate and well selected. The language is often capable of improvement, and the proper names have suffered rather severely. Thus, we find Hagar and Hagars, but not Hegar; Pier's treatment; Kelly pad and Kelley pad; Crede, invariably without the accent; Deuncé, and the Jardin des Plants. Such expressions as the following should be corrected: Parasitis stomititis, labias, mastitis of the breasts, the use of the forceps are indicated, the Eustachian valve of the foramen ovale. We have not been able to find anything on the pernicious vomiting of pregnancy, an important omission.

THE NEW PUBLIC HEALTH. By HIBBERT WINSLOW HILL, M.B., M.M., Ph.D. Late Director, Division of Epidemiology, Minnesota State Board of Health, and later Executive Secretary, Minnesota Public Health Association; now Director Institute of Public Health and M.O.H. of London, Canada; Professor of Public Health, Western University. Price, $1.25. New York: The Macmillan Company, 1916.

THIS book is a collection of articles which the author prepared at the request of the Minnesota State Board of Health for the purpose of showing the modern conception of public health for the information of both the medical profession and the laiety. These articles were published in the *Journal-Lancet* of Minnesota and given to 1100 newspapers in this country and 50 in Canada. The author describes the old idea of public health as concerned chiefly with environment or living conditions; the new with the individual as the source of infection. He points out that thus far public health has aimed chiefly to control infectious diseases; the new public health must extend its activities to education in hygiene in all its phases. This must be done through the grade schools if the large body of the population is to be reached. While the author has presented nothing new to the student of the science of public health, his book serves to emphasize the need for more general information on this subject if the public is to be awakened to a realization of the fact that science has furnished the knowledge whereby infectious diseases may be eliminated, but if this happy condition is to be realized it remains for governmental authority and the public to apply this knowledge.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Regular Meeting, Held March 16, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

Chronic Osteoperiostitis from Infection by the Streptococcus Viridans and Other Organisms: A Clinical Study of the Origin of Certain Obscure and Obstinate Pains of Common Occurrence.—Dr. CHARLES L. DANA read this paper. (See page 765.)

The Pathology.—Dr. THOMAS W. HASTINGS opened the discussion on Dr. Dana's paper. He called attention to the pathology as it related to the supposed causes of periostitis, and mentioned the fact that acute suppurative periostitis was not under consideration. He referred to the fact that organisms not usually considered as causative agents had been described in chronic periostitis, as the gonococcus in a case reported by Bloodgood. Periostitis which became subacute or chronic as a rule was due to tuberculosis or syphilis and were not the cases referred to by Dr. Dana in his paper. Cases of this type, that was chronic periostitis not due to tuberculosis and syphilis, were often puzzling as to their cause. In studying patients with chronic deforming arthritis it was frequently found that not only were the joints involved, but frequently that this involvement was the least important factor in relation to the patient's pain and other symptoms. In chronic infectious arthritis the involvement of tissues about the tendons at their attachments to the bone and to the muscles, and apparently the involvement of the periosteum near the extremities of the bones, caused more disability and pain than that of the joint itself. After careful observation in many arthritis cases it was apparent that the statement of Garrod was well borne out. This worker observed that sooner or later similar lesions, detected by *x*-ray findings, would be found in both gonococcus and non-gonococcus forms of infective deforming arthritis; likewise, as mentioned by Dr. Dana, similar symptoms and *x*-ray findings, due to a perisynovitis, a neuritis and a periostitis, were not necessarily caused by the *Treponema pallidum* or the tubercle bacillus, but might is due to *Streptococcus viridans* or gonococcus. Dr. Hastings mentioned that there was nto proof of a histological or pathologico-anatomical nature for a periostitis due to *Streptococcus viridans*, but that the proof depended upon bacteriological and immunological methods. A larger number of cases of periostisis than had been referred to by Dr. Dana (many of them associated with chronic deforming arthritis) had been found to be due to *Streptococcus viridans*, which was closely related to the *Micrococcus rheumaticus*. Many cases of periostitis and peritenosynovitis must be accepted as of rheumatic (*Streptococcus viridans*) origin. Such cases seldom came to autopsy. Dr. Hastings said that he knew of only four cases of patients that died after long-continued illness, and it was not possible to obtain a post mortem, or even any of the tissues for examination. In any conditions of infection, however, the cause of the infection might be proven by finding, first, the foci of infection and isolating bacteria therefrom; second, by obtaining the bacteria by culture from the circulating blood; third, by carrying out certain blood tests to detect the presence of specific immune bodies (the complement fixation test of Bordet) for the invading organism; and, finally, by obtaining specific focalized reactions in the areas of infection, within six or eight hours after injecting a relatively large dose of specific vaccine, as determined by cultures and blood tests. Careful distinction should be made between the Wassermann reaction and the complement fixation test of Bordet. The Wassermann reaction, as was well known, was not specific in the true sense of the term. The Bordet complement fixation test was specific and therefore much more certainly diagnostic than the Wassermann test. It had been found in the acute stages of infections, for example, such as chorea in acute rheumatic fever, that a *Streptococcus viridans* might be grown from the circulating blood in the early febrile stages of the disease, and later blood cultures would be negative and the complement fixation test positive. In both instances the prognosis as a rule was favorable. In the later days of the same conditions the blood might be overwhelmed with the bacteria, and the blood cultures might again be positive and the complement fixation test negative. In all three stages the positive blood culture and the positive complement fixation tests were diagnostic. Positive blood cultures early in the disease carried no grave significance, while in the later stages this gave a grave prognosis. These statements were facts generally known, and while they proved the presence of certain bacteria as invading the body generally, did not detect localized restricted areas of infection, as, for example, the periosteum. In cases of periostitis, as in most cases of chronic arthritis, it was difficult to obtain by culture bacteria in the circulating blood, although this had been done infrequently in cases of chronic deforming arthritis. As first proven by Besredka for the streptococcus particularly, and by Schwartz and MacNeal for the gonococcus, positive fixation tests for these two types of bacteria meant that infection had spread beyond the original foci of invasion. While Besredka did not work with strains of *Streptococcus viridans*, judging from his reports, it had been found, as stated by him, that the complement-fixation substance was most readil obtained, and only obtained in large quantities, by injecting animals such as rabbits, intravenously, with *Streptococcus viridans*. Clinically, it was borne out that fixation tests for viridans and gonococcus were positive only when there was evidence of widespread invasion. Also, as a rule, in numerous cases of pyorrhea alveolaris, where there was no evidence of systemic invasion, the complement fixation tests were negative. The proof that diffusely scattered areas of periostitis, with or without chronic arthritis, might be due to *Streptococcus viridans*, consisted of the fact that in cases giving positive complement fixation for *Streptococcus viridans*, the injection of a specific vaccine called forth an acute exacerbation of symptoms in localized areas, known to be involved from the clinical symptoms. It was right to assume that positive growths of bacteria from a focus through which infection might be diffusely scattered throughout the body, with positive complement fixation for the type of bacterium isolated from the focus, and with localized reaction in a focus or foci known to exist clinically, was conclusive evidence for the determination of the nature of infection and for its localization. The complement fixation test would persist positively in the blood for gonococcus and some other organisms after injections into the normal individual of several doses of vaccine. Schwartz and MacNeal found for the gonococcus that 53 days after the last injection of vaccine the complement fixation test became negative. On the other hand they found that the complement fixation test for gonococcus was positive as long as 20 years after the original infection. The same results had been obtained for *Streptococcus viridans* infection with chronic deforming arthritis and in some cases of periostitis. These positive tests persisting for years meant that the infection was sluggishly active, continuously or intermittently, in other tissues than the localized focus. This was well exemplified by syphilis. During the early stages with the primary lesion the Wassermann reaction was, as a rule, negative and became more frequently positive after invasion of the entire body, as evidenced by the appearance of secondaries. The same statement might be applied to infections with gonocccus or *Streptococcus viridans*, the most important conclusion being that the positive complement fixation test meant systemic invasion.

The Radiography.—Dr. LEWIS GREGORY COLE said he would spend but a few minutes in demonstrating a few slides of Dr. Dana's cases, two of which he had examined. Personally, he felt that they should have more definite evidences of lesions which showed directly the point of entrance of the special foci of infection. In both of the cases examined and radiographed by him there was a real periostitis. In many of these cases, however, they did not find any evidence of either tuberculosis or syphilis. It should be remembered that the surgeon and internist should go hand in hand with the radiologist in making a diagnosis of these cases in order to get the best results. Dr. Cole congratulated Dr. Dana in being able to present this subject so well and he hoped that what had been presented would stimulate work along this same line.

The Orthopedics.—Dr. VIRGIL P. GIBNEY said that he was deeply interested in the subject brought before them by Dr. Dana, and it had long been a burning question with him, as it was so closely connected with orthopedic surgery, which included ostitis, periostitis around joints, joint lesions themselves, and the various

painful neuroses one could not always explain. Now, by looking into the mouths of his patients he learned a good deal regarding the condition of the teeth and even all the contents of the oral cavity. When he found a case that puzzled him very much and had puzzled him for a long, long time, he made it a rule to examine the teeth to see if there was not a capped tooth or a receding gum that would call his attention to the need of a radiogram. Such a case was then sent to one or other of the many good roentgenologists in this city for an *x*-ray of the entire upper and lower jaws. The gentleman in charge of this work at the Hospital for Ruptured and Crippled, Dr. Darling, would always send him the negative as well as the films with his own report of the findings; a duplicate of these was sent to the family dentist, who could decide whether a tooth should be extracted or could be treated successfully. Dr. Gibney insisted on not assuming the responsibility of having the teeth extracted, because he had long since learned that the dentists themselves were able to obliterate these so-called apical abscesses by skillful treatment and thus save the tooth. The charge, therefore, that they were sacrificing teeth unnecessarily was an unjust one. Dr. Dana had asked him to report some cases bearing upon the subject and he submitted the following:

Case I.—This patient, a girl, 5½ years of age, seen January 8, 1914, had what Dr. Gibney regarded as infectious arthritis of hip of four weeks' standing. She was treated by plaster paris bandage to immobilize, up to March 31, 1915, when his attention was called to some gum boils which she had; she had been troubled with these for nearly a year. The *x*-rays having failed to show any lesion about the hip, he had the jaws *x*-rayed and the plates sent to her dentist, who wrote under date of April 6: "In the inferior maxilla the first and second left deciduous molars are in bad condition, the former having an open gum boil; one permanent central normally erupted, the other partially and irregularly erupted, being displaced by the deciduous lateral, which is still firm but should be extracted. I recommended also the extraction of the first and second deciduous molars." The mother called two or three months later that she had taken his advice and that the hip symptoms had disappeared and the child was perfectly well.

Case II.—This patient was a woman, 64 years of age, seen November 27, 1914. The diagnosis of fungus arthritis was made. Because of weak feet and excessive flesh Dr. Gibney interrogated the term "fungus" and substituted "static"; she had been suffering for about three years with creaking knees, difficulty in getting about, and pains after exercise. He found the molars were capped on the right side and she said she had had an abscess in one of her teeth. An *x*-ray was taken and the report was that several of the teeth did not have the root canals filled, but the first and second molars, which were crowned, did not have the root canals filled and had an alveolar abscess entirely surrounding their roots; one of these was almost entirely gone from caries. The plates with the full report were sent to her dentist; cultures were not made, but he gave her appropriate treatment, and some months later her husband, in calling him up about another member of the family, said his wife had obtained complete relief and needed no treatment for her knees. Whether the correction of her weak foot, which was a part of my treatment, or whether the removal of the source of infection was the cause of her cure, he was unable to say.

Case III.—This patient was a gentleman, about 40 years of age, first seen by Dr. Gibney June 10, 1913. He came under his care for flat foot and what he thought was neuritis of the right shoulder. His history was rather interesting. In November, 1911, he had an attack of what he regarded as inflammatory rheumatism, which kept him in bed for about 5 months. Upon getting up his knee was deformed and his feet and shoulders were stiff, and when he began to walk he had marked flat foot with deformity of the great toe. He went to Mount Clemens on crutches, and while there gave up the crutches, as his knee became straight. When I saw him he had a very sensitive great toe joint, a marked hallux valgus and the hips and knees were painful on use. He had some crowned teeth, and upon further examination it was found that he had had a similar attack to the one in 1911 in 1908 and suffered quite as much as he did with this attack just reported. In other words, he had had an attack in 1908, lasting a year and a half; one in 1911, lasting five or six months, and this light attack in 1913. The radiologist reported Rigg's disease extending down the roots of many of his teeth and two showed evidence of absorption and probably abscess cavity at the root. He took this report to his dentist, who put him under treatment, and he reported in October, 1915, that he was entirely free from pain.

Case IV.—This patient, a lady 72 years of age, was first seen on April 9, 1915. She had infectious arthritis of both knees, probably from her teeth. She was stout the contour of both knees changed, and she had tenderness below the patella and over the ligament patella. Her symptoms had lasted for a number of years. She had been under treatment for intestinal autointoxication and visceral optosis. An examination at once revealed suspicious looking teeth and a very foul breath. The radiologist reported extensive arthritis in both knees, erosion and deposits of calcareous material, and spurs apparently projecting into the quaduceps tendon; the teeth showed areas of decalcification thought to be due to apicul abscesses in both upper central incisors and lateral incisors. Her own dentist referred her to a specialist in the treatment of pyorrhea who gave her decided relief. The ultimate result he had not learned.

Case V.—This patient was a lady about 45 years of age, whose daughter Dr. Gehring had had under his care for a number of years for spinal disease. He said she called his attention three or four years ago to a most obstinate cocydynia, found the coxyx sensitive, and dilated the sphincter, making pretty sharp movements back and forth of the coccyx with his thumb and finger. She had at that time also pain in her shoulder, and said "she had had a rheumatic throat." His treatment failed to give relief, and as he had found this successful in one or two other cases, he was rather disappointed. On December 7, 1915, she told him that her attention had been called to her teeth last July, when it was found that she had two active abscesses and five cold abscesses at the roots of her teeth. Seven teeth were extracted, and from that time to the date of her report she had had no further rheumatism in either her throat, shoulder or coxyx; in other words, she was in perfect health.

Case IV.—Dr. Gibney said this patient, a lady 35 years of age, was brought to him June 2, 1915, for what he took to be infectious arthritis of both knees. The first attack occurred twelve years before, which which she made complete recovery. This present attack was of several months' standing; her physician had found an abscess in her right central incisor by means of the *x*-ray, the necrotic area running back about 2½ inches, apparently connecting with the nasal fossa. At the time of the extraction of the tooth a culture was taken and vaccine used for three months without effect. A culture from the fluid in the knee showed streptococcus, and the same was shown in the alveolar process. It was admitted that the disease had made such rapid progress in the knees that very little could be expected from the removal of the original cause. I did an arthrotomy on both knees, evacuating pus which showed the same culture. The case progressed rather slowly during the summer of 1915, and in September some suspicious points in another tooth were found. She had *x*-rays again and her tonsils and adenoids were rather prominent. These were removed in November; the suspicious tooth was treated, and under the pituitary extract she was steadily improving. The same culture was found in the adenoids and tonsils. At present she was gaining flesh, free from pain, and the range of motion at the knees was slowly increasing, but her joints were still protected by apparatus. During the summer other joints became involved, such as wrist and elbow, both sides, but all of these are now gradually approaching normal.

Case VII.—Dr. Gibney said this patient was a gentleman, about 60 years of age, first seen on September 22, 1915. He had a brachial neuralgia which he attributed to cranking his car 5 years before. About a year ago, after most intense suffering throughout the cervical region and over his right shoulder and over the chest walls on right side, he had his jaws *x*-rayed at the suggestion of a neurologist, but there was nothing found; still some vaccines were made from the alveolar processes and he had about three months' active treatment without result. A list of the names of the distinguished specialists in New York and Boston whom he had seen and the treatment he underwent at the hands of a surgeon in this city upon the suggestion of a Boston surgeon, would make this report

unnecessarily long. At the present time he was still a great sufferer, although he had had the Goldthwait operation done for periostitis of the anterior surface of the scapula. This case was one which he thought bore on the title of the paper of the evening, but the patient had not obtained any relief; in fact, it had never been proven that he had any infection from his teeth, and he himself attributed all of his trouble to the trauma caused by cranking his car.

Dr. Gibney said he wished to impress upon his hearers the necessity of looking for a focus of infection in other parts of the body, as the oral cavity was not the sole location of these foci. The genitourinary men had often accused him of overlooking the foci that were sufficient to cause an osteoarthritis or an arthritis deformans. Again the internists and the gynecologists claimed that the abdominal cavity and the pelvis contained enough foci to infect any part of the body. He concluded by insisting upon examining every part from head to foot when a case could not be distinctly traced to trauma, to syphilis or to malignancy.

The Rhinology.—Dr. CORNELIUS G. COAKLEY believed that Dr. Dana's paper was an epoch-making one in insisting that neuralgic pain usually had some definite local pathological cause. The work of the bacteriologist apparently showed conclusively that the *Streptococcus viridans* was the active infecting agent in the cases reported, and this was a great step in advance. Rhinologists were frequently asked to investigate the upper air passages to determine if possible the source of infection. They began with an investigation of the nose and accessory sinuses. They believed they could rule out as an etiological factor the simple inflammations of the nasal mucous membrane. Collections of pus in the accessory sinuses were frequently found, but they had not been able to connect sinusitis with the so-called rheumatic joint or periosteal infections. There seemed to be no doubt, however, judging from literature, that sinusitis might have caused these infections, but in his own practice he had not seen a single case where he was sure that sinus disease was a cause of the infection. This brought the question down to a consideration of the nasopharynx and the oropharynx as areas from which the infection took place. Both of these regions teemed with all sorts of bacteria. The tonsils usually contained pathogenic organisms, even in a supposedly healthy tonsil, if it was squeezed, and a little milky fluid obtained. This fluid, if cultured in proper media, would be found to contain pathogenic bacteria and almost always the *Streptococcus viridans*, especially if the method advocated by Dr. Hastings was employed. Therefore, Dr. Coakley felt that tonsils that were inflamed were very certain to contain bacteria which might cause pathological processes. On the other hand, any tonsil that was enlarged, red, and manifestly acutely or subacutely inflamed in a person who would frequently give a history of so-called muscular rheumatism, should be looked upon with great suspicion as the focus of infection. Their enucleation was usually followed by very gratifying results. Suspected tonsils should not be examined once, but several times; they might appear normal at the first examination, but evidently diseased in a subsequent examination. The tonsils, however, were not the only foci of infection in the mouth. The isolated lymph nodes and even the general mucous membrane harbored the same microorganisms found in the tonsil, and these organisms might gain entrance into the system, even after the enucleation of the tonsils. This, he thought, might account for some of the failures or recurrrent attacks following tonsillectomy.

The Dentistry.—Dr. ARTHUR H. MERRITT said that in consequence of the universality of dental diseases, the mouth was one of the most common sources of secondary infections. One of the most common of these was the dental abscess. These were caused through infection of non-vital teeth and were of two types, the fistulous abscess and the so-called blind abscess. Roentgenographically, they varied all the way from a slight rarefaction to complete loss of bone, often forming a cavity of considerable size within the body of the bone. In their chronic form they were painless and usually unsuspected. Bacteriological examinations showed that a streptococcus was always present—usually the *Streptococcus viridans*. These abscesses were frequently the cause of more or less serious secondary infections, such as those referred to by Dr. Dana. A careful examination should always be made of the mouth in suspected cases, and all non-vital teeth should be *x*-rayed. If infection was present, steps should be taken to eliminate it. This did not necessarily mean extraction. To extract a tooth simply because of an infection at the root end was about as intelligent a procedure as to amputate the leg because of a troublesome corn. Pyorrhea alveolaris was another common mouth infection which might seriously affect the general health. This was a disease involving the gums and alveolar process, forming deep pockets and attended in most instances by a discharge of pus. The bacteriology of pyorrhea was an exceedingly complex one, containing many organisms of known pathogenicity, though none of them so far as was known was the specific cause of pyorrhea. They were merely secondary invaders as were amebas. It should be remembered that pyorrhea was a curable disease, though it was only a question of time in every case when it would become incurable. Early treatment was, therefore, most important. The frequency of these chronic localized infections made it necessary to scrutinize the mouth carefully in cases such as those referred to by Dr. Dana to-night, and in every instance see to it that they were eliminated.

Dr. WALTER M. BRICKNER said he wished to speak on this subject from the standpoint of a surgeon who had always been deeply interested in the radiographic diagnosis of bone diseases. Dr. Dana had performed an important service in thus again demonstrating the necessity of seeking a definite cause in all cases of persistent pain. Most of the cases that were treated—or mistreated—as neuritis were not neuritis at all. Just as many of the cases so often regarded as neuritis of the upper extremity were, in fact, instances of subacromial bursitis, so in the lower extremity Dr. Dana had found, radiographically, the cause of persistent pains in lesions of the skeletal tissues. But it would be a great mistake to draw the conclusion from Dr. Dana's cases that the organism to be especially suspected in such instances of periostitis or osteoperiostitis was the *Streptococcus viridans*. This for two sets of reasons: First, the bacteriologic proofs in Dr. Dana's four cases were very incomplete. In one case the chain of evidence seemed very strong if a positive complement-fixation test with the *Streptococcus viridans* was an evidence of systemic infection by that organism. In the other three cases there was no such chain of data. In at least one of them no bacteriological investigation was made. In the only case submitted to operation the bone and periosteum removed were not studied bacteriologically. Second, the periosteum was subject to inflammatory reaction from trauma and from infection by a considerable variety of microorganisms, streptococci, staphylococci, the spirocheta of syphilis, the tubercle bacillus, the typhoid bacillus. Whlie the pictures shown by Dr. Dana did not give the appearance of a typhoid osteoperiostitis, it would have been interesting to learn whether a preceding typhoid infection had been excluded in his cases. In connection with these cases it was important to bear in mind that a negative Wassermann reaction might sometimes be found in cases of bone syphilis. Dr. Brickner had had instances demonstrating this. It must also not be forgotten that an osteoperiostitis, visible radiographically, sometimes betokened a medullary infection that did not show in the *x*-ray plate. (A cortical bone abscess gave a characteristic roentgen picture, but a medullary abscess might give no such indication of its presence.) Dr. Brickner had had under treatment a young man suffering with severe and persistent pain in the lower thigh. The roentgen rays showed a marked circumscribed osteoperiostitis. Syphilis was excluded by blood and therapeutic tests. The pain proving obstinate to all other therapy, the patient was sent to the hospital, where a surgeon cut down through the thickened periosteum and, finding the bone beneath apparently normal on chiseling, closed the wound. The pain continuing, Dr. Brickner opened the bone into the marrow cavity, evacuating therefrom a circumscribed abscess, which effected immediate relief of pain and a prompt cure.

Dr. BYRON C. DARLING said that the earliest writings he had found were those of Dr. Benjamin Rush of Philadelphia, who said in his book "Medical Inquiries and Observations" the following: "Some time in the month of October, 1801, I attended Miss A. C. with a rheumatism in her hip joint, which yielded for a while to the several remedies for that disease. In the month of November it returned with great violence, accompanied with a severe toothache. Suspecting the rheumatic affection was excited by the pain in the tooth,

which was decayed, I directed it to be extracted. The rheumatism immediately left her hip and she recovered in a few days. She has continued ever since to be free from it." When they considered how often the teeth, when decayed, were exposed to irritation from hot and cold drinks and aliments, from pressure by mastication, and from the cold air, and how intimate the connection of the mouth was with the whole system, he was disposed to believe that they were often unsuspected causes of general, and particularly of nervous diseases. When they added to the list of those diseases the morbid effects of the acrid and putrid matters which were sometimes discharged from carious teeth, or from ulcers in the gums created by them, also the influence which both had in preventing perfect mastication, and the connection of that animal function with good health, he could not help thinking that their success in the treatment of all chronic diseases would be very much promoted by directing their inquiries into the state of the teeth in sick people, and by advising their extracting in every case in which they were decayed. It was not necessary that they should be attended with pain in order to produce disease, for splinters, tumors, and other irritants before mentioned often brought on disease and death when they gave no pain, and were unsuspected as causes of them. This translation of sensation and motion to parts remote from the place where impressions were made appeared in many instances and seemed to depend upon an original law of the animal economy.

Dr. A. Jacobi said that Dr. Coakley's remarks reminded him of what he had been teaching in 1860 and many times since, namely, that in Dr. Coakley's great experience the examination of tonsils which appeared to be diseased and often discharging pus were discharging pus indeed, but in most of the cases he felt he could not connect anything going on in the tonsils with any systemic effects. Dr. Jacobi believed that the tonsils themselves were given too much credit for what was going on and that not enough attention was given to the Waldeyer ring, this ring of lymphoid tissue formed and surrounded by the faucial, lingual and pharyngeal lymph nodes. More attention should be paid to the small crypts about the tonsils than to the enlarged tonsils themselves. This was the point that Dr. Coakley brought out correctly. Dr. Jacobi then reported his personal experience in what he took for and felt for many weeks was sciatic neuritis. His pains were connected with swellings, more or less circumscribed about the sciatic foramen, along the crural nerve of the same right side, about the right gastrocnemius and the right tibia over about one-third of its length. He was not able to find a cause of the illness, which began quite suddenly, but which took weeks to disappear slowly. Tuberculosis or syphilis was not to be considered in the etiology. He was not able to charge any infection known to him with causing it. The swellings were not permanent and he was not inclined to look for osteitis or periostitis as the cause of an ailment like his.

Dr. A. R. Stevens said he wished to speak of those instances in which the infection came from the genitourinary tract. Cases which had excited greatest interest were those infections which seemed to start from either the prostate or seminal vesicles. He thought there was a popular misconception that these joint or periosteal infections were always due to the Neisser organism. In some acute cases the Neisser infection was present; but in considering the arthritic and periosteal conditions associated with chronic infections of the genitourinary system, it was well to call attention to some convincing work which showed conclusively that six months after the acute Neisser infection had been contracted, a small proportion of cases presented other bacteria in the prostate and seminal vesicles. At the end of the fourth period of six months these secondary invaders could be found in most instances. At the end of three years, as a rule, the genococcus had entirely disappeared. Consequently, it seemed to him it was a mistake to speak of the gonococcus as the usual cause of any chronic infection originating from the prostate. Urologists had been accustomed to speak of certain pains associated with disease of the prostate or vesicles as so-called "referred" pains. The usual explanation had been that these pains came from areas of the body which received their nerve supply from the same part of the spinal cord which controlled the prostate and vesicles. It seemed to Dr. Stevens that possibly some of these pains might be due to a periostitis. He thought that in most all of this work, regardless of the origin of infection, the causal relationship between bone or joint infection and some primary focus was based chiefly on clinical observation. Complement fixation tests, and reactions in the skin and in the painful region under consideration following the injection of dead organisms, were suggestive in establishing such a relationship, but not to be depended upon as conclusive. The better such tests were controlled the more valuable they became in specific instances. And, further, the clinical basis for the establishment of an etiological relationship between a focus of infection and a distant lesion or symptom, was, after all, dependent chiefly on the therapeutic test. Such observations had demonstrated that the genital and urinary systems were accountable for a good percentage of cases akin to those under discussion. Accordingly, the prostate and seminal vesicles, as well as the teeth and tonsils, should be included in the routine examination.

Dr. M. L. Rhein, speaking on the dental side of this question, said he desired to call attention to the fact that he had had over thirty years' experience in recording cases of arthritis, periostitis, and ostitis, which could be distinctly traced to periapical infections at the end of roots of teeth. In over fifty cases of this kind a large percentage were entirely cured by the eradication of the infection, and in none of them was there evidence of any pus being present. They were not abscesses in the ordinary acceptation of the term, where a purulent condition was one of the symptoms. There was no external evidence of infection in any of the cases; nothing in the shape of a fistulous tract, nor was there any connection between any of these cases and any pyorrheal symptoms. In every one of the cases the focus of infection was what Dr. Merritt had spoken of as blind abscess. This term "blind abscess" had been in use in dental nomenclature for many years, but was a very bad term, as there was no infection. Of late, it had been much more appropriately designated as "dental granuloma," it being a small tumor, composed largely of granulation tissue and with more or less bacterial colonization, and which almost invariably was found to consist exclusively of *Streptococcus viridans*. These pyogenic microorganisms, while in this condition, unable to produce pus, were constantly manufacturing toxins, which, in turn, were being absorbed in the system. His main object in injecting these few remarks in the discussion was to call attention to the fact that these granulomata were the really dangerous forms of alveolar infections. They were so securely locked in the recesses of the alveolus that the toxins must be entirely taken up by the circulation. Another most important clinical fact was that the virility of these organisms was of so low a type that they very seldom produced the slightest irritation, consequently they did not manifest themselves to the patient. Radiography frequently disclosed these dental granulomata at the ends of roots of teeth that apparently were in the healthiest condition. In fact, he had notes of five or six cases of dental granulomata at the ends of roots of teeth in which no blemish had ever appeared on the surface of the tooth, but in which the pulps were devitalized by some form of traumatism. Dr. Rhein said he felt that nothing more important could be injected into this discussion than the understanding that this was the really dangerous form of dental infection.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK.

Stated Meeting, Held March 27, 1916.

The President, Dr. Frederic E. Sondern, in the Chair.

American Medical Association in New York in 1917.—Dr. Floyd M. Crandall moved that the Medical Society of the County of New York extend a cordial invitation to the American Medical Association to hold its annual meeting in New York City in 1917. This was seconded. An amendment was offered and seconded that the delegates be so instructed. It was also amended and seconded that Kings, the Bronx, and Westchester medical societies, together with the New York Academy of Medicine, be requested to cooperate with the Medical Society of the County of New York in this plan. The motion and amendments were carried.

Medical Preparedness.—Dr. YOUNG presented the following resolutions:

Whereas: The Medical Society of the County of New York has expressed itself in favor of preparedness as embodied in the resolution offered by Dr. Nathan S. Jarvis at the Stated Meeting of January 24, 1916, and

Whereas: The military preparation is incomplete without an adequate medical division of the Army, and

Whereas: The proposed increase of the Army does not take into consideration its medical needs, therefore

Be it Resolved: That The Medical Society of the County of New York does hereby express itself as opposed to that clause of the Hay Bill which eliminates the Medical Reserve Corps of the U. S. Army, for the reason that in the opinion of The Medical Society of the County of New York, the Medical Reserve Corp of the U. S. Army is an important factor thereof, and further

Be it Resolved: That in the opinion of The Medical Society of the County of New York the numerical medical strength of the Army should not be less than seven per thousand on a peace footing.

Dr. FOWLER introduced the following:

Whereas: There is under advisement by Congress, legislation to increase the military establishments of these United States, and to remedy our lack of preparedness for war, and

Whereas: In past wars untold sufferings and deaths have been caused by an insufficient number of medical officers, and a lack of adequate means for expanding the Medical Department of the Army in times of emergency, and

Whereas: In spite of these facts, and the indignant protests, and criticisms of the people, the Army Medical Department is to-day even smaller proportionately than in the past, and

Whereas: The medical profession of the United States must be included in any plan for increasing the efficiency of medical preparedness, and for actual service in the field and at home, therefore

Be it Resolved: By The Medical Society of the County of New York that the Hon. Secretary of War and the Hon. Chairman of the Committee on Military Affairs of Senate and House, be and hereby are, petitioned by this Society to urge legislation providing for an adequate medical personnel in the Army, and in the supporting organizations which in time of need, would be called to the colors. The number of medical officers should be such as the Surgeon General of the Army may advise.

Both resolutions were passed.

Intussusception in Infants; Observation Upon a Series of Cases.—Dr. L. MILLER KAHN presented this paper in which he stated that the death rate in intussusception in infants was still unnecessarily high and that his object in reporting this series of cases was to call attention again to the fact that with early diagnosis and early operation practically all of these patients might be saved. The cases tabulated in this series had been admitted to the Lebanon Hospital from January 1, 1910, to March 1, 1916, and were operated on by the surgeons on regular duty. There were in all thirty-eight patients suffering from intussusception, thirty-five of whom came to operation. Of these thirty-eight patients, thirty-three, or 87 per cent., were under one year of age, the youngest being sixteen weeks old. Of the remaining five the ages varied from fourteen months to seven years. Among the infants under one year of age in which the manner of feeding was indicated, 82 per cent. were breast fed. There were nine patients operated on within the first twelve hours of the onset, with one death, a mortality of 11 per cent.; eight patients were operated on between twelve and twenty-four hours after the onset of the initial symptoms, with two deaths, a mortality of 22 per cent.; four came to operation on the second day, between the twenty-fourth and forty-eighth hours, with two deaths, a mortality of 50 per cent. Of the thirteen operated on after forty-eight hours or more had elapsed only three survived, a mortality of 77 per cent. If one excluded two of these patients, one 5½ and one 7 years of age, it would be seen that of the remaining 11 only one recovered, an actual mortality of 91 per cent. Of the 35 patients operated upon there were 20 recoveries and 15 deaths, a total mortality rate of 43 per cent. The nature of the intussusception was stated in 24 instances; 3 were ileocolic; in 18 instances the ileocecal valve acted as the head of the intussusception and carried the appendix with it. The appendix was involved and removed in 9 instances, and in 4 of these it was stated to be gangrenous. In 3 instances a double intussusception was present. Resection of the gangrenous bowel was undertaken in 6 instances. No child under one year of age in whom resection of the bowel was done recovered. One resection of bowel in a child five years of age resulted in recovery. A close study of the histories and operative reports of these cases revealed little of importance as to the probable etiological factors. Nothing was observed in this series that would give support to the theory that intussusception resulted from a contraction of circular muscle fibers in the intestines, and that this contracting area, acting as a foreign body, was forced into the nearby non-contracted loop, thus producing the invagination. This explanation of the causation, however, probably accounted for the majority of the cases. After discussing the symptoms of intussusception, the essayist stated that the typical case of intussusception would and actually did present the following picture. A child somewhere between the ages of three months and two years, having previously been in good health, was suddenly seized with violent cramps and gave every evidence of severe suffering. With the onset of pain the child was temporarily blanched, refused nourishment, and vomited. There was perhaps one normal bowel movement, and then the bowels refused to move, only blood-stained mucus or blood being passed. The pain and crying which ushered in the disease might be continuous, but were more likely to have periods of complete remission; the abdomen was soft, and the child seemed comfortable. A small tumor might be made out upon abdominal palpation, or it might be absent. As an early diagnostic sign of intussusception, failure to find a tumor should no longer carry the weight formerly attached to it. Rectal examination would occasionally disclose a mass of bowel coming down from above. Upon withdrawing the examining finger there were usually traces of blood upon it. If no blood had been passed per rectum, the return from the enema showed blood or blood-stained mucus. Gentle bimanual palpation, with one finger in the rectum and the other on the abdomen, might give valuable information. The *x*-ray had given assistance, and should be employed in dubious cases, if available. Examination under ether was of doubtful value, and should not be employed unless one was prepared to operate immediately. Three cases in the series with positive findings except for the presence of tumor were diagnosticated as intussusception, and were relieved after the administration of enemata. There was every reason to believe that the diagnoses were correct, and after the bowels moved with the enemata all the symptoms were relieved. This measure should, with certain limitations, be tried in every case of intussusception, but, after two or three fruitless attempts made in rapid succession, it should be abandoned and operation immediately done. The operation should be performed as rapidly as possible without evisceration. The invaginated loop should be pushed, not pulled, out of the inclosing bowel and all unnecessary steps avoided. The appendix must, when badly bruised, be removed, but even this should not be done unless absolutely necessary. Every precaution should be taken to prevent shock, and the abdominal wound should be closed very securely. Resection might be undertaken if the gut was gangrenous, but had usually proven fatal. Enterostomy might be employed as a last resort. In conclusion, Dr. Kahn said that early diagnosis of intussusception was of the highest importance and should be made by the first physician who saw the case, upon his first visit, if possible. The diagnosis of intussusception having been made, no time should be lost in attempting reduction by enemata, and having failed in this after two or three attempts, the patient should be immediately submitted to operation. The diagnosis of intussusception could safely be made if a typical history was obtained, and blood and mucus found in the stool. The absence of tumor mass should not act as a deterrent to operation. The death rate in intussusception was directly in proportion to the number of hours' delay in submitting the patient to operation.

Dr. SIDNEY V. HAAS said that the only object in bringing such a paper before the society was to impress upon its members the importance of the diagnosis of intussusception in infants. The diagnosis in the majority of cases was not difficult when one was familiar with the conditions. For those unfamiliar with the picture, except as presented in textbooks, the diagnosis was not always so simple. The initial symptoms of sudden pallor, crying and vomiting were often followed in a very short time by an apparently normal

state. The pulse and temperature were normal, the child was ruddy, happy, and playful. It was difficult to believe that a serious condition existed until some hours later, when a condition of shock ensued with an increasing pulse rate, rising temperature, and blood-tinged mucus stool. This period of well-being might last for many hours. It was this quiescent period which doubtless accounted for many of the failures of early diagnosis. Of the physical signs, the most important in his experience besides the tumor mass, which was not always palpable, was the relaxation of the anal sphincter. The differential diagnosis between intussusception and acute ileocolitis with bloody mucus stools might present overwhelming difficulties. Here the relaxed sphincter of intussusception was of the greatest value. The prognosis in these cases depended entirely upon the early diagnosis. A good surgeon could cure practically every case when seen early. Late surgery could do nothing.

Dr. CHARLES HERRMAN said that it was an interesting fact that twice as many cases of intussusception occurred in males as in females. Possibly there was an anatomical reason. The disease was much more common in England and this country than in France and Germany. For example, in his long and large experience Heubner had only seen a dozen cases, whereas many men in this country and in England had reported over fifty cases. The importance of early operation was best illustrated by concrete examples. Northrup some years ago reported two or three cases that had been successfully treated by injections. Later he acknowledged that he was sorry that he had published them, because it encouraged others to try this method and frequently valuable time was lost. A case was reported by Wollin in which a tumor was felt, and injections given. The tumor disappeared and it was supposed that it had been reduced. However, the symptoms continued, and notwithstanding the fact that the mass could no longer be felt, operation was decided on. Invagination with gangrene was found and the child died. The injection might push the tumor toward the diaphragm, so that it was no longer palpable. Behrend reported the case of a boy of eight years who passed a gangrenous portion of the bowel 20 inches in length on the ninth day of the disease. Such remarkable cases stuck in the memory of the student. As a matter of fact such an occurrence was most unusual and it would be almost criminal to wait in the hope that it might occur. Dr. Herrman said he recently saw two cases with other physicians. In both the disease was of more than forty-eight hours' duration, both were immediately sent to the hospital, both were gangrenous, and both died. In both the attending physician had made the diagnosis of probable intussusception, but the parents hesitated about submitting the child to an operation, and there was nothing in the appearance to indicate that it was urgent. It was only when the consultant put it as a matter of life and death that the necessity for immediate operation was recognized. Inspection of the abdomen frequently showed a symmetry or prominent points even when a tumor was not felt. Relaxation of the anal sphincter was often present, especially in the cases that had lasted more than twelve hours. To sum up, the safe rule was to send every suspicious case to the hospital immediately. If the operation was postponed, if gangrene had already set in and if resection was necessary, the little patients almost invariably died.

Dr. EDWARD W. PETERSON said that of about forty cases of intussusception seen by him, twenty-five had been under his personal care. Of this number twenty-four occurred in infants. He wished to present his own results, as they approached rather closely the figures recorded by Dr. Kahn. In his series, one late case died an hour after admission to the hospital, before any operative measures could be instituted; another late case died on the operating table just after the abdomen was opened, in the beginning of an attempt at disinvagination. In eight cases the intussusception was either gangrenous or irreducible or both, necessitating resection or enterostomy—with seven deaths and but one recovery. (The successful case was recorded in detail in the MEDICAL RECORD, March 5, 1905.) In fourteen cases, treated by laparotomy and manual reduction of the invagination, there were three deaths and eleven recoveries. The three fatalities were all in late and profoundly toxic cases. Every case seen within forty-eight hours of the onset of symptoms recovered. In a study of intussusception the most striking feature, and, it has been emphasized by Dr. Kahn, was the wide difference in the mortality in the early and the late operations. In intussusception there was not only obturation obstruction of the bowel, but also strangulation of the blood supply to the obstructed gut. The severity of the early symptoms depended on the degree of strangulation. As had been pointed out by Dr. Kahn, the clinical picture in the intussusception of infants was rather uniform and characteristic; in fact, more so than in any other form of intestinal obstruction. The sudden abdominal pain, with more or less pallor and shock, the pain later becoming intermittent and paroxysmal, vomiting and muco-hemorrhagic stools made up a group of symptoms that was fairly constant. When present but one other symptom was needed to complete the picture, namely, the presence of an abdominal tumor. In twenty-four of the twenty-five cases the tumor could be palpated. Often it was necessary to examine the patient under anesthesia in order to bring out the symptom. Failure to find a tumor, however, in the presence of the other characteristic symptoms, should not bring about any delay in the adoption of radical measures of treatment. The mortality in intussusception was the mortality of delay. It was perhaps unfortunate that hydrostatic pressure and gas or air inflation succeeded in reducing a limited number of invaginations, for such measures were often persisted in until the time for a successful operation had passed. The limitations of aerohydrostatic measures could not be emphasized too strongly. Early laparotomy with manual reduction of the invagination was the simplest, the safest, and the only certain method of treating intussusception.

Dr. LEON T. LE WALD showed some lantern slides in order to show the value of the *x*-ray in the diagnosis of intussusception in infants.

Quiet Hip Disease, a New Clinical Entity.—Dr. HENRY LING TAYLOR presented this communication. He said that about five years ago it was noticed that certain hip cases in children ran a very mild course and without the usual complications and terminal disabilities of tuberculous hip disease. The trouble usually began from the fifth to the tenth year with a moderate limp, often with little or no pain, and was associated with characteristic symptoms. The onset was usually very insidious, an inconspicuous limp coming on gradually without any known cause. Mobility at the hip was often only slightly restricted at first and spasm was absent; but later, lateral motion and rotation in flexion, especially abduction and internal rotation, might be much limited, and there might be some spasm on attempting to force the motion. Dr. Taylor presented several patients to illustrate these points. They were first asked to walk and without apparent restrictions; then when placed on a table the restrictions were pointed out, none of them, however, very marked. The plane of flexion was usually deviated outward, but flexion to nearly 90° and often beyond was preserved. The mobility resembled that of an early period of osteoarthritis in the adult. Pain might be present at some stage of the affection, usually after overactivity, but this was rarely an important or conspicuous symptom. In some cases there was no shortening of the affected limb, but in the majority there was a shortening of one-quarter to one-half an inch. In most of the cases there was moderate atrophy of the limb. These children were, as a rule, in excellent health; they never had toxemia, abscess, enlarged glands, fixed deformity, ankylosis, serious suffering, or disability. The symptoms had some resemblance to those of coxa vara and to some cases of slipped epiphysis and hemorrhagic osteomyelitis, or cysts of the neck of the femur; but they were easily distinguished by the Röntgenogram. The affection lasted from one to three years and terminated in recovery with a remodeled joint. The tendency was to over-treatment on an erroneous diagnosis of tuberculosis of the hip. Most of the cases received little or no mechanical treatment and did well. Traction, braces, operations, and long periods of recumbency were unnecessary, if not detrimental. This affection was a clinical entity which it was important to separate from tuberculosis, syphilis, coxa vara, and some of the rarer hip affections. It was evidently not very rare. Quiet hip disease in children was unquestionably one source of the affection known as osteoarthritis of the hip in adults. Some of the mild and obscure hip cases in children, where the diagnosis had been uncertain, were cleared up and shown to be quiet hip disease after careful raying. In order to avoid error, it was necessary to ray all hip-joint and borderline cases. In conclusion Dr. Taylor said that quiet hip disease, osteochondritis of the

hip, or Perthes' disease, was a distinct morbid entity which should not be confounded with other hip affections. It had characteristic symptoms, Röntgenogram, course, and termination. It was benign and not very rare. The treatment was simple and the prognosis good. It was a dysostosis of unknown causation. It was one cause of osteoarthritis of the hip in adults.

Dr. PERCY W. ROBERTS said that the subject of quiet hip disease was more important to the general practitioner than was generally realized. Heretofore nearly all chronic lesions of the hip were classified as of tuberculous origin. Many of them might be due to syphilis, but they could not be cleared up until they had been placed under treatment. It was due largely to the efforts of Dr. Taylor that enlightenment resulted in the study of this condition. Fortunately the diagnosis was comparatively easy. The clinical picture was one that was not apt to be confounded with anything else. Dr. Roberts said he wished to emphasize the fact that they were dealing with a lesion that had been overlooked in years gone by.

Dr. P. WILLIAM NATHAN said that they knew that tuberculosis of the hip was a particularly difficult disease to treat, and even the results of the best management of the joint were not always satisfactory. For this reason when they examined a child with this condition of the hip, usually a bad prognosis was made. However, if they took a child with such a condition and took him off his feet for a long time and compelled him to give up the pleasures of childhood and wear braces or spica, what would be the result? In recent years they had discovered a number of instances where the condition of the quiet hip closely resembled tuberculous disease; many of these cases were of mild form and required braces or spica and the prognosis was good. Dr. Nathan thought that the general practitioner should appreciate the efforts of Dr. Taylor, even more so than the specialist.

Dr. WILLIAM FRIEDER said that most of these cases were treated as tuberculous disease of the hip and he reported the following instances:

CASE I.—A boy of eight years was seen in April, 1912. He fell one month before seen. He complained of no pain. Then there appeared a gradual limitation of motion in both hips. Now there was no limitation of motion in either hip. The *x*-ray showed a flattening of the head of the right femur, but the *x*-ray of the left hip was negative. In July, 1913, a short spica was used. Following this there was no pain, shortening or limitation of motion. The Wassermann and the tuberculin tests were negative. In October, 1913, there was an increase of the limp and of progressive changes in both hips. There was no pain or spasm.

CASE II.—The patient was a girl, aged ten, who complained of trouble in her right hip. There was a gradual onset of limp. There was no trauma. Flexion was free, rotation and abduction were markedly limited. There was no shortening. The *x*-ray showed typical changes.

CASE III.—This was a boy, aged six, who had an onset of symptoms eighteen months ago, of lameness, with occasional pain in the groin. At that time all hip motions were free and the *x*-ray findings were negative. The limp persisted and a short spica was applied after six weeks. Six months later the *x*-ray showed some flattening of the head and roughening along the epiphyseal line. All the motions were slightly restricted. In March, 1915, the length of the legs were equal and there was some limitation of the lateral motion and flexion. There was no spasm. The Wassermann test was negative. In April, 1915, the *x*-ray showed a flattening of the head, a thickening of the neck, and a slight coxa vara.

Dr. TAYLOR said that the diagnosis of this condition of the hip was not always easy and in order to make sure of the diagnosis the *x*-ray should be employed.

A Serological Study of Presenile Gangrene (Thromboangeitis Obliterans) with Reference to the Possibility of Typhus Fever Being an Etiological Factor. A Preliminary Report.—Dr. CHARLES GOODMAN read this paper. He said that probably no other disease had recently aroused more interest on the part of the clinician, surgeon, and pathologist than the condition generally known as presenile gangrene of the extremities of thromboangeitis obliterans (Buerger). The causative factor had up to the present time not been discovered. The first case of this disease came under Dr. Goodman's observation some twenty years ago when he was an interne at the Mount Sinai Hospital. Since that time he had had the opportunity of studying over two hundred cases. A review of the literature showed that presenile gangrene of the extremities was more or less common in almost every country, but was more prevalent in those countries where typhus was epidemic, as in Russia, Austria, Japan, Bulgaria, Turkey, etc. The number of cases in any country was almost in direct proportion to the frequency of the epidemic of typhus fever. The majority of the cases seen in this country had been among the poor Jewish immigrants from Russia and Galicia, so that some of the writers had believed the condition to be one peculiar to the Jewish race. This was a misconception, as was evidenced by the fact that the disease was seen in countries where typhus fever was epidemic irrespective of the ethnic condition of the population. For a number of years Dr. Goodman was inclined to share the prevailing opinion that cigarette smoking entered largely into the etiology of the disease; but there were thousands in this country and elsewhere who were inveterate smokers and did not develop this disease. Syphilis as an etiological factor could be excluded. On the occasion of a visit to Breslau several years ago Dr. Goodman said he had been informed by two of the assistants of Prof. Kuettner that gangrene of the extremities had been found to be quite frequent while they were doing medical service in the Bulgarian campaign. It therefore struck him that, in view of the great frequency of typhus fever and cholera in the Bulgarian camps, there might be a causal relationship between these infections and the frequent occurrence of gangrene. In a recent conversation with Prof. Hans Zinsser the latter informed him that during his recent visit to Servia he had observed a considerable number of cases of gangrene of the extremities. A careful research of the literature revealed the fact that other authors had suspected the infectious origin of thromboangeitis obliterans. The specific microorganism of typhus fever having at last been isolated by Plotz, Olitsky, and Baehr, Dr. Goodman considered it advisable to have serological studies made. A perusal of the results showed that, while definite conclusions could not be drawn, they indicated the importance of carrying on further studies.

Serological Studies.—Dr. EUGENE P. BERNSTEIN said that Dr. Goodman had sent to him sera from twenty-one cases which were clinically diagnosed as cases of thromboangeitis obliterans. The agglutination reactions and complement fixation tests were made according to the methods described by Dr. Olitsky. In each a negative and positive control were made. In eighteen of these cases the serological reactions were negative, thirteen being studied once and five cases being studied twice. The three other cases gave quite marked reactions. In one case there was almost complete agglutination up to 1-200, and in two of the cases incomplete agglutination up to dilution of 1-400. As a result of the studies made by Drs. Plotz, Olitsky, and Baehr, they concluded that agglutination reactions up to dilutions of 1-50 were not specific. In a study of ninety-eight control cases a strong complement fixation test was not found in any one of them. Complement fixation tests were, however, found positive in a certain number of people who had been in contact with typhus fever. It was possible that the positive reactions found in three cases of thromboangeitis obliterans out of a total of twenty-one might have been due to the fact that these people had been contacts or might have had typhus fever. It was important to remember that patients with typhus fever could lose their serological reactions even in as short a period as five months following the termination of the disease.

Industrial Medical Supervision.—Arthur B. Emmons, 2nd, gives the results of his experience as surgeon to a large confectionery employing eight hundred to a thousand men and women, largely unskilled labor. In his work he had the assistance of a full-time trained nurse. He says that this inspection and supervision accomplishes the following advantages: It gives to the employer increased good will, steadier, quicker, and more contented employees; greater cleanliness of shop and produce and sufficiently improved conditions to make the outlay entirely justified. It offers to the doctor and nurse opportunity to be of distinct service to their patients, and to assure cleanliness and freedom from disease in the food manufactured. This is no small service to the employees, the directors, and the consuming public. The writer asks whether, when the public is aware of these safeguards, other employers can afford to be without such safety and advantages. —*Boston Medical and Surgical Journal.*

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE PRACTITIONER'S DICTIONARY. By GEORGE M. GOULD, A.M., M.D. Revised by R. J. E. Scott, M.A., B.C.L., M.D. Published by P. Blakiston's Son & Company, Philadelphia. Contains 962 pages. Price, cloth, $2.75; leather, thumb index, $4.50.

THE BASIS OF SYMPTOMS. By DR. LUDOLPH KREHL and ARTHUR FREDERIC BEIFELD, PH.B., M.D. Published by J. B. Lippincott Company, Philadelphia and London. Contains 520 pages. Price, $5.

PULMONARY TUBERCULOSIS. By MAURICE FISHBERG, M.D. Published by Lea & Febiger, Philadelphia and New York. Contains 639 pages with illustrations.

STUDIES IN ETHICS FOR NURSES. By CHARLOTTE A. AIKENS. Published by W. B. Saunders Company, Philadelphia and London. Contains 320 pages. Price, $1.75.

THE JOHNS HOPKINS HOSPITAL REPORTS. Published by Johns Hopkins Press, Maryland. Contains 586 pages with illustrations.

SECOND ANNUAL REPORT OF THE TRUSTEES OF THE NORFOLK STATE HOSPITAL, FOR THE YEAR ENDING NOVEMBER 30, 1915. Printed by Wright & Potter Printing Company, Boston.

SEVENTH ANNUAL REPORT OF THE COMMISSIONERS OF THE STATE RESERVATION AT SARATOGA SPRINGS. Printed by J. B. Lyon Company, Albany.

PROCEEDINGS OF THE MEDICAL ASSOCIATION OF THE ISTHMIAN CANAL ZONE, FOR THE HALF YEAR—OCTOBER, 1914 TO MARCH, 1915. Printed by the Canal Press.

CLEFT PALATE AND HARE LIP. By SIR W. ARBUTHNOT LANE, BART., M.S., F.R.C.S. Published by the Chicago Medical Book Company. Contains 102 pages, with illustrations. Price, $4.

BACTERIA AND PROTOZOA. By HERBERT FOX, M D. Published by Lea & Febiger, Philadelphia and New York.

MAN—AN ADAPTIVE MECHANISM. By GEO. W. CRILE, F.A.C.S. Published by The Macmillan Company, New York. Contains 387 pages. Price, $2 50.

OPHTHALMOLOGIE DU MÉDECIN PRATICIEN. By DR. ALBERT TERSON. Published by Masson et Cie, Paris. Contains 480 pages with illustrations. Price, 12 fr.

SURGICAL ANÆSTHESIA. By H. BELLAMY GARDNER, M.R.C.S., L.R.C.P. Published by William Wood & Company, New York City. Contains 220 pages, with illustrations. Price, $2.25.

BACK INJURIES AND THEIR SIGNIFICANCE. By ARCHIBALD MCKENDRICK, F.R.C.S.E., etc. Published by William Wood & Company, New York City. Contains 173 pages, with illustrations. Price, $1.25.

THE MEDICAL CLINICS OF CHICAGO. Published by W. B. Saunders Company, Philadelphia and London.

ANNUAL REPORT OF THE HEALTH OFFICER OF THE PORT OF NEW YORK. Printed by J. B. Lyon Company, Albany.

TRANSACTIONS OF THE AMERICAN CLIMATOLOGICAL AND CLINICAL ASSOCIATION. Guy Hinsdale, M.D., Editor.

THE AMERICAN YEAR BOOK. Edited and published by D. Appleton and Company. 862 pages.

TREATISE ON FRACTURES. By JOHN B. ROBERTS, A.M., M.D., F.A C.S. Published by J. B. Lippincott Company, Philadelphia & London. 677 pages.

NURSE INSTRUCTION. Published by Civil Service Chronicle. 14 pages. Price, 50c.

THE CLINICS OF JOHN B. MURPHY, M.D. Published by W. B. Saunders Company, Philadelphia & London. 194 pages.

LOOMIS SANATORIUM. Printed by the DeVinne Press. 93 pages; with illustrations.

DIAGNOSE UND THERAPIE DER GONORRHOE. By Dr. JESSNER. Published by Curt Kabitzsch. 169 pages. Price, 3.50 Mk.

BREATHE AND BE WELL. By WILLIAM LEE HOWARD, M.D. Published by Edward J. Clode. 150 pages. Price, $1.00.

NERVOUS CHILDREN. By BEVERLEY R. TUCKER, M.D. Published by Richard G. Badger. 147 pages; with illustrations. Price, $1.25.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Printed by The New Era Printing Company. 641 pages.

Miscellany.

Vital Statistics for 1914.—A preliminary announcement from the Bureau of the Census with reference to mortality in 1914, puts the total number of deaths in the registration area, which contains about two-thirds of the entire population of the United States, at 898,059, more than 30 per cent. of which were due to three causes—heart diseases, tuberculosis, and pneumonia—and more than 60 per cent. to eleven causes—the three just named, Bright's disease and nephritis, cancer, diarrhea and enteritis, apoplexy, arterial diseases, diphtheria, diabetes, and typhoid fever.

The deaths from heart diseases numbered 99,534, or 150.8 per 100,000 of population; this is a marked increase over 1900, when the rate was only 123.1 per 100,000.

Tuberculosis caused 96,903 deaths, of which 84,366 were due to the pulmonary disease. This gives a death rate per 100,000 of 146.8, an encouraging decline from the rate of 200.7, which was recorded in 1904.

Pneumonia caused 83,804 deaths, or 127 per 100,000, the lowest rate on record for this disease.

Bright's disease and nephritis were responsible for 67,545 deaths, giving a rate per 100,000 of 102.4; the mortality from these two causes increased from 89 per 100,000 in 1900 to 103.4 in 1905, since which year it has fluctuated somewhat.

Cancer and other malignant tumors caused 52,420 deaths in 1914, nearly 38 per cent. resulting from cancers of the stomach and liver. The death rate from cancer has risen from 63 per 100,000 in 1900 to 79.4 in 1914. The increase has been almost continuous, but it is possible that a part at least is due to more accurate diagnoses and greater care in the making of reports.

Diarrhea and enteritis caused 52,407 deaths, or 79.4 per 100,000, the rate in 1913 having been 90.2, and that in 1900 133.2. Nearly five-tenths of the total number of deaths charged to these causes in 1914 were of infants under two years of age.

Apoplexy was the cause of 51,272 deaths, a rate of 77.7 per 100,000; arterial disease of various kinds, of 15,044 deaths, a rate of 22.8 per 100,000; diphtheria and croup, of 11,786, a rate of 17.9; and diabetes, of 10,666 deaths, a rate of 16.2 per 100,000. The rate from the last-named disease has risen almost continuously since 1900, when it was 9.7 per 100,000. The mortality rate from typhoid fever, on the contrary, has fallen since 1900, when it was 35.9, to 15.4 in 1914, the total number of deaths in the latter year being 10,185. The principal epidemic diseases of children—whooping cough, measles, and scarlet fever—together caused 15,617 deaths, or 23.7 per 100,000, the rates for the three separately being 10.3, 6.8, and 6.6 respectively.

Mental Hygiene.—With the cooperation of a number of physicians and educators, the Committee on Mental Hygiene of the State Charities Aid Association will shortly begin a campaign of education, through the medium of lectures, for the prevention of insanity. The committee is endeavoring to reduce the alarming amount of mental impairment in the State by making careful public statements as to the nature, cause and prevention of diseases of the mind and by securing more effective treatment in the home as well as in hospitals and dispensaries, for persons in the early stages of mental disease.

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Original Articles.

THE TREATMENT OF PYORRHEA ALVEOLARIS AND ITS SECONDARY SYSTEMIC INFECTIONS BY DEEP MUSCULAR INJECTIONS OF MERCURY.*

BY BARTON LESLIE WRIGHT, M.D.,

SURGEON, UNITED STATES NAVY

HASSELTINE[1] of the United States Public Health Service has described dentistry as "a highly specialized branch of surgery." The brilliant work of Brophy and of the numerous other oral surgeons bearing dental degrees, have brought you honors second to none in the field of surgery. Your skilful restoration of the functions of the jaws (teeth), through prosthetic procedure, is an exhibition of surgical skill of no mean order.

The present great war in Europe, presenting as it has, a high percentage of face wounds, most of which have involved the oral cavity, has demonstrated beyond question that the dental surgeon is indispensable in military surgery, and I believe, and venture to assert, that no other surgical specialty is so closely identified with internal medicine as is dentistry. Granting its brilliant surgical achievements, and having the greatest admiration for the men who have created the ever-widening scope of oral surgery, I am confident that through pyorrhea alveolaris, root abscess, and dental caries, all of which are primarily causative factors in systemic infections, you will come into your fullest honors, and confer upon humanity, the greatest benefits; becoming as indispensable in certain lines of internal medicine as you have already demonstrated yourselves to be in certain lines of surgery.

Pyorrhea is one of the most frequent and widespread infections found in human beings, its local devastations are sufficient in themselves to warrant every effort upon our part to effect a cure, and when we consider it in relation to the various systemic infections for which it is so frequently primarily responsible, many of which are serious and some fatal, our responsibility to our patients is at once apparent.

No other local focus of infection is so fraught with danger to the patient as is the disease in question, for the bacterial flora found in the pyorrheal pockets and pus is at once numerous and varied. Therefore any specific infectious disease, acute or chronic, may be secondary to it, or focal infections of any organ or tissue may be caused by it, making pyorrhea not only of the greatest importance to the internist, but to the eye specialist, the throat, nose, and ear specialist, the gastroenterologist, the genitourinary specialist, the gynecologist, the obstetrician, the specialist of the nervous system, and the general surgeon as well.

Of all the secondary systemic infections found associated with pyorrhea, the most frequently seen is arthritis (so called rheumatism) in its various forms; this disease so productive of intense suffering, is probably, next to tuberculosis, the most disabling, and therefore from an economic standpoint, one of the most important diseases we have to combat. Thousands of these poor sufferers are completely disabled and rendered unproductive annually in the United States alone, representing an economic loss of many million dollars to the country.

Therefore it must be apparent that the cure of pyorrhea, long regarded by the medical and dental professions as more or less incurable, is of most vital importance, not only to prevent its local ravages, but more particularly as a prophylactic measure against systemic invasion, or where this systemic invasion has already taken place, to remove the source, thereby making the permanent cure of the systemic infection a possibility.

The treatment suggested and practised by me in cooperation with my dental colleague, Doctor Paul G. White, U. S. Navy, is based on the theory that: For every vegetable parasite mercury is the chemical affinity, and when properly injected into the infected host will cure the specific disease. This is represented by a chemical formula as follows: (Vegetable antigen + Hg) + antibody + complement = complement fixation (immediate cure).

I now believe that mercury has a dual parasitotropic action:

First, primary or direct, in which the Hg by affinity unites with the organism, and without antibody, binds complement. Represented by formula as follows: Vegetable antigen + Hg + complement = complement fixation (immediate cure). Total destruction of all the infecting parasites or of their virulency with immediate cure takes place. I am led to believe that this action is limited to the first few days after the onset of the acute infectious diseases, the period of time during which it will take place seeming to differ in each disease; in some it will be found to extend to the sixth day, in others probably only during the first or possibly the second day. This is due, I believe, to changes in the organisms acquired by the prolongation of their existence in their new environment, by which they gradually lose most if not all of their affinity for mercury. I have never seen this action take place in a subacute or chronic infection.

Second, secondary or indirect, for the reasons noted above, the affinity of the organisms for Hg having been partially or completely nullified, instead of uniting with them, Hg stimulates the rapid production of specific antibody.

*Read before the Harvard Odontological Society, at its annual meeting, Boston, Massachusetts, February 26, 1916, and The North Eastern Massachusetts Dental Society at its annual meeting, Haverhill, Massachusetts, March 1, 1916.

This secondary action takes place in two stages and may be represented by chemical formulæ as follows: *First stage:* Vegetable antigen + Hg = stimulated specific antibody production. *Second stage:* Vegetable antigen + antibody + complement = complement fixation (rapid cure). These reactions take place in the last stages of acute, and throughout the course of subacute and chronic infections, producing as a rule marked beneficial, with rapid but not immediate curative effects.

It is probable that both the direct and indirect actions of mercury in these infections occur in every case injected; under certain conditions one or the other predominating, the other taking a subsidiary part in the cure. It is the secondary or indirect action of mercury which manifests itself in the chemotherapy of pyorrhea.

The cure of this disease, with its multiplicity of possible etiological organisms, embracing as it does all of the vegetable parasites, and one, a protozoan, the *Endamœba buccalis*, with the systemic administration of mercuric succinimide, is an argument that must prove convincing, when considering my theory in relation to the treatment of many systemic diseases and local foci of infection.

The ultra conservatism of the medical profession to any new idea in medicine, no matter by whom advanced, is generally well recognized; in some instances this is of distinct advantage to humanity, as evidenced by the fiasco of our late visitor with his living tubercle bacterin, derived from the turtle.

On the other hand the opposition to the introduction of von Behring's diphtheria antitoxin, and more recently to Ehrlich's theory and the administration of salvarsan, was equally pronounced, and had it been successful, would have deprived humanity of two of its greatest blessings.

The attitude of the profession to my theory is (1) this one of conservatism, enhanced no doubt, by their inability from long years of habit, to disassociate mercury from the treatment and diagnosis of syphilis. Up to the time of the introduction of the Wassermann test as a diagnostic agent for syphilis, the therapeutic test was frequently applied to patients who presented neither a history nor any of the symptoms of this disease, but if they improved under mercury were considered to be syphilitic. In this way many a patient was branded a syphilitic who was entirely innocent of the disease, as is well demonstrated by the cures obtained through the administration of mercury in various diseases by Souligoux and Giru who reported in the *Archives de Chirurgie* of November 25, 1912, 144 consecutive cases of puerperal septicemia treated by deep muscular injections of mercuric cyanide, gr. 1/6 daily, with but three deaths.

Krohl[2] states that benzoate of mercury administered by deep muscular injections in proper doses is not only a cure for all streptococcic infections but will prevent them.

Baccelli[3] treats acute rheumatic fever by intravenous injections of mercuric chloride with brilliant results, in which he is corroborated by Carlo,[4] Maragliano,[5] Singer,[3] and Martone.[5]

Edlavitch[6] reports the successful treatment of a case of spastic paraplegia (non-syphilitic) by intraspinal injections of mercurialized serum.

Barlow[7] reports a case of tertian malaria treated by intravenous injections of mercuric chloride with most brilliant results.

For my own results along other lines I refer you to my former papers, the latest of which appeared in the MEDICAL RECORD under date of July 11, 1914.

(2) They fail to grasp the fact demonstrated by themselves, that a single therapeutic agent can be parasitotropic for an entire group of organisms, such as the vegetable parasites, wherein each specific organism is *supposed* to invariably produce a specific disease, forgetting that the chemical constituents of each of these organisms are almost identical, also failing to note or to remember that transmutation of these organisms may take place with changed conditions of environment, streptococci becoming pneumococci, which when injected into an animal produce typical pneumonia; anthrax bacilli becoming cocci, which when injected into an animal produce a disease entirely unlike anthrax; the hay bacilli becoming tubercle bacilli, which when injected produce typical tuberculosis; the tubercle bacilli becoming cocci, all this having been satisfactorily demonstrated by Rosenow, the Pasteur Institute of Paris, and Maher[8] respectively. The possibility at least of this entire group of organisms being but one organism, having been thus demonstrated, changing form and specific characteristics, but not chemical composition, which may produce one disease to-day and another to-morrow, depending upon environment, is but another convincing argument in favor of the correctness of my theory.

Such is the inconsistency of human nature that what the profession deems impossible in relation to this group of vegetable parasites, they freely grant to that group comprising the pathogenic animal microorganisms; every up-to-date text book on medicine states that arsenic (salvarsan, neo-salvarsan, or atoxyl) is a specific cure for syphilis, yaws, relapsing fever, sleeping sickness, and others.

Having formed no habit for, or developed any prejudice in relation to salvarsan, the profession at first used it indiscriminately in the treatment of diseases of all kinds, quickly discovering that it had no curative value in diseases of vegetable parasitic origin, but that it is a specific cure for the diseases of microorganismal animal parasitic origin.

This renders the argument, "that it is impossible for a single therapeutic agent to be parasitotropic for all the organisms comprising a group" most absurd, and is a third convincing argument in favor of the correctness of my theory.

The organisms most frequently found associated with pyorrhea are the streptococcus-pneumococcus group, several varieties of spirochetes, and a fusiform bacillus, all of which are vegetable parasites; these and others of this group, less frequently found, are the organisms which by entering the blood stream and lymph channels produce the various secondary systemic infections, as is particularly well demonstrated by Hartzell and Henrici[9] in their paper "The Dental Path: Its Importance as an Avenue to Infection."

Since the first publication of Smith and Barrett relating to the *Endamœba buccalis*, this organism has received considerable attention from both the medical and dental professions; it is present in almost every case of pyorrhea, whether as a causative factor or as a beneficial agent is yet to be determined; it has never been found in the blood stream or in tissues or parts of the body showing evidence of a secondary systemic infection, and can therefore be ignored when considering these.

At the present time I believe that the consensus of opinion is that the amebacide emetine is of more or less benfit in pyorrhea but not a cure; even this, however, is a distinct advance in the treatment of

this disease, for which Drs. Smith and Barrett should be duly credited.

We began the treatment of this disease with mercuric succinimide May 4, 1914, before the publication of Smith and Barrett's original paper, and our results were so brilliant that we did not feel justified in using emetine, believing that, even should the *Endamœba buccalis* prove to be the specific organism of pyorrhea, these results would demonstrate that in mercuric succinimide we had an amebacide far superior to emetine, in addition to its being a parasitotropic agent of the greatest possible value in relation to the vegetable parasites. Dr. Weston A. Price,[10] President of the Research Institute of the National Dental Association, who has had considerable experience with emetine in the treatment of pyorrhea, and a shorter experience with mercuric succinimide states: "We believe it (mercuric succinimide) to be superior to emetine in a majority of cases." Riethmüller has stated, "as a matter of fact, after one administration of succinimide of mercury, it is absolutely impossible to demonstrate *Endamœba buccalis* in pyorrheal pockets."

At the Navy Yard, Portsmouth, N. H., we have completed the treatment of seventy-five cases of pyorrhea; among these were noted the following secondary systemic infections: four cases of acute infectious arthritis—so-called acute rheumatic fever, twenty-one cases of chronic infectious arthritis—so-called chronic articular rheumatism, one case of chronic bilateral facial neuralgia, three cases of chronic unilateral facial neuralgia, one of chronic laryngitis, one of chronic otitis media, six cases of chronic lumbar myositis (lumbago), three cases of myositis of other muscles, and locally associated with the pyorrhea, four cases of perialveolar abscess; that is to say, exclusive of the local abscess cases, forty-one (54 per cent. of the total number of cases treated) presented secondary systemic infections.

In every case the pyorrhea was cured, and by this I mean that, in addition to the absolute disappearance of pus, the gums became normally pink, hard, and firm, pockets were obliterated and loose teeth firmly fixed, nor have we been able to find a single case in which the disease has recurred.

In addition to these brilliant results, all the cases of secondary systemic infection were also cured in remarkably short periods of time.

In corroboration of this, A. A. Dental Surgeon G. H. Reed, U. S. Navy, at the Boston Navy Yard, will shortly publish a paper in which he reports fifty consecutive cases of pyorrhea treated by this method with practically 100 per cent. of cures. Dr. C. S. Copeland[12] of Rochester, N. H., has published eleven consecutive cases, all of which were cured, and it is interesting to note that six of these cases presented secondary systemic infections, or 54 per cent., it being the same percentage as in our own series; these were also either cured or markedly improved at the time of writing.

Dr. E. C. Blaisdell of Portsmouth, N. H., in cooperation with Dr. Samuel T. Ladd, and Dr. J. H. Neal, report twenty cases treated and cured.

In one case of Dr. Ladd's, a young man, 22 years of age; was first seen on July 4, 1915. He gave a history of pulmonary tuberculosis of some three years' standing, during which time he had been treated in two Eastern sanatoria and had just returned from southern California to die; he presented on that date all the symptoms of advanced tuberculosis, temperature 102.6°, pulse 118, respirations 30. Apex and lower right lobe and upper left lobe were very widely involved with extensive pleurisy, severe night sweats, characteristic sputum, weighing 102 pounds. He also had pyorrhea. He has now had three series of injections of six doses each, ranging from gr. 5/5 to gr. 9/5, and presents the following condition: cough and sputum have practically disappeared; sputum negative for tubercle bacilli; no night sweats since third injection; lungs are dry and lesions have most markedly improved; weight 146 pounds; pyorrhea cured. He has returned to work, but is still under observation and treatment. Two others had chronic iritis for years, with frequent exacerbations; they both had been treated by several excellent eye specialists, with only temporary improvement; with mercury and local treatment the pyorrhea and iritis in both cases have entirely disappeared. One severe case of ten years' standing had a severe chronic gastritis and chronic appendicitis. His pyorrhea was cured by three injections, the last given April 22, 1915, since which time he has been free from gastric and appendix symptoms. Three others had severe chronic arthritis which was also cured.

Treatment.—Besides the bacterial infection, there is a second factor that requires every consideration, viz., that in a very large majority of cases calcareous deposits occur to a greater or lesser degree along the roots and necks of the teeth, which, acting as foreign bodies, are a constant source of irritation. It is, therefore, obvious that in order to cure this disease in a large majority of cases two courses of treatment must be pursued at the same time: (1) The infecting organism or organisms must be attacked by the use of some parasitotropic agent, and (2) during the administration of this agent, surgical interference must be resorted to locally, all calcareous deposits and tartar wherever found being removed, and the toilet of the oral cavity being made as perfect as possible.

The multiplicity of the organisms productive of this infection makes it necessary to select for systemic administration an agent parasitotropic to them all. That mercury in proper doses and properly administered has this qualification when the vegetable parasites are in question, I have repeatedly demonstrated.

If it is found that the *Endamœba buccalis* is the primary causative factor in pyorrhea, our results and the observations of Price and Riethmüller would show conclusively that mercury is also parasitotropic for this particular protozoan at least.

In this disease, in the male patient, a deep muscular injection of mercuric succinimide, gr. 1 (65 mgm.), should be adminstered every seventh day, until the discharge of pus has entirely disappeared, and the gums have regained their normal condition and appearance. In female patients the dose should be from gr. 1/5 (13 mgm.) to gr. 2/5 (26 mgm.) less than that administered to males. Mercurialism of any marked degree should be met with smaller doses at succeeding injections, or, if the symptoms are severe, the mercury is discontinued until they have disappeared.

Technique.—The syringe used is all glass, and holding forty minims. The needles used are No. 26, intramuscular, for the above syringe.

Syringe and needle are sterilized before using. The solutions are so made that gr. 1/5 of mercuric succinimide is dissolved in four minims of hot, sterile distilled water.

The site of injection is the buttock, using alter-

nating sides for succeeding injections. The skin is sterilized with tincture of iodine. The method of inserting the needle is as follows: The needle butt is held between the thumb and third finger with the index finger over the butt, the shaft of the needle to be perpendicular to the skin surface, the point about three inches distant from it. With a quick, forceful, downward thrust, the needle is driven deeply into the substance of the gluteal muscles, from point to butt. Then into the syringe as many minims of the sterile mercuric solution as represent the desired dose are drawn; if it is to be gr. 5/5, minims XX will be required. Then the syringe tip is inserted into the socket of the needle, and the injection is made slowly. The needle is withdrawn, and tincture of iodine is applied to the point of injection. The injections are to be repeated every seventh day.

Local Treatment.—The local treatment as administered by Dr. P. G. White, embraces the following steps: Careful expression of the pus from the pockets, thorough removal of calcareous deposits and tartar wherever found; extraction of hopeless teeth and roots, polishing of the tooth structure, followed by applying to the margin of the gums equal parts of tincture of iodine, tincture of aconite, and chloroform, continued every other day. This latter procedure may be and has been omitted in many of our cases without any appreciable difference in the time required to effect a cure, but we consider it a valuable adjunct to the local curettage and systemic treatment.

Number of Injections.—The longest period of time required to effect a cure was forty-one days, the shortest four days; average seventeen days. The greatest number of injections required to cure the primary infection in any one case was seven, the smallest number one; average 2.9. The diagnosis in each case was based upon classical symptoms and conditions; pus was present in every case, the presence of slight pathological changes in the gum tissue, or of any particular organism, not being considered as diagnostic.

The following case well illustrates many of the points I have endeavored to impress upon you:

CASE: F— J. F., Chief Master-at-Arms, U. S. Navy, age 48 10/12 years, married, wife perfectly healthy, never conceived. Admitted to the U. S. Naval Hospital, Portsmouth, N. H., from the U. S. S. *Leonidas*, October 1, 1914, as with chronic articular rheumatism, all joints involved, moderate temperature, suffering intensely. Treatment: bed, salicylates, bicarbonate of soda, various local applications. Wassermann negative. He remained under treatment until January 19, 1915, during this time three additional Wassermann tests were negative.

There being no change in his condition, on the latter date he was transferred to the U. S. Army and Navy General Hospital, Hot Springs, Arkansas.

This institution is devoted solely to the treatment of the various forms of so called rheumatism, excepting syphilitic, patients with this disease not being accepted. Upon admission, he was given a fifth Wassermann test, which was also negative. He remained under the special treatment given in this hospital for about four months, when he was discharged improved, all joints being normal, excepting those of both feet. Upon his arrival on board the Receiving Ship at the Navy Yard, Norfolk, Va., May 12, 1915, he was immediately transferred to the Naval Hospital at that place for further treatment. His home being in Portsmouth, N. H., he requested transfer to the Navy Yard at that place, and reported on board of the U. S. S. *Southery* June 2, 1915.

Fearing that if he presented himself to the medical officer, he would again be sent to hospital and probably surveyed and discharged from the service for physical disability, he explained to his commanding officer his condition, who kindly gave him very light duty in the enlisted men's reading room, which did not require him to be on his feet.

He continued in the performance of his duty until July 27, 1915, when he reported to me at the Navy Yard Dispensary, saying that he "was all in," giving the following history up to the time of his present illness. Had never been sick until two years prior to this time, when he had an attack of so called acute rheumatic fever, for which he was treated in a naval hospital for some eight weeks, when he was discharged cured, and had remained so until a few days before his admission to the Naval Hospital, Portsmouth, N. H., October 1, 1914.

On July 27, 1915, inspection revealed a man 5 feet 6 inches in height, apparently well nourished, whose expression was one of suffering. He complained of inability to walk without extreme pain in both feet extending above the ankle joints. Upon examination, the parts presented marked swelling, redness, tenderness, and increase of heat. In all of the small joints of the feet and in the ankle-joints motion was markedly limited, and manipulation of the joints produced great pain.

His upper teeth had all been extracted some years previously, and were replaced by a fairly good plate, eight teeth were remaining in the lower jaw, imbedded in a mass of faulty gold bridge work, which was most unhygienic, with a large amount of pus exuding from around all teeth. No additional local focus of infection could be found. Weight 143 pounds stripped, normal weight 153, systolic blood pressure 150.

He was told that he had pyorrhea, which was probably the cause of his general condition, and I would only treat him provided he would do as directed by my dental associate whom I was sure would insist upon the removal of the faulty bridge at least.

He stated then "that he had been treated continuously for fifteen years for pyorrhea, by a number of civilian dentists," was very much astonished to hear that this condition was the cause of his "rheumatism," could hardly believe it, "as none of his former physicians had ever asked him about his teeth, much less looked at them." He was referred to Dr. White for dental examination, who told him the bridge must be removed and possibly all the remaining teeth might have to be extracted. He consented to our combined treatment finally. On July 30 injection gr. 5/5 mercuric succinimide; August 6, gr. 5/5; August 12, bridge work removed, all eight teeth very loose, the lower right second molar considered hopeless was extracted. Scaling of remaining teeth commenced; August 20, injection gr. 5/5 mercuric succinimide; August 27, gr. 5/5; September 2, pyorrhea pronounced cured by Dr. White, arthritis improved. Further injections continued as follows: September 3, gr. 5/5; September 10, gr. 5/5; September 17, gr. 5/5; September 24, gr. 5/5. By this time he had markedly improved, and the injections were discontinued for the time being. Graduated exercise of the feet was now commenced and gradually increased. November 3 injections renewed, gr. 5/5 administered. This produced rather severe abdominal pain and diarrhea. Injections continued as follows: November 10, gr. 1/2; November 17, gr. 1/2; November 24, gr. 1/2; December 1, gr. 1/2. At this time all symptoms had disappeared, motion was nearly complete in all joints and function practically restored to normal, weight 149 pounds, systolic blood pressure 122. Treatment discontinued.

On January 10, 1916, he was discharged from the service by expiration of enlistment, being certified by the medical officer who succeeded me on the *Southery* as physically qualified for re-enlistment, and was re-enlisted by him the following day. He now (February 14, 1916) weighs 158 pounds stripped.

1. Had the pyorrhea been cured fifteen years ago, this man in all probability would never have developed arthritis.

2. When the arthritis first developed, had a search been made for a local focus of infection, and found, and the proper treatment instituted, two months would probably have been the limit of his illness.

3. Had this been so the Government would have been saved many hundreds of dollars and the man much suffering.

4. The criminal fallacy of the therapeutic test for syphilis is apparent.

5. The inefficiency of the recognized treatment (salicylates and alkalies) in these conditions is apparent.

This assertion is sustained by the eminent men using Baccelli's treatment for acute articular rheumatism, as is well shown from the following abstract of Martone's article copied in full from the *Journal of the American Medical Association*, March 13, 1915:

"Intravenous Injection of Bichlorid in Acute Rheumatism.—Martone reports five extremely severe cases in which salicylic medication failed to influence the clinical picture or *caused symptoms of intoxication so serious that it had to be discontinued.* As a last resort he turned to *mercuric* chlorid and gave it by intravenous injections in doses from 1 to 5 mgm., repeated every day or so well into convalescence. All the patients given this treatment recovered, and none has shown any evidence of a return of joint trouble since. Only one was left with a slight valvular defect; in the others the endocarditis, if such existed, seems to be completely cured. He gave ten injections in one case, beginning with 2, 3 and 4 mgm., and increasing to 5 mgm., toward the end. In another three injections seemed to conquer the disease but he continued with three more on alternate days to make sure of the result. In another case no benefit was apparent under salicylates for a month, and then five injections of mercuric chlorid were given and the cure was soon complete. He followed Baccelli's technic in every particular." (Italics mine).

6. The marked curative properties of mercury in these conditions must be recognized.

7. If mercury had not been administered this man would in all probability have been discharged as incurable, becoming a navy pensioner for life, thereby costing the Government thousands of dollars, for which it would receive no return.

Conclusions.—From my results in this disease and in other infections previously reported, corroborated by the results reported by Souligoux, Giru, and Krohl in septic infections, and by Baccelli and his followers in infectious arthritis, I am convinced that in mercury, properly administered, we have found a cure for the various infections produced by the vegetable parasites, among which pyorrhea, as a primary focus of infection, is of the utmost importance.

The eminent men mentioned have only failed to recognize the advantage of the large doses recommended by me, hence the necessity for their frequently repeated and continued administration of this parasitotropic agent.

Shortly before the death of the lamented Ehrlich he prophesied that chemo-therapy would supplant all other forms of treatment of disease. I am confident that his prophecy will shortly be fulfilled.

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NAVY YARD, PORTSMOUTH, N. H.

THE NURSE IN PEACE AND IN WAR.*

BY J. LEONARD CORNING, M.D., LL.D.

NEW YORK.

IT is not an easy thing, it would seem, to utter anything either very new or very inspiring upon nursing the sick, a theme that has been so often and so ably treated in the past, and more especially during the past thirty years. So I thought when it was suggested that I should address you on this well-worn subject. However, after an interval of reflection, it occurred to me that there were certain aspects of nursing—sociological, ethical—that might be touched upon without manifest triteness; and that looking at matters in this way might arouse in some measure an intensified and broader conception of the significance and dignity of the nurse, trained, zealous, and faithful in her work.

We are flocked this afternoon to pay tribute and wish success to those who are about to dedicate their lives to a high and useful calling—to tend the sick and the infirm, the sorely afflicted in heart, in body, or in mind. 'Tis a noble work! You who are about to give practical effect to the benevolence of the heart may hold up your heads. Be assured that your professions are not lost upon dull ears. Yours is no cramped espousal; the thing which you have set yourselves to do is as broad as human nature.

And you are well prepared. For many months, under favorable auspices, with invaluable opportunities, carefully led on by a corps of accomplished instructors, and solicitously followed in your undertakings by a sympathetic sentiment—for many long and arduous months you have unflaggingly pursued that discipline that alone could enable you skillfully and intelligently to carry on the campaign of the sick room under the generalship of the attending physician.

And now, in the ripeness of time, you are about to step into a world of action—into that world of strong contrasts, of shabby compromises, of ideals half smouldered, flickering up despairingly amid the smother of an ubiquitous selfishness. If perchance your own ideals flutter afflictively at the discovery that all the flowers of earth are not endued with fragrance, do not let that discourage you for long. Consider how men have gone forth to battle and women have braved the pestilence to staunch their wounds; how hungry scholars have achieved master-works in garrets; how moss has grown on a rock. Consider the public library and the hospitals of this city—all kindness and beauty; consider how their walls arose at the sovereign touch of high devotion.

*Read at an assembly of nurses about to give their services to the wounded in the Great War, April 3, 1916.

It has often been asked, "What are the personal attributes most desirable in an attendant on the sick?" The question is evidently answerable in a general sense only. Given good health, good nature, and a reasonable degree of technical training, it may be said that tact, adaptability—anything, in short, which confers power to accommodate oneself to environment, is of consequence.

A sense of humor, a capacity to enjoy the little discrepancies of human nature, is a great assistance in most situations, and is invaluable in the sick room. To be without this faculty is to miss those breaks in serious discipline, those vacations from the strenuous, so necessary to the preservation of serenity and poise. Remember that the planets will roll whether you smile or sigh.

To the physician upon whom devolves the generalship of the sick room, you will bring fidelity; to the patient, your skill, your tact, your hopefulness.

History shows that the disposition of a nation, like that of an individual, is subject to the vicissitudes of change. Contrast the exalted moods of Greece under Pericles with the crawling humors of her decline; think of Rome the republic and Rome the plaything of the Cæsars. Ours, too, it would seem, is in a measure a day of material expediency. Some of us think by boarding the express to pass poetry by, forgetting that she has wings. Just now convenience, luxury—tower high in the estimation of the slaves of the obvious. Beware of the false promises of a tinseled externality! Shall we miss the lesson of Egypt the great builder—Egypt the material? Shall we forget the grewsome relics of a vanity projected beyond the tomb—those spiced mummies, as dead as on the day when swathed and decked, they were laid aside, speechless recipients of a futile luxury? What a dismal heritage of despairing self-deception—this postponed rottenness, this sparkle of jewels on withered fingers, this dried laughter of a thousand years, of a death's head coffined round by porphyry!

To stand on the summit of the Great Pyramid is not to come very close to the zenith; yet an astronomer by looking up may know the secrets of the stars. Matter is changeful; those who feast do but pander to her fickleness. Kindness alone shall soften the harshness of the ages—kindness, boundless, like the inconceivable reaches of infinite space.

It is when brought low by a severe sickness that we feel these things the most. Ambition, zest, hope—all the desires and passions that in health we most tenaciously hold by—flee then, leaving naught behind but a poignant emptiness. Then it is that the nothingness of human achievement wails in upon our consciousness. A crushing sense of unreality conquers us completely; we seem mere phantoms, errant apparitions flitting at the whim of the inscrutable.

It is an arduous service, this which you have undertaken. During the long watches of the night and the drooping vigils of the early morning, when the tick of the clock sounds like the drop of leaden water, and a false twilight blends a spectral illumination with the boding hush—at that fainting hour of hope, when the pulse runs low and clammy fingers clutch the heart, turn your eyes to the east and know that presently the orb of comfort shall rise above the verge of the horizon to lay a halo of gold upon the head of one who has softened the suffering of the night.

Just now, and for more than a score of months, Europe has been the scene of such horror as has not afflicted mankind since recorded time. Races, civilized in part and others in full measure, have set upon each other with the sanguinary madness of a pack of ravening wolves. Science has been despoiled, ingenuity made bankrupt to give effect to a ferocity that has sullied the fairest soils with the unnumbered bodies of the dead. And in every land, in all those mutilated by the sword and harried by a relentless spoliation, there are red eyes and hollow cheeks.

But this is but half the picture. Behind the trenches are the hospitals amid whose maimed and shattered tenantry move the nurses—an army of them—binding and soothing ever, pressed to their work by an irresistible plenitude of kindness. What a paradox! The passion which heals the wound seems as ardent as that which inflicts it.

Shall it be possible in the time to come to vanquish the combative by the milder instinct? May we look for an epoch in which the tone and organization of society shall be wholly altruistic? Not if history and present evidence count in the reckoning. Let the oversanguine scan their own hearts. And the bitter part of it is that the fighting instinct, horrible though it be in its collective and titanic manifestations, is at once an evil and a necessity. Without it no state worthy of the name could—in view of the constitution of the human mind and the moral limitations of the race—endure. History, the teachings of the life of every day, self-examination all point the same way.

What then of the nurse who labors among the sick, the wounded, and the dying? Are her works no more than chaff in a storm? Not if the quickening of all life by sunlight, or the fall of rain on the waste places of the earth count for something in the scheme of things.

Her function is, while relieving the pains of mankind as best she may, to set a term to the abuse of power, to offset the inevitable hardness of the world. Thus she shall keep the torch of benevolent aspiration alight, the glow of hope, the persistent expectation of the ultimate kindness of things so indispensable to the progress and sanity of the race.

THE REFERENCES TO ANATOMY IN RABELAIS' WORKS.*

By DOUGLASS W. MONTGOMERY, M.D.,

SAN FRANCISCO, CAL.

In many places in Rabelais' works there are wearisome enumerations of anatomical structures, principally citing the organs wounded either in a fight or in an accident. These lists of names, occurring as they do in a humorous writer, are presumably humorous, but in the present day it would take a confirmed admirer of Rabelais to find the joke, unless he sought out by sedulous study the contemporaneous meaning of the author. Many of the conditions of life and of thought are different now from what they were in the beginning of the sixteenth century, and the idea of what was ludicrous would vary with these conditions, and these jests may then have evoked the keenest interest and the most uproarious laughter.

Humor presupposes something serious to be humorous about, and this is probably the point in these lists of anatomical names. This will be taken up later, and in the meantime, to get a clear idea

*Read before the San Francisco County Medical Society, February 8, 1916.

of the subject, the following is a translation of part of the description of Friar John's attack on the despoilers of the convent garden, an incident in the war between Picrocole and Grangousier.

"Friar John came down upon them without a word of warning and knocked them over like a drove of hogs. He scrambled the brains of some, and broke the legs and arms of others, or dislocated the spondyles of their neck, or crushed their kidneys, jammed in their noses, poached their eyes, broke their jaws, sent their teeth down their throat, unhooked their shoulder blades, ruined their legs, dislocated their haunches, and disjointed their forearms. If any tried to escape among the vines he frayed the whole skin over their spines, and broke their back as he would that of a dog. He shattered the skulls of those who were fleeing by hitting them over the lambdoidal suture. Some daring ones showed fight, and it was then that Friar John put forth the strength of his muscles. He transpierced the mediastinum and the heart; he struck them under the short ribs and overturned their stomach, so visiting them with sudden death. Others he slammed so fiercely over the navel that their entrails burst out."[1]

This is one of the most lively of these enumerations, but who would now consider this long anatomical list witty? Many on running across such passages lay down the book with a sigh. A physician may be interested in the old names, such as calling the ulnæ les faucilles, the sickles, especially if he happens to have been raised on a farm before modern machinery drove out the scythe and the sickle, and had learned to appreciate how the forearms of a good mower swing around as if a part of the implement he is handling.[2]

One explanation of the occurrence of these anatomical farces is that they were satires on writers who revelled in them. In fact, it is probable that Gargantua was modeled on old romances. A better one, however, seems to be the widespread interest, both popular and professional, that anatomy then excited. Anatomy was then a growing science, and the men engaged in it were animated by the enthusiasm of discoverers. Sylvius (1478-1555), Servetus (1509-1553), Vesalius (1513 or 1514-1564), and Fallopius (1523-1562), all lived in the time of Rabelais (1494-1553), or not long after, and they were the makers of modern anatomy. Besides this those who were engaged in the plastic arts and in painting were deeply concerned with anatomy.

The Plastic Arts and Painting and the Study of Anatomy.—Leonardo da Vinci (1452-1519), Michael Angelo (1475-1564), Rafael (1483-1520), and Benvenuto Cellini (1500-1571) were only the leaders in a vast art movement in Italy. Almost everyone was either painting like Leonardo da Vinci or Rafael, or carving in marble like Michael Angelo, or making castings like Benvenuto Cellini. This movement is comparable to the socialistic, mechanical, and chemical tendencies of modern life. The greatest artists were engaged in illustrating works on anatomy, and all of them strove through its practical study to attain artistic perfection. There are in the Victoria and Albert Museum in London wax models of muscles made by Michael Angelo,[3] and I shall never forget Benvenuto Cellini's description of the beauty of the sacrum, the keystone to the pelvic arch, that supports the graceful upward curving vertebral column. In all probability he was as familiar as Michael Angelo with the lumbar muscles and the frame to which they were attached.

The illustrations in the old anatomies are interesting, as showing the close relationship between artists and anatomists. Very often, as frontispiece, there is a skeleton gallantly posed in the foreground of a landscape with the ruins of classic temples in the distance.

One of the finest of these frontispieces is "A Lecture by Vesalius" in Vesalius' magnificent "Opera omnia anatomica et chirurgica." The audience consists of boys, young men and women and old men. The preponderance of elderly men with flowing beards and long robes, as well as the elaborate architectural details were probably for artistic effect. The mixed audience, however, may indicate the popular nature of the lecture.

Even down to 1753 in Surgeon's Hall, London, iron spikes had to be fixed in the theater to prevent the mob from getting over the outer rail during the anatomy lectures,[4] which shows what an intense interest the populace then evinced in these functions, for they were functions.

An anatomist, therefore, in Rabelais' time, had all those artists and their followers as enthusiastic and attentive hearers. And besides those who were studying these arts many also who were interested in theology were deeply concerned in anatomy.

Religion and the Study of Anatomy.—One of the most interesting anatomists of the renaissance was Servetus, who discovered the circulation of the blood one hundred years before Harvey. It is significant that Servetus' description of the circulation occurs, not in a medical work, but in the midst of a treatise on theology. His interest in anatomy bore on its relationship to his search for the seat of the anima, or soul, or spirit. To seek for this anima in the circulation and in the lungs was perfectly logical, for was it not written that after God had fashioned man of clay, He breathed into him the breath of life, and where else could He breathe it in but through the lungs? This idea of the soul or anima being a divine breath was an old and widespread one. According to Walter Pater, Marcus Aurelius speaks of it, saying that if there is a hereafter the divine breath will be there also.[4] Servetus in seeking for the entrance of the soul into the body showed the characteristically daring practical tendency of the European investigator.

Besides the belief in the divine breath there was another belief that linked anatomy closely to theology, this was the mystic creed that there were soul or spiritual duplicates for the entire material human body, including every organ. This spiritual being was of an ethereal imponderable nature. In the Inferno reference is made to this. Of the two visitors in hell, Virgil and Dante, the latter was alive and corporeal. In their journey they met Chiron, the chief of the centaurs, who halted and regarded them narrowly. Then taking an arrow from his quiver, with its fork he musingly stroked back his beard, and turning to one of his fellow centaurs remarked, "Have ye perceived that the one behind," meaning Dante, "moves what he touches?" "The feet of the dead are not wont to do so."[5] Even the deity was assumed to have a full complement of organs, such as appertains to the higher vertebrates, and it was customary to swear by those viscera. For instance, Rabelais swears, "par la ratte Dieu," by God's spleen.[6]

There was yet another point on which anatomy and religion touched. In accordance with the views then prevailing of the resurrection of the body, the theologians, who then held the chief political power,

were very strict in allowing bodies to be dissected. Very occasionally and after the performance of elaborate ceremonies, the body of a criminal might be obtained, and after dissection the remains had to be conserved for ceremonious interment.

When, therefore, we reflect that religion was then the subject of the most lively universal interest, and shortly led to one of the most devastating wars in Europe, the Thirty Years' War, and that religion was closely associated with anatomy in trying to fix the seat of the soul, we can get a faint inkling of the audience that an anatomist then had. The few lectures on anatomy that Rabelais himself delivered were given in the early part of his medical career, before the people of Montpellier, on the body of a criminal, and among those in his audience was Etienne Dolet (1509-1546), a writer and a politician, who was later burned for his religious or political views, which, as has been mentioned, amounted in those days to the same thing.

Therefore, through the great sentimental forces of both religion and art a vast number of people would be interested in anatomy, and in very many instances in an intense sentimental way, making it well worth while for a humorist to joke about it.

Not very far removed from the time when Servetus was so intently seeking for the place of entrance of the soul into the body, Rabelais described how Gymnaste killed Tripet, one of King Picrochole's men, by severing with a single stroke of his sword his stomach, colon, and the half of his liver. Tripet fell to the ground, and spilled out four pots of soup, and his soul was mingled with the soup.[7] One of the prevalent beliefs then was that the blood was the soul, and the Great Mocker indicated that the unfortunate Tripet voided both the soup and the soul at the same instant and in a common stream.

The Practice of Medicine and the Study of Anatomy.—It was only natural that in a day when the study of anatomy excited such widespread interest that a reputation for special anatomical knowledge should substantially contribute toward a reputation for a knowledge of medicine, especially as anatomy was about the only real medical science then being developed. In fact, at present a medical reputation often does not depend on a man's knowledge of the care of the sick, but on a knowledge of some popular and allied subject, as bacteriology, or on his supposed acuteness in ferreting out rare diseases with strange and striking names. So the great anatomists of the Renaissance seem to have practised medicine. Vesalius was physician to Charles V and to his son, Philip II of Spain. Sylvius practised medicine, and Servetus, when he was not occupied in studying anatomy or engaged in some bitter religious disputation, was a practitioner. Rabelais also cared for the sick, but recognized that he could benefit the suffering ones more by jollying them than by any of the means then existing for the control of disease.

It is, therefore, no wonder that the lecturers in anatomy in those days had large audiences, exerted a wide influence, and gained considerable sums both in fees and as salaries. Sylvius, for instance, acquired a reputation for being miserly, and he could hardly have done this if he had not had the wherewithal to be miserly upon.

The whole understanding of medicine of that day was that of an art, the sole end of which was the cure of disease. The dominant idea of this art was that a physician gave a medicine, the specific effect of which was the banishment or annihilation of a personal disease entity that was troubling the afflicted individual. It was almost exactly the same idea that the laity to a great extent yet has, as expressed in patent medicine advertisements. Of the various adjustments that can be made through a knowledge of the nature or course of disease, or through a knowledge of anatomy or physiology, they knew nothing, as these branches had not yet been sufficiently developed.

With the widespread knowledge of anatomy, and with its associations both fanatical and sentimental to religion and art, the ground was prepared for Rabelais' whimsical genius. For instance, Panurge in telling of his adventures in Constantinople, related how a Turk drew strips of pork through his flesh after the manner we do now in *bœuf à la mode*, and then tied him to a spit, and proceeded to roast him before a good hot fire. As burning alive was a popular form of punishment then and contributed materially to the entertainment of the people, this in itself was a kind of grim humor. The Turk, however, indifferent even to his victim's squirms and howls, fell asleep, and Panurge managed to free himself and to set the place on fire, and the owner of the house, rushing in, was so enraged that he drove the spit through the aforementioned Turk. Rabelais relates at length the parts pierced. The spit entered the belly, traversed the third lobe of the liver, pierced the diaphragm, entered the pericardial sac, and ran out near the shoulder blade. The only jokes I can see in the incident are the imperturbability of the Turk and a petulant remark made by Panurge as he was escaping from Constantinople as fast as his legs could carry him. It seems he was closely pursued by a troop of hungry dogs that acted as scavengers for that dirty city, and that were attracted by the savory smell of the strips of pork that were drawn through Panurge's flesh. Under these distressful circumstances Panurge observed that there is no pain of the teeth like that when the dogs are after you.[8]

It may be also that the slow roasting on a spit had a local flavor. In times previous to this, a condemned man was first strangled, and the body was then burnt. As the resurrection of the identical body was then a matter of faith, this added materially to the punishment, but in a way that was considered perfectly just and appropriate. As, however, toward the Reformation, the religious controversies became sharper, those condemned were burned alive. With the increasing controversial acerbity, the burning was more slowly done so as to increase and lengthen the suffering. In some instances a cage, containing the victim, was balanced on a long pole that was continually swept near the fire and away from it, making it resemble Panurge's experience with the spit. Calvin, as a typical exponent of his time and of his type of mind, caused Servetus to be burned with green wood, and the punishment was lingered out for a long half hour.[9] Incidentally it may be remarked that Calvin and his doings were particularly detestable to Rabelais.

The attitude of the public toward anatomy has undergone a great change since the end of the fifteenth and the beginning of the sixteen century. General interest in this subject has steadily declined until now, even among medical men, the audience of an anatomist is diminishing. When I was a student those of us who became prosectors to the chair of anatomy were looked upon as being particularly fortunate, and the chair of

anatomy was always held by a surgeon. Well-known surgeons like McBurney and Bull were demonstrators in the dissecting room, and looked upon the position as being a stepping stone both toward a professorial chair and renown. All this is now changed. The anatomist in a medical school has nothing to do with surgery, and he teaches a branch that is looked upon as a preliminary study. Furthermore, connection with the chair of anatomy would now be considered detrimental to a surgical reputation. This estrangement of anatomy from the practice of medicine is not peculiar to this preliminary branch; it looks as if it would involve both chemistry and physiology, which are being built up into independent studies, so elaborately taught as to preclude a physician's participation in them. It is needless to point out the evils this course entails. The framework of the body, the functions adhering to that framework, and the chemical processes taking place within it should be the physician's constant study. Without them the physician as well as the surgeon becomes a technician, or a drug dispenser.

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2. In the Middle Ages, the ulna or cubitus, and the tibia were called the focilia majora: the radius and the fibula, or peroneus, were called the focilia minora. Rabelais Medicin par le Dr. Felix Bremond, 1879, Gargantua, p. 168, note 108.
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7. Gargantua. Bk. I, Ch. XXXIV, line 55 et seq. (Edition par Abel Lefranc.)
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323 Geary Street.

DEMENTIA PRECOX STUDIES.

THE RELATION OF CECAL STASIS TO DEMENTIA PRECOX.

By BAYARD HOLMES, M.D.,
AND
JULIUS RETINGER, Ph.D.,
CHICAGO.

In previous papers we have shown the parallel between the adrenalin reactions of dementia precox patients and the adrenalin reaction in persons and animals poisoned with the toxic amines, especially with ergotoxine, with histamine, and with indolethylamine. We have also shown that in dementia precox patients and in patients suffering with gastric crises of tabes, in both of whom this adrenalin paradox appears, the stools contain a load of histamine sufficient to produce a solution of 1:1000 in a cubic centimeter of water for each 100 grams of stool. No such quantity of this toxic amine is to be found in the stools of healthy persons or of those sick with other diseases having the normal adrenalin pressor action.

After this demonstration it became necessary to account for the production of histamine in these patients. Ross has shown that the indolacetic acid in the urine of dementia precox patients is four times as great on the average as it is in healthy individuals (83 to 21). He has further shown that it is greatest in catatonic cases (100), and that the quantity of indolacetic acid is not increased or diminished by the character of the food. Since indolacetic acid is obviously the result of catabolism of tryptophane, it might at first seem difficult to account for the fact that while indican is greatly increased in the urine by food of a high protein content, indolacetic acid is not so modified. It should be remembered in this connection, however, that tryptophane is furnished not only by the food but also by all of the secretions of the intestinal tract, from the salivary glands, the gastric glands, the mucous glands of the liver, and the secreting glands of the duodenum and small intestine. Ross considers the indolacetic acid "endogenous" in its origin, while the indican seems to be exogenous.

The same remarks apply also to histidin, from which histamine or betaiminazolyethylamine is catabolized, and the tyrosin from which ergotoxine is produced.

It is impossible to discover the products of the catabolism of histamine in the urine. This toxic amine is probably destroyed in the liver, but the form that it assumes is yet unknown. Ergotoxine is to be recognized in the urine in the form of paraoxyphenlyacetic acid, but the method of its recognition is difficult and not available in our studies. In the blood the recognition of ergotoxine has not proven practical with our patients, for their blood pressure is usually low and the blood contains a considerable quantity of histamine and a recognizable quantity of indolethylamine. By the method of Jolles the reactions have so far been positive, but frequently reactions of the same kind have been found when there was evidence that the indolethylamine was not present in the blood. It is well known that the three toxic amines individually and collectively increase the coagulability of the blood both *in vitro* (Zunz and others) and on intramuscular injections. The maximum of coagulability is far below the lethal dose of the amine. When the dose of amine is increased the coagulability diminishes and at last hemolysis sets in.

The difficulty of determining where these toxic amines are produced and what particular mechanism encourages their production has been solved in a large degree by previous researches. Arthur Keith has contributed to the study of this subject both from an experimental and from an anatomical standpoint. He has shown that there exists a series of sphincters in the intestinal tract dividing it into several lengths, each with a separate function. The first sphincter is in the pharynx; it is essential to deglutition. The second is at the cardia. The third is at the pylorus. The fourth is at the ileum, just as it empties into the cecum. The fifth is at the right of the middle of the transverse colon. The sixth and seventh are in the sigmoid and rectum.

It will be recalled by anyone with a clinical experience that quite serious spasms of the pharyngeal sphincter occur and require therapeutic attention. Hess has shown that this condition is quite common in the newborn. Spasm of the cardia is a well recognized clinical entity and is not easily forgotten by anyone whose misfortune it has been to treat such a case. Hess considers it present in many cases of spasm of the pylorus. In children the most common and the most serious spasm recognized today is pylorus spasm. It is frequently accompanied by spasm of the pharynx and spasm of the cardia, though few clinicians have reported this combination. Spasm at the ileum near its junction with the cecum has not received clinical attention in man, but it shows itself in Johne's disease in animals. The presence of the colic sphincter has been

emphasized by Cannon, who showed in experiments on animals that there was a contraction of this sphincter with each peristaltic wave in the transverse and descending colon, called the distal colon, coincident with an antiperistalsis in the proximal colon and cecum. By means of the barium meal the *x*-ray fluoroscopic examination exhibits this peristalsis of the distal and antiperistalsis of the proximal colon in a conclusive manner. The laborious work of James T. Case has confirmed all the previous experiments in this direction and has given a substantial basis to the clinical experimental work of Arbuthnot Lane. Normally, then, there is a sphincter dividing the colon into two portions and acting as a pylorus to a second stomach, the "cecal stomach." Spasm of the sigmoid and of Jacobson's sphincter results in Herter's infantilism and Hirschsprung's disease.

In our examination of the motor efficiency of the intestinal tract in cases of dementia precox we early discovered the spasm of the colic sphincter and the reduplication of the transverse colon between the hepatic structure and this sphincter. The number of patients that we have been able to examine has been too few to give this observation any great value and our opportunities have not been adequate to carry on this study. We have been able to examine the *x*-ray plates of a great many patients with the test meal in the cecum and proximal colon without discovering this reduplication very frequently. It certainly is not common in the healthy.

The long retention of the cecal contents was clinically looked upon by Arbuthnot Lane as the cause of a toxemia grave enough to require surgical interference. He was sustained in his therapeutic experiment by the teachings of Metchnikoff and by the bacteriologic work and chemical investigation of Nathan Mutch. Bertrand and Bertelot had discovered among the inhabitants of the cecum a bacillus which they termed the *Bacillus aminophilus intestinalis*, capable of growing upon a nutrient media containing one-half of one per cent. of histidin, and thus producing histamine, or betaiminazolylethylamine. The same organisms were discovered by Mutch in the cecums and colons extirpated by Arbuthnot Lane. He found that the ileum was practically sterile down to the sphincter and that the cecum was full of the growing colon bacilli capable of producing the toxic amine. He demonstrated by the methods of Dale and Barger the amount of histamine in the cecal contents. Clinically the implantation of the ileum into the sigmoid produced satisfactory results. Chas. A. L. Reed has performed the same or similar operations upon epileptics and has reported beneficial results.

Although the evidence is not all in—and were it in it would be impossible to collect it into this short article—we can say definitely that there is much evidence of the intoxication of the dementia precox patient with these toxic amines, and perhaps with others not yet recognized. The most easily recognized of them, the indolethylamine, has been demonstrated in a great number of dementia precox patients in its catabolized products in the urine, in the stool, and in the perspiration, and there is strong evidence that it has been recognized in the same manner in the blood. Intoxication with histamine explains many of the adrenalin paradoxes. The increased coagulability of the blood which is a conspicuous symptom in many dementia precox patients is consistent with amine intoxication. Many patients have been operated upon for appendicitis at the beginning of their breakdown with dementia precox, and many others have complained for a long time before their breakdown of abdominal disturbance and they have given expression to toxic symptoms such as attend fits of biliousness and constipation.

If we were asked to interpret the origin of pylorus spasm we would doubtless mention the nervous temperament of the patient, the possibility of parathyroid deficiency, the possible deficiency of the calcium salts in the tissues, and especially the presence of irritation above the pylorus. Clinically, hyperacidity and ulcer of the stomach have been looked upon as causative factors and the washing out of the stomach before meals has resulted in diminution of the spasm. This has been especially the case in children where the psychological effect of the tube can hardly be brought forward. As to the origin of the spasm of the cecal sphincter, we have little to offer. Probably the same factors prevail. There may be a constitutional spasmophilia, but there is much more likely to be a local irritative cause either in the material poured into the cecum, the plancton of the cecum, or in irritation going out from the pylorus or duodenum through the musculoneurol ligament of Colin MacKenzie, which seems to be related to the nerve supply of the sphincter which initiates the peristalsis and antiperistalsis of the colon.

The clinical history, the physical and biochemical examinations, and the symptoms of dementia precox are consistent with a toxemia going out from the decomposing refuse of intestinal digestion in the cecum, where they have been long retained. The betterment which occurs in many cases of dementia precox during an attack of typhoid fever might be explained by working out this hypothesis.

It seems that any research on dementia precox ought not to neglect the study of the motor efficiency of the colon and its relation to the toxic amines.

THE CAUSATION AND TREATMENT OF PELLAGRA

BY H. E. BONDE, M.D., C.M. (Caledonia), L.R.C.P. (Edin.), L.R.C.S. (Edin.), L.R.F.P.S. (Glas.)

KINGSTON, JAMAICA

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In the general interest evolved by the recent papers appearing on pellagra in the various medical journals of both continents, a short paper at this time may be of some value. Despite the various theories that have from time to time been advocated, I desire to bring to the notice of the profession the following theory, viz., (1) Gastrointestinal autointoxication (or alimentary toxemia). (2) Actinic rays of the sun.

The term gastrointestinal autointoxication has been under discussion quite recently as not being a correct one to use, but being an old term, and one more readily understood, I am confident that its use will be permitted. In discussing this subject, and in order to go into the matter as fully as possible, I propose to deal with it under the following headings: (*a*) Relations of the gastrointestinal tract to the skin. (*b*) Relations of other organs to the skin. (*c*) Relations of other conditions to the skin.

The Stomach.—There seems to me to be abundant evidence in favor of this relationship. The conditions acne vulgaris and acne rosacea, which appear on the face, tell at once that the stomach is at fault.

The Intestines.—Taking typhoid fever as an example, we are all familiar with the fact that between the seventh and the ninth day there appears on the skin of the abdomen reddish or rose-colored spots. Pathologically there is intense hyperemia of the intestines during the first week. Sir Malcolm Morris in a paper entitled "The Internal Secretions in Relation to Dermatology," quotes Sir Arbuthnot Lane as having described the pronounced pigmentation met with in cases of alimentary toxemia beginning under the eyelids and thence spreading gradually over the face. The neck first becomes brown and then almost chocolate colored. The skin of the abdomen, the thighs, axillæ, and that covering the spinous processes of the vertebræ grows progressively darker, and on these surfaces areas of a still darker staining may develop.

In an address delivered by Sir Arbuthnot Lane on "Chronic Intestinal Stasis," and published in the *British Medical Journal*, Nov. 1, 1913, he, in classifying the symptoms, makes the following statement:

"The symptoms that result directly from the autointoxication of chronic intestinal stasis. * * * No. 3. Degenerative changes in the skin associated with alteration in its texture and color, the development of pigmentation, especially in certain localities, and a more or less offensive character of the perspiration. The pigmentation is so marked in some cases as to leave little doubt that the patient is suffering from Addison's disease."

He also cites the following cases:

CASE I.—Suffering from general debility of four years' standing accompanied by symptoms of mucous colitis with alternating constipation and diarrhea. . . . There was marked yellowish-brown staining of the skin, which, in the association with the asthenia, suggested the possibility of Addison's disease.

CASE IV.—K. H., spinster, aged 37, had been constipated since birth. She had attended several different hospitals during the last eight years. She was said to have mucous colitis, and appendicostomy was done. She had been in the habit of taking 6 minims of croton oil twice a week, and said that this usually opened her bowels once. She had well-marked toxic symptoms, and was very pigmented.

CASE VI.—A. E., a married woman, aged 30, had been constipated ever since she could remember. She had been treated at five different hospitals. She had suffered severe abdominal pain for the last eighteen months. Toxic signs and pigmentation were well marked.

CASE XII.—A. P., a married woman, aged 54, had been constipated for six years, and always had indigestion. She also had attacks of vomiting, and for the last few weeks severe pain in the abdomen. The skin was very pigmented, and toxic symptoms were well marked.

Anatomy of the Sympathetic Nervous System.—We are well aware that the sympathetic nervous system is connected with the central nervous system by communicating and distributing fibers. The branches of communication between the ganglia are composed of gray and white fibers, the latter being continuous with those fibers of the spinal nerves which pass to the ganglia. The branches of connection between the ganglia and the central spinal nerves also consist of white and gray nerve fibers, which may be contained in separate filaments or united in a single branch, the former proceeding from the spinal nerve to the ganglion, the latter passing from the ganglion to the spinal nerve, so that a double interchange takes place between the two systems (Gray). Dr. S. A. Kinnier Wilson, in an address published in the *British Medical Journal*, June 14, 1913, on the "Clinical Importance of the Sympathetic Nervous System," states that "it possesses this remarkable feature that it gives a double nerve supply to the skin and its appendages, the glands, vascular system, alimentary system from mouth to anus and respiratory system, due to the two divisions of the system, namely, the sympathetic and para-sympathetic, or autonomic. Traced into the cord we find that it is represented as the intermedial lateral tract; further up to the brain it can be traced farther backwards than the basal ganglia. There is another important point in connection with the sympathetic nervous system, and that is the chromaffin cells, which are founded in the sympathetic ganglia and plexuses; also masses of chromaphil tissue lying in depressions on the dorsal portions of the ganglia. In the chromaphil system, therefore, we have a widespread tissue immediately allied to the sympathetic nervous system in origin and localization endowed with important physiological properties. Chromophil tissue secretes a substance which has a definite and characteristic action on non-striped muscle fibers; in other words, on structures which are innervated by the sympathetic nervous system."

The intestines are entirely supplied by the sympathetic nervous system through the superior and inferior mesenteric plexuses, these finally subdividing into Mesiner's and Auberach's plexuses respectively, supplying the muscularia mucosæ which are composed of non-striped muscle fibers.

Physiology.—In a paper which appeared in the *Practitioner* of January, 1915, on the "Physiology of the Chromaffin System," Prof. D. Noel Paton, states: (1) The chromaffin tissue may be defined as a tissue composed of cells derived from the nerve cells of the abdominothoracic sympathetic system, which stain a brown color with chrome salts and produce a physiologically active substance called adrenalin. (2) The law that adrenalin acts by stimulating the endings of the true sympathetic nerve is universal—Elliott's law. (3) On the muscles of the alimentary canal in the doses usually administered in experimental work, adrenalin produces the effect of stimulation of the true sympathetic. (4) In considering the exact seat of action of adrenalin physiologists have perhaps too much ignored the terminal ganglia which in the case of the intestine at least have such important functions.

Pathology.—Dr. Mott of London, in his review of the histological changes of the nervous system in a case of pellagra, among other things states that the combined sclerosis is not unlike that found in a pernicious anemia which we know may be due to a streptococcal toxemia, etc.; moreover, my experience tells me that the nerve cell changes rather indicate a chronic toxemia.

Dr. H. F. Harris of Atlanta, Ga., in a paper on the "Pathology of Pellagra," which appeared in the Transactions of the first National Conference on Pellagra, held in South Carolina, in discussing the pathology of the brain says the following: "By far the most interesting communication that had up to that time been made on the changes in the brain was an article by Babes and Sion in 1899. They showed the presence in the nerve cells, particularly in the large chromophilic cells in the cortex, the presence of unmistakable changes, etc. The nuclei are frequently pushed to one side and lose their power of taking basic stains and present swollen

nuclei; the pigment in these cells is also dislocated, and instead of being around the nucleus lies scattered throughout the cell-body, etc."

These alterations have been in the main confirmed by Marinesco, Rossi, Richette, Grimaldi, and by myself in this country, and are of great interest and importance.

Spinal and Sympathetic Ganglia.—The ganglion cells of these structures exhibit changes similar to those found in the central nervous system, though they are not as a rule so marked. In a paper on "Nervous Histopathology of Pellagra," read at the second triennial meeting at Columbia, S. C., Douglas Singer and Lewis J. Pollock say: "Similar reactions were found in the posterior root ganglia and in the cells of the semilunar ganglia of the sympathetic and of Auerbach's plexus in the intestine where these were examined."

In the report of the Illinois Pellagra Commission it is stated that in Case II there was widespread chromatolysis of axonal type with marked pigmentary changes involving especially the larger elements. Pigmentary changes were present even in the medium size pyramidal cells, etc. Many of the cells, especially among the smaller elements, showed a diffuse dark stain which, with a heaping up of satellite cells, suggested the existence of a more chronic type of cell change. Similar changes were present in the Purkinje cells and the cells of the posterior root and sympathetic ganglia.

The Absorption of Toxin or Toxins from the Gastrointestinal Tract as a Causative Factor in Pellagra.—In the first progress report of the Thompson-MacFadden Pellagra Commission, Dr. W. J. McNeil, in his observations on the intestinal bacteria in pellagra, states that "in general it was ascertained that the fecal bacteria in pellagra when examined directly with the microscope are different from the normal in their quantitative relationship and that unusual kinds of bacteria more or less heterogeneous in nature are present."

In the summary of the same report by various authors under the heading "Symptomatology" the following statement is made: "It would appear that three or four years ago a large proportion of cases observed in the county presented intestinal and nervous symptoms of great severity. In 1912, in many instances, symptoms were quite mild, and sometimes were confined almost exclusively to the cutaneous system, the disease appearing to be of a less virulent type in 1912 than in previous years, also the feces contain decidedly abnormal amounts of indol and skatol, especially the latter."

"The feces of pellagrous individuals have a most characteristic aromatic odor, and the estimations of the indol and skatol would indicate that this odor was due to the large amounts of these aromatic bodies found to be present. Normally only traces of these bodies are present, and from the investigation of Herter, and also of one of us (Myers), with Fisher and Diefendorf, the amounts detected, especially of skatol, may be regarded as decidedly abnormal and indicative of peculiar bacterial conditions in the intestine. When these results are compared with the acidity determinations in the gastric juice, some relation between the amount of skatol formation and anacidity is apparent."

"Again the feces of pellagra individuals have a most characteristic odor, and the estimation of indol and skatol would indicate that the odor was due to the large amount of these aromatic bodies found to be present."

Dr. J. A. B. Hammond of the Isle of Wight, in reporting a case in the *British Medical Journal* of July 5, 1913, states that "when I first saw the patient the general impression was that of one suffering from a chronic toxemia, probably of intestinal origin."

In the post-mortem report we find confirmative evidence. In Dr. Mott's report of an Egyptian case related in the same journal, "the stomach was dilated and thinned with denudation of epithelium. The small intestines were normal in condition. Large intestines in condition of chronic colitis, with denudation of the epithelium and patches of marked congestion with ecchymoses and arborization of blood vessels."

It would seem quite possible that whatever may be the toxin or toxins in the gastrointestinal tract that may be the primary cause of pellagra, it is evident that these toxins act on the sympathetic nervous system in the intestines, then on the chromaffin cells and tissue, which by their close connection with the central nervous system produce the pigmentation called pellagra with its resulting degeneration and neuritis.

Relation of Other Organs to the Skin.—The Lungs. In pneumonia we have herpes labialis. In phthisis we have yellowish spots appearing in the region of the sternum—pityriasis versicolor.

The Suprarenals. The pigmentation in Addison's disease is an exaggeration of the normal, and occurs therefore in the face, the neck, the hands, anterior folds of axillæ, nipples, perineum and genitals, while in more advanced cases the mucous membrane may become pigmented (Rolleston). Pathological changes in the glands. (1) Atrophy of one or both glands. (2) The various stages of tuberculosis degeneration. (a) Interstitial growth. (b) Fatty degenerated patches. (c) Caseous masses.

The semilunar ganglia are degenerated and much pigmented, and they may through cicatricial contractions become entangled, as it were, in the diseased tissue of the adrenals. The nerve fibers show extensive sclerotic changes. Drs. Alexis and Arnaud assert that "Addison's disease will not result if the pericapsular ganglia be not affected, though the other portions of the adrenal bodies are at the same time extensively diseased." (Wheeler & Jack.)

The pituitary gland. There is pigmentation in this condition. Sir Malcolm Morris quotes Harvey Cushing as saying that in all his patients affected with primary hypopituitarism, except the older ones, the skin was smooth, transparent and notably free from moisture.

The thyroid gland. One of the signs of myxedema is the yellowish tint which the skin presents. Red patches may mark the skin over the nose and on the cheek. In exophthalmic goiter the skin may show a pigmentation closely simulating that of Addison's disease and leucoderma, severe pruritus, or urticaria. It may be well to note in passing that the suprarenals are supplied exclusively by the solar plexus, also that the thyroid gland is supplied entirely from the superior and middle cervical ganglia of the sympathetic nervous system.

The Relation of Other Conditions to the Skin.—The familiar pigmentary signs of pregnancy suggest that the sexual secretions may be concerned in normal coloration. The malignant cachexias of the various organs and the various anemias all seem to suggest that the skin is an index not only of the condition of the gastrointestinal tract, but also of that of other organs and different blood states.

The Actinic Rays of the Sun.—In the study of spectrum analysis there is what is known as the reverse dark line or absorption spectrum. Light transmitted through certain liquids as blood produces band spectrums; these spectrums are obtained only when light passes through mediums capable of absorbing rays of a certain wave length, hence they are called absorption spectrums. The sun also consists of a luminous solid, a liquid of intensely heated and greatly condensed gas called photosphere. From the above it would appear that there are factors in the sun's rays which can act as an irritant to the uncovered area of the skin, and so cause an intense hyperemia in the subject whose vitality is already lowered from defective nerve innervation.

Clinical.—Turning to the clinical side of pellagra we seem to find abundant evidence of the condition occurring in the spring and summer time even in the colder countries. In the case described by Dr. Hammond he states that "in the late spring of 1912 she (the patient) was taken out into the garden and for two or three days somewhat exposed to the sun; this was quickly followed by the appearance of an erythematous dermatitis over the back of the hands and wrist, the palms escaped, but on the wrists it crept round to the front as described by Dr. Charles Box; a little later it came on the cheeks and on the lips. At first we regarded it as severe sunburn, but soon bullæ appeared and there was considerable suppuration, especially from the lips and between the fingers. A little later the tongue and mouth ulcerated."

Dr. Sambon, in commenting on Dr. Kay's case at Lymington, states that "when one considers all the foregoing points the appearance of the first eruption at the end of summer, its second appearance at the beginning of spring, and its third recurrence also in spring, the remission of symptoms and improvement during winter, the bilaterally symmetrical erythema with subsequent desquamation, the vertigo, tremor, etc., one cannot help coming to the conclusion that the case is one of pellagra."

Dr. Stephenson, in reporting a case at Prestwich, says: "At the end of May the skin on the dorsal surfaces of the hand and wrists got red, rough and scaly; the face was also involved, but to a lesser degree, the bridge of the nose and both malar regions. The conditions were at first thought to be severe sunburn, for some other patients were undoubtedly sunburned at the same time, but while all the others got better this case did not. . . . On July 13, the patient was exposed to bright sunlight and the hands were markedly reddened again. During July 16 and 17 she was kept in bed in a subdued light. On the 18th the fading color was noticeable. After being out again on the 19th and 20th her face and one hand had got a vivid red and she indicated that the skin felt sore. The other hand had been covered with a glove and it remained pale, the rash on the face and forehead being brighter than before."

Dr. Box of St. Thomas' Hospital makes the following statement: "The month was December and the typical eruption was not present, etc. I had an opportunity of seeing the child in May this year; the rash had made its fourth appearance and was very striking; diffuse dermatitis implicated the flush area of the face, tip of nose, and margins of the mouth, the dorsal aspects of the hands and lower third of forearm showed the pellagrous gauntlet, etc. She was described by the house physician as looking very well and 'sunburned' the skin of the affected parts being characterized as 'tanned.' "

Experimental.—Dr. W. H. Harris of Tulane University, New Orleans, referring to his experiments carried out on monkeys, observes that "Monkey No. 2 was inoculated on December 2, 1912, it remained apparently normal for a period of two months and in February 12, 1913, it was again inoculated with filtrates from another typical case of pellagra. Early in May it showed irregular patches of a copper turkey-red color about the face. On May 10, these patches were raised considerably, darkened, very dry, and more clearly defined; they extended across the nose and spread in wing-like manner on either side under the eye and over the cheek. On May 28 the skin lesions had become almost black and were beginning to scale."

Treatment.—The gastrointestinal tract ought to be thoroughly disinfected and with this aim in view the following drugs have been found serviceable: Internally: calomel, beta-naphthol, acetozone, salol. Externally: an ointment consisting of beta-naphthol, balsam of Peru, and zinc ointment; later, when the bullæ have burst and a raw surface has been left, tar, salicylic acid, ammoniated mercury, and zinc ointment can be applied. Diet: A well balanced diet; ripe bananas daily; ripe papaws. General: Keeping in the shade as much as possible.

Conclusion.—1. That pellagra is a disease akin to Addison's disease. 2. That the causal bacteria are in the intestines as indicated by the amount of indol and skatol present, and that it primarily affects the sympathetic nervous system and, secondarily, the central nervous system. 3. That there are factors in the actinic rays of the sun which can act as irritants to the exposed surface of the skin so as to intensify the condition. 4. That it responds to treatment by gastrointestinal antiseptics internally, and externally by the usual protective ointments.

I am indebted to Dr. D. J. Williams, Medical Superintendent of the Lunatic Asylum, Kingston, Jamaica, for facilities afforded me and for his encouraging interest.

CLIMATE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.*

BY WALTER SANDS MILLS, A.B., M.D.,

NEW YORK,

PHYSICIAN TO THE TUBERCULOSIS INFIRMARY OF THE METROPOLITAN HOSPITAL; MEDICAL EXAMINER FOR THE NEW YORK STATE HOSPITAL FOR INCIPIENT PULMONARY TUBERCULOSIS.

TWENTY-FIVE or thirty years ago, and up to the last ten or twelve years, perhaps, it was customary for many physicians hereabouts to direct their tuberculosis patients to go West for the benefit of the climate. The West meant anywhere west of the physician's home to the Pacific Coast. Other physicians sent their patients South, and that meant anywhere from Virginia to Florida. About that time, 1884, Trudeau, because of the great benefit he had personally derived from a sojourn in the Adirondacks, established his place at Saranac Lake. After that many particular spots in various places, for one reason or another, came to enjoy the reputation of being beneficial to the lung invalid. Many patients so sent away got worse and died. A few recovered. A large percentage of the patients should never have been sent away from home, because they were beyond the stage of help in any climate.

About ten years ago the publicity campaign for

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the prevention and cure of tuberculosis began to be vigorously prosecuted. The public was told in large type of the horrors of tuberculosis. It was told that consumption was contagious, until families were split apart because if one member coughed the others were afraid of him. The public was told that fresh air and forced feeding effected a sure cure; nobody need die of tuberculosis. Professional philanthropists and social workers almost made the public believe that the physician was not necessary; medication and change of climate were not necessary; and so an ad nauseam. Some members of the medical profession even became obsessed with some of these ideas.

At the present time I think the medical profession is coming to a more rational understanding of pulmonary tuberculosis, its symptomatology, and the care of patients suffering from it. But even yet many deplorable mistakes are made, both in diagnosis and in treatment.

To-night I shall speak briefly of the use of change of climate as part of the treatment in pulmonary tuberculosis. Several things are of importance in this connection, and all of them seem to me to be of equal value: (1) The physical condition of the patient. (2) The economic circumstances surrounding him. (3) The place to send him to. Now to discuss these three questions in order:

1. The Physical Condition of the Patient.—During the course of a year I have a good many cases of tuberculosis referred to me for an opinion as to the stage of the disease, and for recommendation as to what to do. I can best illustrate what I recommend by citing a few cases.

Case I.—Civil engineer, aged 22. I was first called in to see this young man December 6, 1901. He was rather a large, fine looking chap with a good family and personal history. I found he had been engaged for several months on the construction work of the New York subway which was then building. His work was all under ground in a place without daylight and always damp. He had had a succession of colds and had lost ten pounds. After watching him for several days and looking after a catarrhal pneumonia, I diagnosed infiltration of the right apex. Fine râles could be heard over that part of the lung above the scapula. On December 12 I called the late Dr. J. W. Dowling in consultation. He confirmed my diagnosis of pulmonary tuberculosis in an early stage. The patient was advised to take a trip through New Mexico, Western Texas and old Mexico. As his means were ample this was carried out. After four months he returned in first class condition, and has remained so ever since. He is now married and has several children, all healthy.

Case II.—Woman, aged 32, born in Tennessee. A younger brother died of tuberculosis in 1902 or 1903. The family then came to New York to live. In 1906 this girl became my patient. Early in July of that year she weighed 113 pounds. She had developed a cough with some expectoration, was hoarse, and ran an afternoon elevation of temperature. I thought I detected evidence of trouble in the right apex. After having the patient under constant observation for a month, Dr. Pulley was called in consultation. He confirmed my diagnosis of early tuberculosis. As the brother had died after a few weeks in Arizona, the family was averse to sending my patient away. Arrangements were therefore made to keep her on the roof of the apartment house where she lived for six to eight hours a day, resting in a steamer chair. The progress was very slow. I kept constant supervision over her till January, 1907, when I was told she was to be married in a few days to an old sweetheart who lived in her Tennessee home. The wedding took place without my advice and the bride went to Tennessee to live. There I was told she went down hill rapidly until the local physicians despaired of her life. Then I was called into the case again by mail. My advice was to go to Albuquerque, New Mexico, and place herself under Dr. J. H. Wroth, whom I knew personally. This was done in May or June, 1907. Dr. Wroth informed me that the patient's voice was gone, that her lungs were involved, and that he considered the case hopeless. The patient was at once placed in a sanatorium and for months was in bed. She remained in Albuquerque nearly three years. She was then practically well, but on my advice traveled for several months more, going as far South as Mexico City. Since 1910 she has lived in Tennessee a well woman. Every summer she comes to New York to visit her parents. In December, 1914, she had a child, born dead. This past summer, 1915, she spent in New York. She weighed 150 pounds and was in perfect physical condition. I believe the climate of New Mexico saved this woman's life.

Case III.—Man, aged 49. Referred to me by Dr. E. Rodney Fiske, of Brooklyn, April 2, 1909. This man was a graduate of Annapolis, although then in business. Both parents had died of tuberculosis. The patient had a camp in the Adirondacks, and spent several months there each year. Notwithstanding that he had tuberculosis in the early stages in the right apex. The sputa contained tubercle bacilli. He had an open-air sleeping porch built on his house and proposed to be cured, if possible, at home. I advised a trip through the Southwest. I told him he must get away from business altogether for a time. He did so. He was away three months in New Mexico; that summer he spent in the Adirondacks. He has been well of his lung condition ever since. The tubercle bacilli disappeared.

Case IV.—A woman of 30, sent to me for diagnosis in May, 1913. She was married and had one child, aged 10. She was a large, handsome woman, the picture of health. She had a slight cough. When I came to examine the lungs I was amazed. I found both were actively affected and ordered her home and to bed. I was unable to impress either the patient or the family with the gravity of the situation and my advice was not followed. In December of that year, 1913, the patient lost a brother with tuberculosis. That frightened her and I was sent for. Her home was in Newark. That time the patient went to bed and a nurse was called in to care for her. For three months I saw her once a week. There were no symptoms apparent to the unintiated except a shortness of breath. But the patient had an elevated temperature all the time, and repeated examinations of the lungs revealed active lesions of both sides. There was no emaciation and the patient was still very beautiful to look at. The patient and the family urged me to send her away. I refused, on the ground that she was too sick to be benefited. Wherever she went she would needs be a bed patient, and the absence from friends and home would more than counterbalance any benefit of climate. I was dismissed in April, 1914. The patient was soon sent away from home and died away from home in August, 1914. I do not think this patient had a fighting chance from the time I first saw her.

Case V.—A young woman, aged 22 at time I diagnosed tuberculosis. She had been a patient of mine when ill since she was 6 years old. Practically all her sickness during these years consisted of an occasional cold, usually with sore throat. The family history was good so far as tuberculosis was concerned. In December, 1912, after a busy social season and a succession of colds, with slight cough and constant daily rise in afternoon temperature, I diagnosed infiltration of one apex. I told the parents one Sunday afternoon that the daughter had tuberculosis and must go away from New York. As the girl had some relatives in Montana I was prevailed on to let her go there. She remained away until the following September, 1913. She came back looking well, but without much change in the lung condition. She is quite tall and at that time weighed 115, much under weight for her height, but of a fashionable slimness. In the fall of 1913 a younger sister had typhoid fever. When this patient had recovered I advised the mother to take both daughters away. They spent four months in San Antonio, Texas, and another two months in various parts of Western Texas, returning to New York in the summer of 1914. My tuberculosis patient is cured. Her weight now is 150.

I think these few cases are sufficient to illustrate my point as to the physical condition of patients whom it is desirable to send away.

2. The Economic Circumstances Surrounding the Patient.—It must be remembered that a patient suffering from tuberculosis is sick. He needs all of the necessities and some of the luxuries of life.

The three things most needful in the treatment of tuberculosis are rest—mental and physical, fresh air, good food. These things cost money. Work and worry must be eliminated so far as possible. That again means money to care for the patient and to care for those dependent on him.

If a patient presents himself, therefore, who so far as the physical condition is concerned seems a fit subject to send away from home, his financial status must be inquired into. Climate will do no good if he has to go to work when he reaches the desired place. If he has to worry about how the family is going to get food and shelter when he is away climate again will do no good. In either case he should stay at home. All of the well known resorts for tuberculosis patients are over-crowded with health seekers looking for jobs, and many of them rapidly grow worse and die because of lack of proper care. When it comes to public charity, most communities are willing to care for their own, but they resent having outsiders foisted on them and refuse to care for strangers. I have had quite a good many patients in the Metropolitan Hospital, workingmen or women, who have been sent West by some lodge or labor union, or perhaps by friends, but without funds to take care of them when they reached the sought-for place. They were promptly sent back broken in spirit and in physique, only to die. No patient should be sent away who has not sufficient funds to keep him for at least six months; a year is better, and with money enough to get home again at the end of that time.

Within the last two or three years the United States Public Health Service has investigated the "Interstate Migration of Tuberculosis Persons" and very great stress is laid on this phase of the subject. Texas and New Mexico were investigated and reported on by Passed Assistant Surgeon Ernest A. Sweet, North and South Carolina by Surgeon A. D. Foster.

In New York City charity cases are cared for by the local public charity officials. Very sick patients are sent to the Tuberculosis Infirmary of the Metropolitan Hospital, those less sick to the Sea View Hospital on Staten Island. The city Department of Health maintains a sanatorium at Otisville, about fifty miles from New York. The State maintains a sanatorium at Ray Brook, in the Adirondacks, for incipient cases only. New York City sends more than two hundred cases a year up there. The social and economic status of cases for all of these institutions except one is investigated by the social service of the Department of Public Charities. Cases sent to Otisville are investigated by the Department of Health. The physicians have to pass only on the physical condition.

3. The Place to Send the Tuberculosis Patient to.—My own preference as to climate for the tuberculosis patient is New Mexico and western Texas. Many patients do well in Colorado, but it is too cold for a good many invalids up there.

New Mexico and western Texas have a maximum of sunshine, the greatest of all germ destroyers, and a minimum of rain. The altitude varies from two to five thousand feet, and that is a desirable factor. The air is dry and, to my notion, has a distinct beneficial effect on the lung invalid. I spent nearly a year in that country for my own health twenty years ago, and I know whereof I speak.

The other places that are famous but nearer home I have not so much faith in. The lung invalid, if not too sick, will do better in the country away from tenements and crowded streets and city life generally, no matter where it is. But I do not believe that the true curative air is either in the Adirondacks or in the Carolinas, or in the other places that have a great reputation, except in the places I have mentioned—New Mexico and western Texas. The other places are of benefit because patients sent there are removed from vicious habits or surroundings. When I say vicious, I mean physically vicious, unhealthful, not wicked. Sanatoria are numerous, but most of the health seekers who go to them are benefited by the right living and by the care they receive rather than by the air they breathe.

In New Mexico and western Texas I believe the air itself is of curative value. In any of these places the health seeker should place himself under the care of a local physician. That is likewise essential. Many lung invalids derive no benefit from a change of climate simply because they depend on the climate alone and do foolish things. The health seeker should place himself under competent medical supervision in his new habitat in order that he may know how to get the greatest benefit from his new surroundings.

10 East Forty-first Street

A URINARY TEST FOR SYPHILIS AND ITS COMPARISON WITH THE WASSERMANN REACTION.

By CARL D. GRAY, M.D.,

Portland, Maine

House Surgeon, Maine Eye and Ear Infirmary

The form and variety of symptoms, either recent or remote, that may be produced by the *Treponema pallidum* are multiple. This same parasite causes certain metabolic changes in the human body, as is shown by the different laboratory methods, *i.e.* the Wassermann reaction, the gold chloride test, and the luetin reaction. With the exception of the latter, these tests require a well-equipped laboratory and reagents which are not within reach of the general practitioner. That some simpler test may be used which will at least strengthen or weaken the question in the physician's mind, is very probable. I wish to report a series of urinary examinations, part of which have been carried out in common with the Wassermann reaction.

The test is simple, requiring only a few test tubes, one of which must be graduated in cubic centimeters, and two stock solutions. A specimen of fresh urine, acid, in reaction and normal specific gravity, *i.e.* above 1.016. A test for sugar, even in the smallest amount, should also be made, as its presence will interfere with the reaction. The reagents consist of: Solution I, Dissolve 1 gram of resublimed iodine in chloroform or carbon tetrachloride; Solution II, Phosphoric acid 10 per cent. To perform the test take 6 c.c. of fresh urine, preferably the early morning, and add 1 c.c. of Solution I and shake thoroughly for two or three minutes. The reaction depends upon some substance which inhibits the decolorization of the iodine. After urine and iodine solution have been thoroughly shaken, the tube is set aside for a few moments, when the chloroform will settle to the bottom, being either pearly white (a negative reaction) or colored pink or deep purple, when the reaction is positive and syphilis is to be suspected. One cubic centimeter of Solution II is then added, and the tube and

contents are shaken the second time. If the chloroform is cleared and becomes white after standing three or five minutes, the test is negative.

The presence of sugar, even in the slightest trace, will produce a positive reaction, as has been proven by the examination of diabetic urines, and also by producing temporary glycosuria in healthy individuals whose urine had given negative tests and gave further negative reactions after eliminating a superabundance of carbohydrates from the diet.

A low specific gravity urine of the type produced by ingesting large amounts of water or the so-called "nervous polyuria" will give a positive reaction. To prove this, examinations of fresh urine from normal persons were made and were found to be negative; then later in the day, after several hours of labor with little or no water ingested, followed by copious drafts of fluid and a relaxation from mental strain, a second examination gave a positive reaction. This was illustrated in the case of several physicians after several hours' work in the operating room and in students following examinations. A positive result may also be caused by drinking one or two bottles of beer within a few hours of making the test. It seems necessary to inquire regarding the use of alcohol in this test for the same reason that it is necessary before taking blood for a Wassermann, the reverse result occurring in the urinary reaction. The presence of albumin, bile, indican, or blood has no influence upon the reaction. Cystitis, due to staphylococci, streptococci, pneumococci, or colon bacilli does not give rise to a positive reaction. Nor does gonorrheal urethritis unless complicated with a chancre. The reaction has been obtained from the urine of five patients where the diagnoses were made by finding the spirochetes with the dark field illumination. In other cases the diagnosis has been from the history and clinical finding alone or as controlled by the Wassermann reaction. In two cases all three of these reactions were positive without any history of infection obtainable, the only lesion showing in the mouth.

TABLE I.

Diagnoses	No. Cases	+	−
Syphilis	50	50	0
Surgical conditions	55	1	54
Tuberculosis	15	0	15
Glycosuria	5	5	0
Pneumonia	5	0	5
Gonorrhea and chancre	2	2	0
Septicemia	10	0	10
Gonorrhea	5	0	5
Kidney disease	15	0	15
Scarlet fever	2	2	0
Carcinoma	3	0	3
Healthy individuals, controls	13	0	13
Polyuria of nervous origin	5	5	0
Polyuria produced by the test of diabetes	10	10	0
Typhoid fever	5	0	5
	200	75	125

This short report is based on investigations made only during the past five months, but a glance at the two tables will give a slight idea of the results obtained. Urinary examinations were made in two hundred cases from patients suffering from different diseases as diagnosed under Table I, while it was possible to make a Wassermann for comparison, as is shown in the thirty-five cases in Table II. It has not been possible to obtain urines from cases of every description, and it is very likely that a more thorough investigation will show other conditions besides those noted below which give the reaction. With the results obtained it would seem that, while the test does not afford a positive diagnosis for syphilis, it has its place in the examinations, and in certain cases might aid greatly in determining a more elaborate test.

The cause for the reaction is unknown as far as I have been able to determine. Physiological chemistry has not as yet solved all the problems or given cause for all reactions that occur. From results obtained in different tests we assume that certain substances, in some unexplainable manner, react with other substances and cause a definite result.

For illustrative purposes, I will cite a few case histories for comparison of the results tabulated in Table II.

CASE I.—J. R. D., man, age 31, widower. Wool sorter. Family history, negative as far as obtainable. Has three sisters, four brothers living and well, although one brother, aged 43, is nearly blind. Has always been in good health, never been under treatment for any cause. Complains of difficulty in seeing things after dark. First noticed this about five years ago. Onset gradual and vision perfect during the day. Examination showed the lids, sclera, cornea, and pupils normal. Through the opthalmoscope both disks were pale, the vessels small, and pigmented areas all over the retina. O.D.V. = 1. O.S.V. = 1. Clinical diagnosis of retinitis pigmentosa O.U. was made. Urinary test was very positive and the Wassermann showed + + +. Under mixed treatment improvement was marked in three months.

CASE III.—V. M., woman, age 18. Single. Bookkeeper. Family history: Father living, in poor health, cause of which the patient does not know. Mother died eight years ago of tuberculosis. One brother and one sister living and well. Four brothers and three sisters died soon after birth, cause unknown. Always been well till March, 1915. Has had severe frontal and occipital pain the last six months and lost some weight. Has lost all her teeth. Last March the left eye began to get red and painful. Photophobia. Vision lost within a week. Was in Canada at that time but returned home in the summer. In August the right eye ran the same course, and she lost weight and became almost totally blind. Entered hospital first of November. Examination showed the cornea dull, with dense infiltration. Pupils contracted. Deep circumcorneal injection. Perception of light only. Clinical diagnosis of interstitial keratitis and iritis. Urinary test positive, Wassermann + + +. Under treatment marked improvement has been noted, vision returning slowly.

CASE IV.—C. S., female, age 18. Single. Family history: Father died fifteen years ago of tuberculosis, age 33. Mother died four years ago, at the age of 42, from a shock. Two sisters living and always been well. Has had pneumonia eight times. Suffers from dull headaches and has been obliged to wear glasses. Otherwise always been in good health. In the middle of June, 1915, a rock struck her in the face and broke her glasses, a small piece going in the left eye and being removed. A week later the eye began to smart and burn, vision growing dim. A week later the right eye began to fail in the same way. Condition grew worse, till it was impossible to tell day from night. Examination showed the cornea deeply infiltrated, gray, and hazy. Pupil small and immobile. Patient had to be led about. Clinical diagnosis of interstitial keratitis and iritis was made. Urinary test was positive. Wassermann + + +. Under treatment the condition improved slowly.

CASE VII.—O. C. H., male, age 29. Family history negative. Had a chancre in 1898, followed two months later by a rash all over the body. Was told at that time he had syphilis. Took mercurial and mixed treatment for two years. Spent three months in a sanatorium for tuberculosis which involves the upper portion of the right lung. Three weeks before being seen (September 3, 1915) the right eye began to feel irritated, got red and painful. Photophobia. Examination showed the cornea dull, with infiltrated areas and deep injection. O.D.V. = 0.5. O.S.V. = 1.2. Diagnosis: Interstitial keratitis. Urinary test positive. Wassermann negative. Under treatment the condition improved rapidly.

CASE VIII.—Mrs. P. P., age 52. Married. Family history negative. Always been well. Mother of twenty children, three living, seventeen dying under 1½ years of age. The left eye has been sore and painful for the

TABLE II.

Case	Clinical Diagnosis	Specific History	Iodine Test, Urine	Wassermann
1	Retinitis pigmentosa	None obtained	+	+++
2	Uveitis acuta specific	None obtained, except for an attack of rheumatism	+	+++
3	Interstitial keratitis and iritis specific	None obtained	+	+++
4	Interstitial keratitis and iritis specific	None obtained	+	+++
5	Interstitial keratitis	None obtained	+	+++
6	Interstitial keratitis	None obtained	+	+++
7	Interstitial keratitis	Chancre and rash in 1898, 2½-yr. treatment	+	
8	Iritis	None obtained	-	+
9	Interstitial keratitis	None obtained	+	++
10	Paralysis, third nerve	None, except for a rash a couple of years before	+	+++
11	Interstitial keratitis specific	Gumma of clavicle three years before. Received 2.1 gm. neosalvarsan. Took mercury for several months 14 years before	+	+
12	Paralysis third nerve specific	None obtained	+	++
13	Parenchymatous keratitis	None obtained. Has typical notched teeth	+	++
14	Paralysis external, rectus specific	Severe sore throat and rash two years before. Two miscarriages.	+	+++
15	Absolute glaucoma	None obtained.	+	+
16	Scleritis conjunctivitis	None obtained.		
17	Paralysis of superior oblique and inferior rectus	Attack of grippe about a month before		-
18	Parenchymatous keratitis	None obtained	+	+++
19	Episcleritis	None obtained	+	
20	Chancroid	Sore on glands two years before. Bubo	+	+ + +
21	Not reported	None obtained except for three miscarriages at two months	+	+
22	Gumma of neck	Chancre several years before	+	+
23	Interstitial keratitis	None obtained	+	+ + +
24	Secondary syphilis	Ulceration of cervix and labia. Rash of face and body.	+	+ + +
25	Interstitial keratitis	None obtained. Hutchinson's teeth	+	+++
26	Neurochoro-retinitis	None obtained, except for a sore throat a year before and slight rash on chest		
27	Keratitis	None obtained	+	
28	Neuroretinitis	None obtained	+	-
29	Interstitial keratitis and iritis	None obtained	+	
30	Interstitial keratitis and iritis	None obtained. Hutchinson's teeth. Prominent frontal bone. Skin of hand dry and wrinkled	+	+++
31	Interstitial keratitis	None obtained	+	+++
32	Gumma of neck	None obtained	+	+++
33	Syphilis primary	None obtained. Mucous patches on labiae	+	+++
34	Syphilis of throat	None obtained. Mucous patches in throat showing spirocheta, enlarged glands	+	+++
35	Keratitis and iritis specific	Rash three years ago	+	+++

last two weeks (seen September 20, 1915). Cornea dull, infiltrated pupil, small posterior synechia. Diagnosis of keratitis and iritis. Urinary test positive. Wassermann + + +.

Case XXIV.—Mrs. J., age 37. Family and past history negative. Ten weeks before (seen November 26, 1915) had been troubled with ulcerations of cervix and labia, which had healed under local treatment. When seen the face, arms, and body were covered with a macular rash. Hair falling out. Mucous patches in throat. Diagnosis: Secondary syphilis. Urinary test positive. Wassermann + + +.

Case XXV.—D. D., female, age 12. Family and past history not obtained, except that she had been operated on for enlarged tonsils and adenoids. Referred from school. Left eye red and deeply injected. Cornea dull and infiltrated. Notched teeth. Skin of hand dry and wrinkled. Rash around mouth. Interstitial keratitis. Urinary test positive. Wassermann + + +.

In the limited number of cases which have come under observation, as is shown by the results obtained in Table I of 200 cases, the reaction would almost seem a positive diagnosis for syphilis, were it not for the fact that other conditions may give the same reaction. The presence of sugar can easily be ruled out by any of the laboratory tests and the use of any diuretic can be discontinued for a short period. The best method is to obtain a sample of the early morning urine, and do the reaction before decomposition has set in. A low specific gravity urine (below 1.015) usually gives a positive reaction, and the result of one examination in such a case should not be relied upon. In comparing the results in Table II, the most prominent point in favor of the value of the reaction lies in the fact that no case in which the history or clinical findings suggested syphilis has there been a negative urine reaction and a positive Wassermann; while in six cases the iodine test was positive and the Wassermann negative. Three cases in which both tests were negative and in which specific infection was not suspected are also tabulated. Three or four cases in which the urinary test was positive and clinical finding suggested specific infection have been under treatment and with marked improvement, although there was no Wassermann obtained. One case, which is not reported in either table, gave a positive urine reaction, also the spirochetes were found from the initial lesion with the dark field illumination.

In conclusion, it seems that in suspicious cases this simple test may aid greatly, either suggesting the use of a better established test or the cautious administration of antisyphilitic treatment.

THE INTRAVENOUS ADMINISTRATION OF MERCURY IN SYPHILIS.

By THAD SHAW, M.D.,

SAN ANTONIO, TEX.

This method was first used by Baccelli in 1893 and subsequently by Blaschko, Lewis, Chopping, and others. In recent years the method has apparently fallen into disuse. Very little is found in literature upon the subject, but since the popularization of intravenous medication in the usage of salvarsan and neosalvarsan this method of administering mercury has been revived. Two articles upon the intravenous injection of mercury in the treatment of syphilis have appeared comparatively recently; these are by Meyer, whose results were disappointing, and Lydston, who was very gratified by his results in eight cases. Wernigk after twelve years of experience appears enthusiastic. Balser, at the French Medical Congress in 1904, indorsed this form of medication for cerebral and ocular syphilis. Ravant uses the cyanide of mercury intravenously as a preliminary to salvarsan

therapy. Kingsbury and Bechtet write: "Our experience with this method is derived from the use at the New York Skin and Cancer Hospital in a large number of cases of cutaneous syphilis. We first used the bichloride in doses of one-sixth to one-third grain in distilled water. On an average six injections were given in each case. Our best results were attained with this salt. We used also the benzoate in a 1 per cent. solution of normal salt, of which the dose was 2 to 12 c.c. While the results with this salt were good, they were inferior to those obtained with the bichloride."

The use of this salt of mercury as an efficient form of antisyphilitic medication was suggested to me by Dr. Shropshire, who gave me a reprint of an article by an Alabama physician. And as the availability of salvarsan was fast decreasing, and as such had always been too costly so far as certain classes of patients were concerned, especially the Mexican who applies at the free clinics, and for routine use in the municipal out-patient departments, we decided to begin the use of mercury salts intravenously; we entered upon this work at the City Hospital with the idea of determining a definite average dose and time of administration, in all of which work we have been ably assisted by Dr. Barrow, who has undertaken the active administration of the medicine.

We first used the bichloride of mercury in physiological salt solution in doses of 1/12 to 1/8 grain of the bichloride in 10 to 20 c.c. of the salt solution. We found, however, that unless this solution was prepared fresh immediately before the administration, the patient presented from one to six hours after receiving the medicine very alarming symptoms, such as chill, temperature 102° to 104° F., pain in the abdomen, bloody stools, retention of urine, albuminuria in some cases, nausea and vomiting, together with headache. This reaction was due to the breaking up of the bichloride into calomel and HCl, and not to contamination by live or dead bacteria or by bacterial products. All references consulted, however, insisted upon the use of the sodium chloride in the intravenous solution to prevent the laking of the blood. Upon consulting my notes from the Oppenheim clinic in Vienna, I found the following method used:

Bichloride of mercury,	0.20
Sodium chloride,	0.30
Distilled water,	100.00

Give daily 1 c.c. intravenously.

The effects were quick. The patient got practically 1/30 grain bichloride per day. I do not remember having seen any bad effects, local or constitutional. Schumacher in his "Therapeutics" gives a formula recommended by Pyle as follows:

Bichloride of mercury,	gr. xv
Sodium chloride,	gr. xlv
Water,	Oil, ℥ xiv

Dose: 1/16 to 1/6 grain of the bichloride.

At the time of the first few injections we met with phlebitis and some periphlebitis following the administration of the medicine. Because of this and the unpleasant reactions we had experienced we decided to adopt another plan of procedure.

We first sought another salt; we tried the succinimide of mercury, but the irritation and the slough caused by this salt whenever the subcutaneous or perivascular tissues were invaded were almost as severe as those caused by salvarsan. Along about this time, and for the same reason, some of the assistants at the Southwestern Insane Asylum began the use of the biniodide of mercury, and have had no unpleasant results from its use; but I am not familiar with the clinical results. However, knowing the greater value of the bichloride of mercury, and wishing to obtain more free soluble mercury in contact with the spirochetes, we decided upon another plan. We began the use of the bichloride in the same dosage in distilled water, regarding as nil the danger from the laking of the blood from the intravenous use of distilled water. Since this method of procedure has been adopted no unpleasant experiences have been met with. Of course, there is always a low grade of phlebitis, which becomes very marked after repeated use of the same vein and which gradually leads to obliteration of the vein; but this of itself is no inconvenience either to the patient or to the doctor, owing to the great number of accessible veins in the body. The dosage arrived at by us was 1/8 to 1/6 grain to patient of 140 to 150 lb. body weight every five to seven days. Usually the initial dose is 1/12 grain, after which, if there are no bad effects, the dose is increased gradually to 1/8 to 1/6 grain at intervals of every five to seven days, the number of doses depending upon the effects obtained and the Wassermann reaction. It was not always possible, however, to make a Wassermann test. At first a uranalysis was made in all cases the day following the administration of the mercury, but as no albuminuria was produced in any cases except those mentioned this was not strictly adhered to in all cases. cases.

The results attained were exceedingly gratifying, as the following reports of the more interesting cases, from the Ambulatorium of the City Hospital, will show:

Case I.—M. C., Dr. H.'s patient.—Syphilitic keratitis, hereditary. He had had three doses of 606, several months of mixed treatment, and potassium iodide. Wassermann was 3 plus; 4 plus after eight doses of 1/6 grain; the first dose caused a slight diarrhea. After fourteen doses the Wassermann was plus-minus and after fifteen doses was minus-plus. The patient's vision is considerably improved and he says his eyes are all right now. Case previously reported.

Case II.—S., Leg ulcers; Wassermann + + + +; first injection caused chill and temperature 100.8°. After ten injections the ulcers were halfway healed; patient was lost track of.

Case III.—S. G., Ulcers of the mouth; Wassermann 4+. Four injections of 1/6 grain. Ulcers entirely healed.

Case IV.—Lopez, Cerebrospinal syphilis. Wassermann positive. Symptoms somewhat relieved by three or four injections, but control of the patient was lost.

Case V.—Lugo, Secondary syphilis, cutaneous (picture) Wassermann 3+ injections of 1/5 grain each. First treatment July 8; good results; skin clear on July 20; Aug. 3 periostitis of hands and limbs began to develop. During months of October and November patient was given 1/5 grain every four days. Occasional periosteal nodes would appear but subsided after the use of potassium iodide. Wassermann not made the second time; patient lost track of.

Case VI.—Perez, Iritis, incipient paresis. Wassermann 4+. First dose caused pain in abdomen. Four injections of 1/6 grain; iritis was cured; mental symptoms and pain slightly alleviated.

Case VII.—C. B., Leg ulcers, syphilitic, 3 inches in diameter. Wassermann 3+; nine injections of 1/6 grain. Left hospital before cured but legs were greatly improved.

Case VIII.—F., U. S. Army retired: Leg ulcers both legs and gumma of both thighs. Wassermann +; four injections 1/5 grain. Ulcers healed considerably but left hospital before cured.

Case IX.—Carrie W., Periostitis and syphilitic rheumatism. Wassermann ++. First dose caused diarrhea,

bloody stools and vomiting. Periostitis and rheumatism were relieved but patient discontinued the treatment just as soon as the immediate symptoms were alleviated.

CASE X.—D., Leg ulcers ow long standing. Wassermann +; three injections of 1/8 and seven of 1/6 grains. Ulcers healed.

CASE XI.—Julio, Adenitis of cervical glands; three doses of 606; Wassermann +; operated upon some years ago by Dr. P. for sarcoma of the neck glands. Five injections of 1/6 grain. Now practically well and selling papers upon the street.

CASE XII.—Mrs. M— Twelve doses of venarsen; periostitis of the jaws and dropping out of the teeth. Three injections of 1/8 grain. Cured or more correctly relieved. These I think are the same kind of cases which have responded so favorably to the mercury salicylate and succinimide treatment of pyorrhea by White of the U. S. Navy.

CASE XIII.—Curtis, Hemiplegia of right side of six months duration. Wassermann positive; six doses of 1/6 grain. Practically cured when last seen.

CASE XIV.—John A., Arthritis and arthralgia; came in on crutches; seven doses of 1/6 grain. Cured; walked out without crutches.

CASE XV.—Wallace D., Ulcers and stricture of the rectum, fistulæ and sinuses; greatly reduced weight and very anemic. First dose 1/6 grain. Marked salivation. Three or four doses of 1/8 grain. Patient gained in weight; greatly improved and ulcers healed.

CASE XVI.—Jno. K., Syphilitic heart and aortitis, broken compensation; came on stretcher; six doses of 1/5 grain. Greatly improved every way; left hospital in good condition and not seen since.

Conclusions.—(1) The intravenous usage of the bichloride of mercury is quick, safe, and certain; the dosage is mathematically exact and the administration is free from pain.

(2) The immediate introduction of the curative agent into the circulating blood is what has not been obtained by the other methods of using mercury.

(3) The phlebitis and the periphlebitis occur in proportion to the concentration of the solution used, and this danger can be minimized still further whenever the sensitiveness of the patient demands.

(4) The effects are just as quick, in many cases surer and more permanent than those following neosalvarsan or the salvarsan, and the drug acts in cases where these have given no appreciable results.

(5) Bichloride intravenously is the poor man's remedy, and, because of its cheapness, availability and ease of administration, I wonder why its use was ever discontinued after once it was thoroughly tried.

MOORE BUILDING

CLINICAL REPORT OF A FATAL CASE OF ANGINA PECTORIS.

BY J. J. GINGLES, A.M., M.D., LL.D.,

SEATTLE, U. S. A.

FORMERLY PROFESSOR OF ANATOMY AND PROFESSOR OF CLINICAL SURGERY IN THE MEDICAL DEPARTMENT OF THE WILLAMETTE UNIVERSITY, PORTLAND, ORE.

I WAS hurriedly summoned to the bedside of A. B., hotel proprietor, American, aged 64, early Monday morning, February 14, 1916. I found the patient in great agony, bathed in a cold perspiration, afraid to move, and suffering intensely from the pathognomonic pain of angina pectoris—following the full length of the intercosto-humeral nerve. The patient's face wore a look of despair, and he begged most piteously for relief.

I promptly administered a hypodermic injection of 3/8 gr. morphine sulphate with 1/100 gr. atropine sulphate; had artificial heat applied over seat of pain and to the lower extremities. After he was wholly relieved of pain, inquiry elicited the fact that he was a Christian Scientist, and that he had suffered from attacks of the same character, but of lesser severity, for some days prior to the morning he summoned me to attend him, and that the sufferer and his wife had employed Christian Scientist treatment for him during the interval of several days as above mentioned, without benefit, of course. He assured me he had endured all he could, and I believed him; he was extremely weak, well-nigh exhausted.

Further inquiry disclosed the existence of chronic catarrhal gastritis, which evidently had existed for a number of years, with occasional attacks of acute indigestion; each of these attacks being characterized by hyperacidity of the gastric fluid and consequent fermentation with overdistention of the stomach with gas. On this last occasion, the upward pressure upon the heart, evidently caused the angina pectoris.

The relief from pain was perfect and complete throughout the entire day (Monday) until about 8.00 P.M., when I was summoned again and in haste. I found him suffering in much the same manner, though less severely than in the morning. I again employed the same measures for his relief as in the morning, with the result of a complete night's rest and several hours of unbroken sleep.

This second attack had followed a light meal of bread ad butter and some excellent home-made beef tea, and despite the exhibition of 30 gr. doses of sodium bicarbonate and two minim doses of beechwood creosote in solution, administered often.

Tuesday the treatment was continued, with very light diet, and in small amounts; the patient was quite comfortable until after his evening meal, when he was again the victim of a slight attack which was more readily controlled than on previous similar occasions. The patient again slept well all night.

Wednesday morning about an hour after the taking of one poached egg and one slice of buttered toast, the same overdistention of the stomach with gas and acid eructations occurred, accompanied yet again with angina as before. After once more relieving the intense pain, I ordered that he take no solid food, but instead he should depend entirely upon concentrated meat juice; and for treatment added a liquid digestive ferment to the creosote and soda bicarbonate.

The man was very fond of milk, and had been accustomed to using at least one quart daily; the milk was of the finest quality and stood a test of the most rigid form; but this patient, in common with other victims of excess of acid in the gastric juice and the inevitable fermentation, could not digest milk in any form, or in any amount; indeed his late illness doubtless resulted from his trying to live upon a milk diet alone.

Wednesday evening at 5.30, I gave him his second hypodermic injection for the day; waited until relief came, and then just at 6.00 P.M., I told the patient and his wife—who acted as his nurse, and did it well—that his hope of life and of recovery depended upon his keeping absolutely quiet; explaining that although he had no organic disease of the heart, no aneurysm, nor any arteriosclerosis, still his heart had grown extremely weak, and I most earnestly charged them, in view of the gravity of his condition, to keep him absolutely quiet, even furnishing them a catheter to be used if needed.

At 8.30, I was hastily summoned again, and arrived in time, a few minutes later, to see him gasp and die. His wife assured me he had felt no pain since my previous call at six, but that he had attempted to rise in order to urinate, and had fallen back on the pillow, saying, "I am so tired." I tried strychnine hypodermically, and overdistended both anal sphincters, all to no purpose. He was dead. Dilated heart.

In conclusion, I wish to state clearly that I submit this clinical report with the intent to make a true, unbiased statement of facts, my one and only motive being to emphasize the self-evident lessons therein.

To my mind, the most important lesson to be learned is this: The greatest harm that is done by irregular practitioners, by whatever name they are called, is that they, by their absurd pretense of cure, deprive the credulous victim of the precious time during which competent medical or surgical assistance, if secured, might relieve his suffering and in very many instances prolong the life of a fellow-being.

Medicolegal Notes.

Duty to Attend Patient—Effect of Impossibility to Do So.—In an action for malpractice it appeared that the patient had been treated for septicemia, which treatment was discontinued prior to the commencement of the action. The cause of action, if one existed, arose not out of improper treatment of that disease, but out of the defendant's negligence in failing to correctly diagnose the plaintiff's ailment as osteomyelitis. It was held to be immaterial what the result of the treatment would have been had it been continued, and equally immaterial what the correct treatment of osteomyelitis is.

It appeared that about the 12th of February, 1912, a condition arose in the affairs of the defendant whereby it was practically impossible for him to visit the plaintiff or to treat him during a considerable time thereafter, and that he instructed the plaintiff's father to continue the treatment, and to advise him promptly should any change occur for the worse; that no notice was given him of any change in the plaintiff's condition; that he was neither called upon to further treat his patient nor dismissed from the case; and that other physicians and surgeons were called about the 12th of March, 1912. The plaintiff requested an instruction that, if the jury found from the evidence that the defendant was employed to treat the plaintiff, and that he undertook to attend on him, the law presumes that such employment lasted during the sickness of plaintiff, and the relation of physician and patient continued between plaintiff and defendant until it was ended by the consent of the parties or revoked by the express dismissal of the defendant by the plaintiff. It was held that this instruction was properly refused. Assuming that it correctly stated a general principle of law, it had no proper application to the facts above recited, for it contemplated that no change had occurred in the affairs of the physician whereby he would be prevented from properly discharging his duties to his patient.—Osborn v. Cary, Idaho Supreme Court, 152 Pac. 473.

Unmuzzled Dogs — Regulation by New York City Board of Health.—Under the general provisions of the New York city charter prescribing the powers and duties of the board of health, and in view of various sections of the charter, from which it appears that the Legislature empowered such board to enact and enforce regulations and ordinances to protect and promote public health, in relation to many subjects over which the board of aldermen are given regulative power and control by the charter, and that the lawful regulations, ordinances, and orders of the board of health are paramount, Sanitary Code, § 80a, enacted by the board of health, providing that no unmuzzled dog shall be permitted to be on any public highway or in any public park or place, is valid as against an objection that the board of aldermen alone had power to enact such a regulation, notwithstanding the provisions of Greater New York Charter, §§ 50, 51, "that subject to the Constitution and laws * * * the board of aldermen shall have power to regulate the use of streets and sidewalks by * * * animals * * *" and "shall have power to * * * regulate and forbid the keeping of dogs."—People v. Warden, New York Court of Appeals, 110 N. E. 451.

Tuberculosis Hospital Not a Nuisance.—A bill was filed by the city of Northfield, N. J., and several property holders, praying that the board of freeholders of Atlantic County be enjoined from erecting a hospital for the care of patients afflicted with pulmonary tuberculosis. "The evidence submitted," the court said, "does not justify the conclusion that any danger to health exists or can be reasonably apprehended from the operation of this institution, providing it is properly operated. In this view the only possible ground for relief is the claim that the establishment of the hospital is operative to materially reduce the market value of the adjacent real estate. That claim, standing alone, cannot justify the relief here sought. There are some authorities apparently to the contrary, but the weight of authority is clearly to the effect stated. A person cannot be denied the right to make a lawful use of his property merely because such use is operative to injure the market value of his neighbor's property; he will not be permitted to disturb the quiet enjoyment of his neighbor's habitation by interference with the atmosphere by unreasonable noises, odors, or gases; he will not be permitted to physically disturb his neighbor's property, as by backing water upon it or otherwise physically interfering with it; but the mere disturbance of market value is not regarded as an infringement of an existing right in the party damnified, and cannot be made the basis of relief of this nature." Preliminary injunction was denied.—City of Northfield v. Board of Chosen Freeholders, New Jersey Court of Chancery, 95 Atl. 745.

Medical Services as "Necessaries"—Wife Living Apart from Husband—Accouchement Case.—Medical services are necessaries within the rule making the husband liable for necessaries furnished to the wife, and when such services are necessary the husband cannot escape liability therefor by showing that he did not call in the physician, or even that the physician was called in against his consent, and over his objections.

If, however, through no fault of the husband, the wife abandons his home and refuses to live or cohabit with him, he is not responsible for her necessaries, unless expressly requested by him; and persons furnishing her with such under such circumstances cannot, upon any theory of an implied request or of implied agency of the wife to bind the husband, collect from the husband.

And the mere fact that the wife is living apart from her husband is sufficient notice to the public who may deal with her, to put them on inquiry and to advise them that, so far as the liability of the husband is concerned, they credit the wife at their peril, since the law is that in cases of separation, the presumption is that the husband is not liable, placing the burden of proof on the party furnishing the necessaries to show that the separation has taken place under such circumstances as will render the husband liable; that is, has taken place as the result of his cruelty, violence, abandonment, or other misconduct or fault on his part.

The case at bar was a suit by a physician against the husband for $10 as the reasonable value of professional services rendered the wife during childbirth. It appeared that three and one-half months before the services were rendered the wife voluntarily abandoned the husband against his consent and without fault on his part, and had gone to live with her father, where she was when the child was born. The physician was called in over the telephone by someone at the house. It was not disputed that the services were necessary, that the amount sued for was reasonable, that the husband was the father of the child, or that the physician had not heard of the separation before he was called in. The sole insistence of the husband was that his wife had abandoned him over his objection and through no fault of his.

The plaintiff admitted that if the services had been solely for the wife's benefit the husband would not have been liable, but insisted that the services were equally as necessary to the preservation of the life of the defendant's offspring as of that of his wife, and that the defendant was liable, not on any theory of liability for services furnished his wife, who had abandoned him, but upon the theory of his liability for necessaries furnished his child. It was held that the defendant was not liable, since a husband is not liable for the support of his minor children where his wife leaves him without cause, taking them with her.—Johnson v. Coleman, Alabama Court of Appeals, 69 So. 318.

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NERVOUS CONTROL OF KIDNEY FUNCTION.

WHILE it is well known that the kidney is richly supplied with nerves, it has never been possible to demonstrate that this organ is furnished with any true secretory nervous fibers. It is unquestioned that section or stimulation of various nerves has marked effects upon the action of the kidney, but the readiness with which this organ responds to alterations in its blood supply has led most observers to the conclusion that the chief influence was carried through the vasomotor filaments and not through true secretory nerves.

Certain experiments have been carried out on the transplantation of this organ with results that would indicate that nervous control is not essential to its proper working, but not until very recently has any one done this work with a view of studying the function of the kidney under these conditions. Quinby (*Jour. Exper. Med.*, 1916, xxiii, 535) has adopted the technique of Carrel and others in this line and completely removed one kidney from the body and then sutured it back in place. A comparative study of the function of the two organs was undertaken when the animal had recovered from the effects of the operation. Quinby found that, at first, the reimplanted kidney showed more activity than the normal organ as measured by the output of both water and salt, but that later there was some return of control and both organs excreted practically equal amounts. The primary stimulation is accompanied by an engorgement of the kidney and is evidently due to the absence of vasomotor control such as is present in the normal kidney. For this reason the reimplanted organ does not suffer from the shock of operative procedures and begins to functionate as soon as the circulation is restored. In a second series of dogs the intact kidney was removed after the animal had recovered from the operation of reimplanting the opposite one. In these animals the renal function of the solitary reimplanted organ was apparently normal and it reacted normally to the injection of salt solution, lactose, and phenosulphonephthalein. The blood urea remained at a normal level, so that there was apparently no nitrogen retention.

There is no possibility that, in these instances, the nervous connection of the kidney was not completely severed, and it seems highly improbable that, in the short space of time after operation before the observations were made, nerve filaments could grow out and reestablish themselves in the kidney. These experiments, therefore, furnish very strong evidence that secretory nerves to the kidney do not exist. It is interesting to note that dogs having but a single kidney, and that one which had been subjected to reimplantation, were able to live normal lives for apparently an indefinite period. The author warns the reader that the operation must be done rapidly, for no kidney showed normal function after having been excluded from the circulation for longer than one hour and twenty minutes.

CARE OF THE FEEBLE-MINDED.

How best to care for the feeble-minded is a problem, the solution of which will tax the brains of medical authorities and legislators to the utmost. There are many mental defectives in every community who ought to be under restraint or cared for in such a way that they are not a menace to others. Probably from 10 to 20 per cent of those in prisons and reformatories are mentally defective. As was said in the Report of the New York Board of Charities, Feb. 15, 1915, the feeble-minded at liberty are a costly menace to the community, but under suitable custodial care they can be made useful and happy, and the danger of propagating their kind can be minimized. While it is allowed that mental defectives should be properly cared for, the question as to how this necessary and laudable object may be most effectively carried out is one that presents many difficulties.

Dr. Helen MacMurchy of Toronto, inspector of the feeble-minded in Ontario, has published recently her annual report, in which the subject of the mentally defective is dealt with ably and exhaustively. She outlines the kind of institutions which she thinks most economical and satisfactory as follows: (1) A sufficient population to admit of the economic unit in everything, and of good classification, say 1,000 to 2,000. These should be divided into comparatively small families, of about twelve to fifty in a family, each with special needs and characeristics, according to age, strength, sex, mental age, appearance, physical condition, ability, trainability, teachability, disposition, occupation, habits, manners, trustworthiness, etc. (2) Sufficient land, about one acre per inmate, for an Industrial Plan Colony. (3) Simple buildings on the cottage system, costing about $400 per bed and built by the inmates as far as possible. (4) Workshops and industries, farm and garden work and training and suitable equipment so that the institution may be self-supporting and self-contained, producing and manufacturing all that the inmates need. (5 The best superintendent that can be procured. (6) A staff of officers of the highest type, well organized and comfortably and suitably provided with residence, recreation, and opportunities for improvement in their work and development of their talents in every direction.

It is obvious that education and bringing up will exert a considerable amount of influence upon the future of mental defectives, and it seems almost

as obvious that an institution of the type sketched by Dr. MacMurchy will most fittingly fulfill the purpose. Those who are diagnosed as mentally defective should be trained so as to be self-supporting as far as it is possible, but should not be allowed enough liberty to be a source of danger to the community. It appears wholly against the best interests of the race, nation, and community that a person mentally defective should be permitted to perpetuate the species, and one who is palpably deficient in intelligence should be kept under restraint. The most dangerous of the large army of mental defectives are those who are weak-minded but not sufficiently so to be restricted as to liberty. These spread vice and disease on all hands and help to fill our prisons and reformatories. At any rate, steps should be taken to diagnose mental deficiency, and when a diagnosis has been made, to have all suffering from such defects intelligently and kindly treated according to their grades of deficiency, but always bearing in mind that the welfare of the race at large must come first, and that for the good of the same majority the abnormal members of society must be restricted in their harmful activities.

CHRONIC TETANUS.

TETANUS has shown several phases in which prolonged time is a characteristic. There is the so-called latent form, in which a missed infection is awakened to activity weeks or months after the infliction of the wound. A case of tetanus relapse has been or will be reported from the Halle Clinic in Germany. These phases of tetanus are so rare as to be almost unique, while in theory another condition might occur, to wit, chronic tetanus in the legitimate sense of the word. Cases of chronic tetanus, so-called, in which the duration of the disease is unduly prolonged should be termed subacute at best. An actual case of chronic tetanus lasting over seven months was reported by Faust at a medical meeting held at Dresden (*Muenchener medizinische Wochenschrift*, January 18). The author made an extensive research into literature, and so far as he knows, his case is quite unique. The man made an incomplete recovery, his jaws were still partly locked, and other muscles were in a hypertonic state. The original injury was a shell fragment wound of the left foot, which was properly dressed. Ten days later the muscular rigidity was noted and antitoxin injected. Meanwhile the wound was healing well and no fever had developed. Trismus was marked, and there were several convulsions daily, due to internal irritation. Aside from these the muscular state was one of rigidity, the patient feeling rheumatic. Everything was done to relax the muscles, but to no purpose. After 136 days the rigidity began to give way spontaneously, so that the patient could leave his bed and get about. Lockjaw and abdominal rigidity persisted. A study of the case in detail shows that on the 78th day the muscles began to relax, but soon afterward the disease returned in full strength, with fresh and violent convulsions. There is no mention of the date of the last attack.

Old authorities have mentioned a so-called rheumatic tetanus, entirely benign in character and without history or evidence of an entrance wound. The author does not allude to this condition, which goes back to the prebacteriological era; but a comparison of it with his own case would have seemed worth while.

HINDHEDE ON DIET.

THE views of Hindhede, the Danish dietician, are but slightly known to the American medical public and it is only quite recently that his little works on nutrition and cookery have been translated into German. As an advocate of what many of his colleagues would call underfeeding, these translations are timely for Germany and might be equally so for other warring nations. His ideal regimen is milk, bread, potatoes, and fruit, but he realizes that this ideal is unattainable. Concerning meat he says harsher things, if possible, than the avowed vegetarians themselves, for he attributes to its overconsumption almost all imaginable evils; yet many of his dietaries contain small quantities of flesh foods. When it comes to the possible protein minimum requirement he makes Chittenden and Fletcher appear conservative in comparison. He resembles the latter in the economical side of dietetics and computes the low cost of a satisfactory ration. From this angle he likens meat to chocolate bonbons. His German book reviewers do not mention caloric requirements, but lay stress on tables showing uric-acid formers, and basic-salt formers. Hindhede writes down to the lay reader whom he evidently means to reach. For twenty years he has been studying practical dietetics among the peasants of Jutland. He indirectly attacks much of the teachings of his German confrère or rival, Rubner, and the latter, who is regarded by his countrymen as the world's greatest authority on dietetics, will surely reply to him. Needless to say, such a document will be of considerable interest to those, and their name is legion, who are making a careful study of food value and nutrition.

RELATIVE VALUE OF TESTS FOR RENAL INEFFICIENCY.

IT is manifest to all clinicians that not one of the very numerous tests in use for renal permeability possesses value for the general practitioners as a class. None can be carried out properly without apparatus, strictest regulation of diet, trained assistants, etc. They belong to the resources of hospitals. In a discussion on this subject before the Aerztlicher Verein at Frankfort (*Münchener medizinsche Wochenschrift*, February 22) von Noorden expressed himself as above. At the same time he enumerated in the order of their value to him those tests which he naturally employs. The iodine test, one of the oldest known, he has used with great profit from the first of his career. Its chief value is in prognosis, for it tends to reveal the progressive deterioration of the kidneys when this is present. Next in order come alimentary or tolerance tests with necessary ingredients of the diet—water, sodium chloride, and nitrogen (as urea). These three tests are also of value for regulating the diet. The fifth test, that for the amount of N retention in the blood is of course an indirect method for examining the functions of the kidneys. To be of value it must be made at repeated intervals. The recent method of Bary enables us to get a rapid result with only a few drops of blood.

A Legislative Attempt to Curtail the Powers of the Boards of Health.

In the turmoil and hurry of the closing hour of the New York Legislature a bill was passed amending the public service commissions law in such a way as to give to the commissions exclusive power to regulate overcrowding in public conveyances and specifically taking that power away from the local boards of health throughout the State. No attempt was made on the part of the legislators to find out how public opinion would react to such an encroachment upon the jurisdiction and powers of the health boards of this State; no public hearing was called when a measure of such vital concern to the welfare of the commonwealth was under consideration. If this bill is signed by the Governor and becomes law, it will establish a dangerous precedent which, if availed of generally, may undermine the effectiveness of the State health law and cripple the powers of the boards of health so conservatively and beneficially exercised throughout all these years. There is no good reason for depriving health boards of their power to regulate overcrowding in public conveyances and to protect the public from a well recognized mode of spreading communicable diseases through close personal contact with infected individuals. If the regulation of the overcrowding in cars is left exclusively in the hands of the public service commissions, it never will be effective for the reasons that the personnel of the commissions does not include sanitary experts or physicians, that the commissions will not consider the problem from the same viewpoint as the health authorities, and that even if they do attempt to regulate overcrowding they will have to invoke the penal statute in punishing offenders. This will necessitate drawn-out litigation and proof on their part that the offence committed had a criminal motive or intent. It could never be proved that when a person coughed or sneezed in an overcrowded car and disseminated pathogenic organisms he had a purpose of infecting others. Under the public health law proof of such a motive is not required to stop at once a nuisance or to remove immediately a source of danger to the community. The bill, known as the Simpson bill, Assembly Int. 496, is now in the hands of the Governor. It is hoped that the Governor, who on many occasions has shown such an enlightened interest in public health, will veto this measure.

Senator Works' Resolution.

Eternal vigilance seems to be strongly indicated and most necessary for the protection of the community when legislative bodies are in session, for there is evidently no end to the long array of preposterous measures that are tolerated by them. The resolution recently introduced by Mr. John D. Works of California, in the Senate of the United States, may be cited as an illustration of this mischievous kind of legislative meddling with rules of reason. The Christian Science Senator evidently became uneasy when he learned of the election of the Surgeon General of the United States Public Health Service to the presidency of the American Medical Association, and determined to save the country from the calamity that threatened it. Accordingly he introduced a resolution forbidding the officers of the service to join any medical, public health, or other organization, explaining in the preamble that the American Medical Association is a body of men belonging to but one school of medicine and interested in the promotion of their selfish ends. It is hardly conceivable that such a bill will be reported out of the committee to which it was referred. It will undoubtedly die of dry rot in the archives of the committee, and it will in this form serve as a lasting monument to its introducer. It affords us, however, an opportunity to pay tribute to the efficiency of the Service and its head, to the contributions to medical and public health science which the officers of the service have made, and to the intellectual and scientific stimulus their membership in the various medical and public health associations gives to the great body of physicians comprising these associations. Emphatic protests against this outrageous bill of Senator Works should be sent to the members of Congress, for the bill is a direct insult to the intelligence of the people.

News of the Week.

City Death Rate.—During the week ending April 22 there were reported in New York City 1,515 deaths, giving a death rate of 14.15 per 1,000, as compared with a total of 1,748 deaths and a rate of 16.68 for the corresponding week of last year. Because of the growth of population since last year, this decrease of 2.53 in the weekly rate is equivalent to a saving of 271 lives. The death rate for the first seventeen weeks of 1916 is 15.48 as compared with 15.65 for the corresponding period of last year. The disease showing important decreases in mortality were: Measles, scarlet fever, diphtheria, spinal meningitis, digestive (other than diarrhea), pneumonia, influenza, and pulmonary tuberculosis. There was no noteworthy increase in the mortality of any disease.

Quarantine Bill Signed.—On April 27 Governor Whitman of New York signed the Adler bill transferring the Quarantine Station at Rosebank, N. Y., to the Federal Government. The new law creates a commission, consisting of the Governor, the Lieutenant-Governor, the Attorney-General, the Comptroller, and the State Engineer and Surveyor, to negotiate the transfer.

Dr. White's Brain.—In accordance with his wish, the brain of Prof. J. William White of Philadelphia, who died on April 24, was removed shortly after death and deposited in the Wistar Institute for Anatomy, University of Pennsylvania, where it will be used for scientific study.

Study of Internal Secretions.—The formation of an Association for the Study of the Internal Secretions has recently been suggested by a number of American physicians interested in the subject, and it is now desired to learn whether there is sufficient interest in the matter to warrant its further consideration. Some of the advantages of such an association are set forth as (1) the assembling of those interested in the subject; (2) the facilitating of the exchange of ideas, inquiries, and reprints on the internal secretions; (3) the enabling of those who are without facilities to keep in touch with the literature of the subject—possibly by the preparation of a monthly list of articles with a brief résumé; (4) the facilitating of concerted clinical study of the subject and of the measures brought forward in organotherapy. It is, therefore, requested that any physician who may be interested and would approve the establishment of such an association send his name and address on a postal card to Dr. Henry H. Harrower, 715-719 Baker-Detwiler Building, Los Angeles, Cal.

Street Accidents.—The Police Commissioner of New York reports a considerable decrease in the number of street accidents in the city during the first quarter of this year as compared with the same period of 1915. The establishments of car-stop safety zones, the designation of play streets for school children, and an increase in the traffic force are believed to be responsible for the decrease. During the first quarter of 1915 the accidents numbered 4,664, the fatal accidents numbering 119, as compared with 4,277 accidents, and 105 fatalities for the first three months of 1916. There was a drop of almost 40 per cent. in the number of children under 16 who were injured, the figures being 1,181 for January, February, and March of 1915, and 761 for the same months of this year. During the same quarter 46 children were killed in 1915 and 28 in 1916. The number of persons injured by accident in the streets during the entire year 1915 was 22,540, death resulting in 659 cases. Of these 659 106 were children under six years of age, and 184 were between six and sixteen years. In the list of dead there were 149 females and 510 males. The largest number of accidents occurred in July—2,291—and the smallest in February—1,359. Passenger motor vehicles were responsible for the greatest number of accidents, 4,865 persons being struck, of whom 177 died. Street cars injured 1,771 persons, of whom 77 died; delivery motor vehicles, 1,212 persons, with 105 deaths, and motor cycles 377 persons with no fatalities. Horse-drawn passenger and delivery vehicles, trucks, etc., struck 2,587 persons, causing 103 deaths. To falls and miscellaneous accidents suffered while riding on, boarding, or alighting from vehicles were ascribed 3,026 injuries, of which 47 were fatal.

Baby Week.—Saturday, May 6, and Sunday, May 7, have been designated as Baby Sabbath and Baby Sunday, respectively, as a fitting end to the Baby Week in New York. The committee in charge of arrangements of the week called attention to the fact that during 1915 there died in New York City alone 13,866 children under one year of age, and that in fully one-half of the cases death was due to preventable disease.

Addition to Hospital.—The addition to the New York Nursery and Child's Hospital, which has just been completed and furnished, was opened for use this week.

President Encourages Red Cross.—The plan of the American Red Cross to enroll 100,000 new members in the Metropolitan district by Decoration Day, has been approved by President Wilson who, in a message to the committee in charge, says: "It is both a patriotic and a humane service that is rendered by every citizen who becomes a member. A large, well organized, and efficient Red Cross is essential."

American Association for Promoting Hygiene and Public Baths.—The next conference of this association will be held in Baltimore on May 9, under the presidency of Dr. Simon Baruch. The program includes "Dock Baths" by Dr. Franzack of Buffalo, "Floating Baths" by Col. Frank Hines of New York, "Effect of Baths in Training the Feeble-Minded" by Dr. Eleanor Keller of the Vanderbilt Clinic, and "Comparison of Methods for Disinfecting Swimming Pools" by Dr. Wallace Mannheimer of Columbia University. An address will be delivered by the president, Dr. Baruch, on "Hygienic Preparedness and School Baths." The secretary of the association is Mr. J. Leonard Mason, 587 City Hall, Philadelphia.

American Gynecological Society.—The forty-first annual meeting of this society will be held in Washington on May 9, 10, and 11, under the presidency of Dr. J. Wesley Bovée. The program contains the titles of thirty papers to be read in addition to a discussion on the "Production of Painless Labor by Other Means Than Morphine-Scopolamine." The secretary of the society is Dr. LeRoy Broun, 148 W. 77th Street, New York.

American Association of Immunologists.—The third annual meeting of this association will be held in Washington on May 11 and 12, under the presidency of Dr. James W. Jobling. The program contains the announcement of twenty-six papers.

Medical Society Elections.—TOLLAND COUNTY (CONN.) MEDICAL SOCIETY: Annual meeting at Rockville on April 17. Officers elected: *President,* Dr. Thomas F. Rockwell, Rockville; *Vice-President,* Dr. Donald L. Ross, Mansfield; *Secretary-Treasurer,* Dr. Eli P. Flint, Rockville.

PLYMOUTH DISTRICT (MASS.) MEDICAL SOCIETY: Annual meeting at Brockton on April 20. Officers elected: *President,* Dr. Nathaniel K. Moyes, Duxbury; *Vice-President,* Dr. Gilman Osgood, Rockland; *Secretary-Treasurer,* Dr. Alfred C. Smith, Brockton.

TANGIPAHOA PARISH (LA.) MEDICAL ASSOCIATION: Annual meeting at Amite City on April 13. Officers elected: *President,* Dr. Edward L. McGehee, Hammond; *Vice-President,* Dr. James L. Le Noir, Amite; *Secretary-Treasurer,* Dr. Anthony J. Strange, Independence.

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA: Sixty-fourth annual meeting at Durham on April 18 to 20. Officers elected: *President,* Dr. Charles O. H. Laughinghouse, Greenville; *Vice-Presidents,* Dr. David J. Hill, Lexington, Dr. Joseph L. Spruill, Columbia, and Dr. J. H. Shuford, Hickory. The next meeting will be held in Asheville in April, 1917.

SOUTH CAROLINA MEDICAL ASSOCIATION: Annual meeting at Charleston on April 18 to 20. Officers elected: *President,* Dr. Curran B. Earle, Greenville; *Vice-Presidents,* Dr. Charles R. May, Bennettsville, and Dr. Clarence L. Kibler, Columbia; *Secretary-Treasurer,* Dr. Edgar A. Hines, Seneca. Spartanburg was elected as the place for the next meeting.

Obituary Notes.—Dr. THEOPHILE J. ELLINGER died in Philadelphia on April 29 at the age of 60 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1879, and he served a term as intern in the Philadelphia Hospital. He was a police surgeon for ten years. He was a member of the Philadelphia County Medical Society, of the Medical Society of the State of Pennsylvania, of the Medical Examiners' Association, of the West Philadelphia Medical Society, of the Physicians' Motor Club, and of the American Medical Association.

Dr. FRED K. PORTER of Southwick, Mass., a graduate of the Medico-Chirurgical College of Philadelphia in 1898, died at his home, on April 12, aged 42 years.

Dr. GEORGE H. GODSON of Harmon, N. Y., a graduate of the New York University Medical College in 1892, and a member of the Medical Society of the State of New York, the Westchester County Medical Society, the Harlem Medical Society, and the Greater New York Medical Association, died at his home, on April 21, aged 55 years.

Dr. WILFORD B. HARDIN of Dallas, Tex., a graduate of the medical college of the Southern Meth-

odist University in 1911, and professor of gynecology at that university, died at El Paso, on April 10, aged 28 years.

Dr. CHARLES A. FERNALD of Boston, Mass., a graduate of Harvard University Medical School in 1872, and a member of the American Medical Association, the Massachusetts Medical Society, and the Suffolk County Medical Society, died at his home, on March 15, aged 68 years.

Dr. ABRAHAM HERZLICH of New York, a graduate of the University and Bellevue Hospital Medical College, New York, in 1905, assistant surgeon at the Hospital for Deformities and Joint Diseases, and a member of the Eastern Medical Society of the City of New York, the New York Physicians' Association, and the Harlem Medical Association, died on April 16, aged 32 years.

Dr. THOMAS C. MOORE of Smyrna, Del., died at Cheswold, on April 12, at the age of 62 years. He was graduated from Hahnemann Medical College and Hospital in the class of 1884.

Dr. NORTON DOWNS died at Three Tuns, Pa., on April 15, at the age of 52 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1888. He was a member of the Montgomery County Medical Society and of the Medical Society of the State of Pennsylvania, and a Fellow of the American Medical Association.

Dr. EDWARD WACHTEL PALMER of Greencastle, Pa., died at Chambersburg, on April 18, at the age of 46 years. He was graduated from Baltimore Medical College in the class of 1902.

Dr. FRANKLIN D. WORCESTER of Keene, N. H., a graduate of the Hahnemann Medical College and Hospital, Chicago, in 1887, died at his home, on March 30, aged 64 years.

Correspondence.

NINE MONTHS IN A GERMAN HOSPITAL.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—THE following observations were made during a period of military activity on the Russo-German (Silesia-Polish) border and vicinity. I was staff-surgeon of the American National Red Cross European Relief Expedition, departing from New York in September, 1914, on the *S.S. Red Cross*, which proceeded abroad to Pauillac, France, and Falmouth, England, and through Holland to Austria and Germany. Hospital supplies and units of surgeons and nurses were distributed to the warring countries. The German and Austrian units were placed in hospitals in October, 1914, at Cosel and Gleiwitz, Silesia, Germany, and at Vienna and Budapest.

Dr. Breiger, the leitender artz of Cosel, appointed me surgeon-in-charge (haupt-artz) of an improvised hospital, previously a modern schoolhouse, with a capacity of 120 to 130 beds. The hospital staff comprised two German assistant surgeons, a German medical student doing his fourth year in lieu of military service, a nursing staff of nuns consisting of Grauschwestern and German Red Cross sisters and helpsisters, also a squad of sanitary troops.

Since returning to the United States in July, 1915, I have found a scarcity of reports in the literature in reference to German war hospitals.

The Polish-German town Cosel is situated on the Oder River near the line of union of Germany, Austria, and Russia, called Drei Kaiser's Ecke. Battles at Bendzin and engagements in the corner's vicinity and South Russian-Polish towns during the fall and winter of 1914 were the sources of wounded. In the spring of 1915 the sources were more distant—from Warsaw and the Carpathian mountains. Transportation by hospital trains took one or two days in the former and three to seven days in the latter distributing places. A main trunk railroad connected Cosel with Breslau and Myslowitz, and at the latter place three main lines emptied: one from Russian Poland draining the Warsaw region via Radom, another line from Kielce and South Poland, and a third from the Northern Austria border draining the Carpathians from Przymysl and Lemberg. Field hospitals were numbered. Radom was a chief distributing point for the Germans in the Warsaw attacks. It rapidly developed under the German rule, and rail communication was established with Lille, France.

Private hospital trains, as well as the regular army trains, were used in transportation to Cosel; also, hospital ships on the Oder carried convalescents away from Cosel to points along the river as far as Stettin on the coast.

There were eleven other hospitals in Cosel, the majority being improvised (Turnhall, School, Barracks), but a garrison hospital built in 1807 and a civil hospital were permanent ones.

The Sixty-second Regiment of infantry was stationed here; its barracks were dated and used by Bismarck. Recruits and Landsturm filled the town. Night exercises, marches, departure of detachments at regular periods for the front, incoming transports, an all-pervading military atmosphere made life here eventful and interesting. Military funerals were daily occurrences. Russian prisoners wounded were treated under careful guard, too, at a Schutzenhaus. Sentries were constantly posted throughout the city, at the provision houses, and at the bridges on the Oder. At nine o'clock at night all civilians were off the streets, doctors and sanitary troops coming and going to their various stations (hospitals). During the night sentries signaled one another by a peculiar whistle, "all's well," on the hour.

The hospital capacity was 1,200 beds. It averaged 1,000 all the time.

First-aid dressings were noted on half the wounded. Others had been put up in casts at field hospitals. The filthy condition of many wounds was accounted for by delay in transit through Russia; maggots and lice developed, especially in fractures within casts.

The men were, in general, well nourished, but filthy and bewhiskered. The field treatment was noted to be: Arrest of hemorrhage. Immobilization of fractures, using starch bandages, boards, straw, long side board with hoops half encircling the trunk, pelvis, thigh, or leg; wire sieve for arm. Plaster (gypsum) was applied lavishly, some casts being one and a half inches thick and of fine quality; straw and aluminum in half-inch strips were incorporated in the casts. No windows were made in the cast, but the site of the wound was marked. Many of these were saturated by purulent exudate coming from the wounds. The first dressings consisted of applications of 5 per cent. tincture of iodine and sublimated gauze made adherent to the wound (and dirt free) by masticol (mastich and benzol).

Hospital cases were divided at the railroad station as light and heavy wounded, and sick. The

lightly wounded were marched to various stations under sanitary troops. The heavily wounded were transferred from train to wagon or carriage (sleighs in winter) without changing stretchers, and were allotted to the hospitals, whose accommodation had been announced to the director the day before the train's arrival. Refreshments for the wounded were dispensed at the railroad station; cigarettes were not forgotten. On arrival at the hospital, severe wounds were dressed at once. Wound solutions (irrigation routine) were potassium permanganate, peroxide of hydrogen, and alum acetate. Dressings numbered sixty to ninety a day. Large wounds of soft parts were dressed by fixation splints with fenestræ, as fractures.

Immediate operations were uncalled for except in case of pyothorax.

In bone operations loose, detached bone fragments were extracted; if in line with and in the vicinity of the fracture they were left undisturbed, and added materially to the strength of the union later. Conservation in infected fractures of the thigh showing no inclination to improve after a month's adequate treatment was found futile, as late secondary amputations very often proved fatal.

Records were written every five days; discharges and histories were kept by a sanitary officer and written in German script; careful detailed records characterized this service; information material was sent to the central office. Correspondence of soldiers with their families was encouraged. The mail system was wonderfully well managed. Discharge records were especially minutely detailed, with a view to compensating the soldier and doing justice both to him and to his government.

The hospital routine consisted of dressings from 8 to 1 o'clock; operations were done in the afternoon, and in the late afternoon dressings were again applied and *x*-ray examinations were made.

Cholera and typhoid inoculations were given. Cases with fever not due to wounds were isolated. Dysentery was the rule in nearly all men on arrival, but cleared up in 24 hours under treatment with castor oil.

As a hospital the schoolhouse proved ideal; ventilation, light, heat were perfect; there were large square rooms with very high ceilings, nine beds in a room; isolation was easily practised.

Typhus fever did not occur. Amputation for gas infections in frozen legs numbered two fatalities. I had two cases of tetanus; both were fatal, although I used intraspinally all the antitoxin the town could offer. Hand wounds were treated conservatively; many useful two-fingered hands resulted. Conservation of the foot and ankle was not practised.

Instruments were not numerous; bone instruments occupied the chief shelf in the cabinet made of wood constructed especially for the schoolhouse and made after the fashion of a carpenter's tool chest upright. Another cabinet held the surgical material. Heating the operating room was by a tile oven-stove, as is generally seen in Germany. Wooden floor and wooden operating table covered with oilcloth showed the plain dealing surgical hospital. There was no tub in the house; partial baths were in vogue.

JOHN LANCER, M.D.,

[illegible] Surgeon St. Luke's Hospital, New York; [illegible] Attending Surgeon [illegible] Hospital; O. P. D.; Surgeon to the 12th Reserve Hospital, Un[illegible] the American Expeditionary Forces, October [illegible] to [illegible], 1915.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

GUNSHOT WOUNDS OF THE SPINE: MEDICAL ASPECT, SURGICAL ASPECT—THE HARVEIAN LECTURE—EYE SYMPTOMS IN RELATION TO NERVE DISEASE.

LONDON, April 8, 1916.

GUNSHOT wounds of the spine have been occupying the attention of the Medical Society of London. Capt. James Collier opened a discussion on their medical aspect by remarking that during the last eighteen months an unparalleled opportunity had been offered for investigating them and a number of new facts about them brought to light. He dwelt on six special points, viz: (1) the nature and mechanism of production of the lesions; (2) the state of the reflexes and of muscle tone in the affected region; (3) the distinction between root lesions and central lesions; (4) disturbances of sensibility; (5) the occurrence of rare and unusual phenomena; (6) prognostic indications. He classified the lesions into direct and indirect (including concussion), remote and secondary. He illustrated each by reciting a case. In nearly all the initial, clinical state was that of a total lesion of the cord. The reflexes showed how much of the transverse lesion was anatomical and how much physiological.

Lieut.-Col. D. Armour considered the surgical aspect in two main classes: (1) those in which the function was interfered with, with or without damage to the vertebral column, and (2) in which it was not. The most frequent cause of injury to the cord was from driving in of fragments of bone, which may produce concussion of varying degree up to extensive damage, diffuse and irregular in distribution, tending to diminish as the distance from injured spot increases. The first question is, Can the nature and extent of the damage be determined? *X*-rays have not proved reliable as to this; they may fail to reveal an existent bony injury, and they never show the full effect within the spinal canal. As to operations, three questions must be considered: (1) would benefit accrue? (2) would life be endangered? (3) might the patient be made worse? In practised hands the risk would not be materially increased. The level of the lesion does not closely correspond with that indicated by our diagnostic signs, so that a wide area of cord must be exposed. The dura, if intact, should not be opened. If sepsis be present, drainage must be employed. A septic condition of bladder or kidney contraindicates operation. Paralysis of intercostals adds considerably to the danger of operation, but may be guarded against by a skilled anesthetist. An operation may remove pressure by bony fragments or arrest hemorrhage, edema, etc., but as it is often impossible to be sure as to the actual gross damage, Colonel Armour thought in case of serious doubt the patient should be given the chance of relief by surgery.

In the discussion that arose on these two papers. Dr. Guthrie said the symptoms arising from complete transverse lesions were like those due to spinal shock, and indeed this could not be excluded within three months of the injury. Certain cases, in which on operation the cord was found disintegrated and pulped, had been reported as having recovered function, but he thought any return of function indicated that the destruction was not so complete as supposed. He mentioned a case in which some return took place fifteen months after the cord was thought to be destroyed.

In spinal shock one meets with flaccid paralysis

and later paralysis in extension or flexion; less severe in the former than the latter. One should use great caution in admitting the existence of a complete transverse lesion.

Capt. E. Adams had fourteen cases in hospital with evidence of damage to nerve tissue; three ended fatally, two from urinary sepsis, the third from bronchopneumonia. In three others there was no improvement; in eight there was progress. He thought bedsores and catheters were to blame for some fatalities, and doubted if it was right to hand over cases to male nurses for regular catheterization.

Capt. E. F. Buzzard agreed almost entirely with the two previous speakers. When an operation was done it was not enough to remove a foreign body—a proper laminectomy was wanted.

Maj. Newton Pitt had been disappointed with laminectomy. In cystitis he had seen improvement follow suprapubic cystotomy.

Dr. Wilson referred to cases of shock, and spoke of one caused by a shell bursting in front of a youth without hitting him, but bringing on symptoms of transverse lesion at the level of the ninth dorsal segment. Lieut.-Col. Sargent, in case of doubt, would give the patient the chance of benefit from an exploratory operation.

The Harveian lecture was delivered on the 16th inst. by Dr. James Taylor, who took for subject, "Nervous and Other Medical Disorders as Seen at an Eye Hospital." He illustrated a number of points with lantern slides, and carried on the work which he had begun in connection with the late Hughlings Jackson, who was one of the first to show the great importance of eye symptoms in relation to disease of the nervous system. Dr. Taylor has enjoyed unique opportunities of observing such cases at the leading eye hospital, and has begun to realize how large is the number of patients who seek advice at such institutions on account of some eye trouble which on examination proves to be an indication of a general condition. He commented on the cases he had had at Moorfields in groups, the largest comprising those who came on account of failing sight, which proved to be associated with optic atrophy; this was found in most cases to be connected with other conditions. In over 200 out of 233 cases there were distinct signs of tabes or of general paralysis of the insane; in some only Argyll-Robertson pupil—in one on one side only; in others only absence of knee jerks and lightning pains; in others, again, both these conditions, occasionally gastric crises. Ataxy only rarely occurs in tabes with optic atrophy—a fact long known and confirmed by these 200 cases, for it was found in only two, and very marked in only one of them. Signs of general paralysis were noted in only three or four, but it is not uncommon for mental symptoms indicative of this to appear some years after patients have been quite blind.

The next largest group applied on account of some defect in the ocular movements. Dr. Taylor commented separately on myasthenia gravis, albuminuric and glycosuric retinitis, Graves' disease, hemiopia, retinal embolism and thrombosis, and optic neuritis. They illustrated the extraordinarily varied medical interests to be seen at an eye hospital as well as the need for a broad general basis on which to build as to different forms of diseases, in addition to the ocular and visual signs which may indicate variations in the progress of physiological or pathological processes.

PRACTICE IN ALASKA.

SOME TRANSPORTATION DIFFICULTIES.

(From Our Special Correspondent.)

St Michael, Alaska, March 10, 1916.

In this modern age of rapid transportation of the sick and injured, the profession compares the various methods in the relative number of minutes consumed and at the same time lays great stress on the facility of taking patients to and from these various vehicles and the smoothness with which the vehicles run. This has come about partly through the advancement in the profession, but largely through competition on the part of the several manufacturers and operators of these carriages for the sick.

Persons living in Alaska, particularly in northern Alaska, know of these conveniences and luxuries through visits to the United States proper and through literature, but when tragedy falls upon them they must resort to such transportation as is available. This transportation in summer may be a boat, usually home made, wooden or kyak (native Eskimo boat made of skins stretched over very light timbers), or perchance a passenger or freight boat passing in the right direction on the Yukon River or some of its tributaries. In this connection it may be interesting to note that almost all persons in Alaska live on or near some water that is navigable, at least by small boats. In winter the transportation is by means of the sled drawn by the reindeer or by Eskimo dogs; in this immediate section by dogs only. These dogs are used in this section exclusively for all forms of overland transportation; are used in odd numbers, hitched in pairs with one in front as leader. The sled is strongly made of hickory or oak with broad runners, sides to hold the cargo (whatever it may be), two handles and a brake at the back, where the "musher" (driver) rides or runs along after the dogs. It is surprising what these animals can pull on a good trail and on how little they live. For example, eleven average Malamute dogs will pull 1,000 pounds at the rate of 60 miles a day; they can keep this up for day after day, and with an occasional day's rest can keep going the entire season, which is about seven months out of the year. They will live, work hard, and keep fat on one dried salmon fish a day per dog, which is thrown out to each animal in the evening after the day's work is over.

During the period in which the "freeze" is commencing (fall) and during the period when the thaw is taking place (summer) the trails are bad, and it is at this time that transportation is most difficult in Alaska, as neither the boats nor the sleds can be used. To travel overland at this time, particularly on the coast, and make any headway is almost impossible on account of the tundra. The tundra is a peculiar soil, probably of glacial origin, flat or rolling in contour, covered with wild grasses or reindeer moss, found in northern and northwestern Alaska from the coast to many miles inland. There is a humus on the surface which is almost impervious to water, and the grasses grow in very tough bunches about 10 inches in diameter and as high as 18 inches. These bunches are called "nigger heads," are very elastic, and dot the surface of the tundra in great numbers. As warm weather comes on, the snow and ice melt, water collects between these "nigger heads," and the surplus flows away according to the contour of the ground. The tundra thaws down about 8 inches, but remains frozen

always beneath this plane, and on digging below this point one finds ice mixed with the earth.

It can readily be seen that traveling overland during the early fall or early summer is very difficult, as you are either stepping in water or on a "nigger head." Should you step on a "nigger head," it will bend over and the foot slip off. It was during this transition period in the fall of 1915 that a man named Mr. W. D., aged 49, had to be brought from Iditarod to St. Michael, Alaska. This man had been working all summer, and was making the "clean up" (gold dredging) preparatory to returning to the States before navigation closed. The day prior to the proposed date of taking a gasoline launch for St. Michael, this man was struck on the back of the neck by a steam shovel. He developed paraplegia as the result of this injury, even lost control over his urine and feces.

The last over-the-sea ship was scheduled to leave St. Michael seven days after this injury. There were twenty-one persons in the party, including three women, and they must make St. Michael by that date or remain in Alaska over winter. All of these persons had remained in Iditarod until after the close of navigation on the Iditarod and Yukon Rivers in order to reap the full proceeds in gold at the clean-up from their summer's hard work. The question naturally arose: "What can we do, now that W. D. is paralyzed? His wife and children are waiting and expecting him on this last ship, bringing with him the gold of a prosperous summer." W. D. said: "We will go." There was no doctor, but his friends packed him him into the gasoline launch, and the party of twenty-one started north on the Iditarod. Traveling was satisfactory until they reached the Yukon River. There was an early freeze-up, earlier than in previous years, and the party encountered ice. They proceeded on the Yukon but a short distance when it became impossible to go farther on account of the dense ice, so the party had to land. They succeeded in getting to a native Eskimo village, procured a sled and brought W. D. in. The launch turned back and made its way to Iditarod before being caught in the ice, and the tragedy was reported to St. Michael by wireless. A rescue party started out from St. Michael in a large tug boat, thinking that it would be possible to force the new ice. On reaching the mouth of the Yukon the ice was so thick that the tug could make no headway, and was compelled to return without the party, but brought news that there were now one paralyzed man, one man with pneumonia, and a woman with heart failure, and had also learned that the party would attempt the remaining portion of the trip overland. There was some snow, but the trails were bad, and although the sloughs were covered with ice, it was thin and dangerous.

Persons well versed with local conditions expressed the opinion that it was very doubtful whether or not enough dogs and sleds could be procured to transport so large a party with their necessary luggage, so the army fort at St. Michael sent out three sleds of eleven dogs each, fur robes, and the necessary number of soldiers, in charge of Sergeant Rector, U. S. Signal Corps, to assist the party in every way they could. Sergeant Rector is an old soldier and reliable. He directed his mushing (sledging) party so as to reach the Iditarod persons in the shortest possible time, and with this additional assistance and the scientific leadership of the soldier, the twenty-one persons were safely landed in St. Michael sixteen days after beginning their journey. The three sick were put in the hospital, and the others found comfortable quarters in the town. None of them had had the proper kind or amount of food since leaving the launch on the Yukon River, but W. D. was cheerful, always with a smile and a joke, and his paralytic condition the same as when leaving Iditarod.

Even after the many hardships that this party had encountered to reach St. Michael, they were too late to connect with the last ship touching this port for the United States. They were not downspirited as the sick were improving, especially W. D., whose condition was diagnosed as concussion of the cervical spine, and he made great improvement in a few days of proper rest and treatment.

It was learned that there was to be one more ship to Nome, Alaska, a distance of 120 miles by water, and it was further learned that the U. S. Coast Guard Cutter *Bear* was in Arctic waters, so the U. S. Deputy Marshal wired the captain of the *Bear* about the stranded party and the sick. Captain Cochran of the *Bear* promptly answered: "Will be there to-morrow morning at eight o'clock to take the party to Nome."

W. D.'s troubles were not over yet! Bering Sea (Norton Sound) was frozen over two miles out from shore; so how was the party going to get aboard? This ice, too, was new and dangerous. The *Bear* arrived in due time and penetrated the ice until about one mile from shore. The Iditarod party had seen the smoke of their friend, the *Bear*, coming, and were waiting on shore until they could determine the point where the cutter would stop. Sleds, kyaks, and snowshoes had been procured to use in making the proposed trip from shore to ship, but again the ice was new, untried, and broken in spots by the tide. "How safe is it?" asked one of the ladies. "I do not know," said W. D., "but we must make it." The party crept along slowly over the ice, pulling the sick in sleds by means of long ropes. Those walking were using snowshoes. At the same time the trained crew was launching boats from the *Bear* on the ice. As the party reached these boats they were pulled alongside, and safely and scientifically landed on board the ship. It took one hour and thirty-five minutes to accomplish this boarding, which was carried out without incident and with the greatest of precision. The party landed in Nome in due time to connect with the steamer for Seattle, Wash., and a wireless en route stated "All doing well."

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 20, 1916.

1. Preventable Forms of Mental Disease and How to Prevent Them. E. Stanley Abbot.
2. Pellagra: A Review of the Subject. Charles A. Howland.
3. Acid Autointoxication in Infancy and Childhood. John Lovett Morse.
4. The Frequency of Epilepsy in the Offspring of Epileptics. D. A. Thom.
5. False Aneurysm of the Brachial Artery. D. Pearce Penhallow.

1. Preventable Forms of Mental Disease and How to Prevent Them.—E. Stanley Abbot discusses the more common forms of mental disease and says that some of these are wholly, some partly, and some not at all, preventable in the present state of our knowledge. Of the insane admitted to our hospitals about 24 per cent. are cases of dementia præcox; 16 to 20 per cent.

are cases of manic-depressive psychosis, and in this class the writer believes that fatigue plays a large part as a causative factor; 16 per cent. are cases of organic brain disease, and 14 to 15 per cent. may be classed as toxic psychoses. Alcoholic insanity, a wholly preventable psychosis, forms by far the largest part of this group. About 15 to 20 per cent. of the admissions are made up of small groups of miscellaneous psychoses, such as paranoia, epileptic insanity, etc., and many others are of doubtful diagnosis. The writer concludes that an indeterminate but very large amount of feeble-mindedness can be prevented; that of the insanities proper, the alcoholic and drug psychoses, and general paralysis can be absolutely prevented; that of the fatigue psychoses a large proportion, possibly half or three-quarters, might be avoided; that possibly a small proportion of the dementia præcox and arteriosclerosis psychoses might be obviated, and that a small proportion of the remaining forms might also be prevented. By proper attention to the requirements of eugenics, by the avoidance of undue fatigue and worry, by the prevention of syphilis and by a suppression of the general use of alcoholic drinks it would happen in the course of a generation that there would occur yearly, at a conservative estimate, a quarter to a third less insanity than at present and perhaps three-fourths less feeble-mindedness. The indirect benefits to the community in lessened cost to the State, in lessened crime and dependency, in better health and better efficiency, better standards of living, and better morality would be incalculable.

3. Acid Autointoxication in Infancy and Childhood.—John Lovett Morse sums up his review of the nature and origin of the acetone bodies by stating that they are formed from fat in the absence of carbohydrates or when the metabolism of carbohydrates is abnormal. They may also under certain conditions be formed from protein, the amount formed from protein being relatively unimportant in comparison with that formed from fat. The acetone bodies are not formed in the digestive tract. The deleterious effect of the acetone bodies is not due to any specific toxic properties which they possess, but to their acid character in general and to the power which they possess as acids in withdrawing alkali from the organism. Few who have not examined the urine of children regularly for the presence of acetone and diacetic acid realize how frequently they are present. They are found so often that no attention is paid to their presence unless there are some symptoms of acid intoxication. In making a diagnosis of acid intoxication better tests are the examination of the blood for the presence of abnormal acids, the determination of the amount of ammonia excreted in the urine and its relation to the total nitrogen excretion, and the determination of the carbon dioxide coefficient in the expired air. The most characteristic symptom of acid intoxication in infancy and childhood, outside of the presence of considerable amounts of acetone bodies in the urine, is a peculiar type of dyspnea, or rather hypernea, without cyanosis. Another evidence of acid intoxication which is very frequent in infancy is a diminution in the output of urine, complete anuria being not at all uncommon. A number of other symptoms may be present but are not pathognomonic of acidosis. The writer refers to the reports with reference to an epidemic of acidosis in Boston and the vicinity and says that it is evident from what we know of the etiology of acidosis that an epidemic of primary acidosis is an impossibility. In the vast majority of cases thus reported there was no justification for the diagnosis of acidosis. It was true, however, that some strange and unusual cases occurred during this period. It is also true that in a number of these cases large amounts of acetone bodies were found in the urine, and that, when these cases recovered, the acetone bodies first disappeared from the urine, while in the fatal cases they persisted. Dr. Morse cites several illustrative cases. He says that little or nothing is known as to the pathological changes. Degenerative changes have been found in the parenchymatous organs but nothing in any way pathognomonic. The logical treatment is the introduction of alkalies into the system, the best for this purpose being bicarbonate of sodium. This may be given by the mouth, by rectum, subcutaneously, or intravenously. The writer prefers to give it by mouth if it can be retained, making the concentration 1:30 or 1:60. In urgent cases dextrose in strength of 2½ per cent. in physiological saline solution may be given intravenously. It must be remembered that this treatment is simply for the condition of acid intoxication, and that the condition is not a primary but a secondary one.

New York Medical Journal.

April 22, 1916.

1. Orthodontia and the General Physical Health. Bernhard W. Weinberger.
2. Obstruction of the Pylorus in Infants. E. Mather Sill.
3. Intravenous Serobacterin Therapeutics. William Egbert Robertson.
4. Diphtheritic Paralysis. H. Brooker Mills and Joseph A. Mendelson.
5. Immobility of the Diaphragm Following Pleural Exudates. John H. Pryor.
6. Ischiorectal Abscess from a Fish Bone. J. F. Saphir.
7. Carcinoma. Guthrie McConnell.
8. Right Sided Abdominal Pain. Samuel Floersheim.
9. Gonorrheal Infection of the Urethral Glands. Albert Lefort.
10. Quinine and Urea Injections in Hyperthyroidism. Leigh F. Watson.
11. Medical Questions in the Pennsylvania Compensation Act. Harry A. Mackey.

1. Orthodontia and the General Physical Health.—Bernhard Wolf Weinberger discusses more particularly the subject of malocclusion, with reference to its etiology, effects, and treatment, and concludes that modern orthodontia requires a thorough knowledge of the physiological development of the dental arches and associated structures, the remote as well as the local etiological factors; proper diagnosis, classification, and treatment, based not only upon mechanical principles, but on physiological principles as well. A study of normal occlusion teaches that the full complement of teeth is absolutely necessary in order that the teeth may perform their proper function; extraction of teeth to accomplish this result is not only unnecessary but even criminal. Where the dental arches are arrested in their development, the development of the associated structures is also hindered. Therefore the orthodontist is dependent upon the rhinologist, and the rhinologist needs the assistance of the orthodontist. The disturbances of development begin early in life, consequently orthodontic treatment should be begun early, in order that cure may be completed by the time the second molars are in their proper position. Marked facial deformities can be corrected, allowing every child to develop normally, permitting functions of nutrition, digestion, and respiration.

2. Obstruction of the Pylorus in Infants.—E. Mather Sill reports six cases, three of pylorospasm and three of pyloric stenosis, and says that we are forced to admit that pyloric spasm plays a most important part in each group of these cases, because the symptoms in the great majority of cases are abrupt in their onset. Then again in a number of cases the symptoms will subside and the child will recover. He calls attention to the cardinal points in diagnosis—sudden onset, persistent projectile vomiting, constipation or obstipation, and steady loss in weight. He thinks a palpable tumor is not necessary for a diagnosis and is not always felt.

If a distinct tumor of the pylorus is felt surgery probably offers the best chance of recovery. Medical treatment offers much better hopes for cases in private practice than for dispensary or hospital cases. Such treatment should consist in breast milk from the mother or wet nurse, dilution of which may be necessary. When breast milk is not obtainable, suitably modified cow's milk may be given every half hour in small amounts at first and the amounts increased at lengthened intervals of feeding as symptoms improve. A milk formula low in fat and sugar should be given in the beginning. Unsweetened evaporated milk diluted with barley gruel is best suited for this purpose. The stomach should be washed twice daily with normal saline solution, 5 per cent. of bicarbonate, the temperature of the water being 110° F. Small doses of opium and atropine may act favorably in allaying the spasm. On the whole it is best not to rely too much on drugs in these cases. Posture is important. The head of the bed should be raised, or a pillow placed under the child so that it lies on a marked incline. After feeding the child must be kept quiet for at least an hour. The postoperative treatment consists in giving breast milk alternately with boiled water. Three hours after operation two teaspoonfuls of breast milk are given, followed in one hour by two teaspoonfuls of water. The next day one-half ounce is administered every three hours. Colon irrigations of a physiological saline solution are given after twenty-four hours, but sooner if there is distention with gas.

6. Ischiorectal Abscess from a Fish Bone.—J. F. Saphir relates the history of a patient who consulted a physician complaining of pain in the anus, chills, and some fever, aching in all parts of the body, and general malaise. His condition was finally diagnosed as ischiorectal abscess, for which he was operated upon. He continued to have a fistulous opening, for which he received treatment, and was finally subjected to another operation four months after the first when, in curetting the fistulous tract, a fish bone was discovered about two and one-half inches in length and triply bent upon itself. The writer points out that this case emphasizes the necessity in fistula cases for early diagnosis; for more frequent rectal examinations on the part of the family physician; for complete and more thorough opening of the canal, and probing of affected areas for branch canals, pockets, and foreign bodies; for trimming off the edges of the wound to prevent bridging and too hasty healing, and for proper drainage. The case also shows that the sphincter can be cut through without causing incontinence if cut at right angles to the muscular fibers, as well as the ability to get along without locking up the bowels for a week, without the use of opiates, and without the use of rubber hose.

The Journal of the American Medical Association.

April 22, 1916

1. Spasm of the Stomach and Duodenum, from a Roentgenologic Point of View. Russell D. Carman.
2. Sarcoma of the Base of the Skull. C. E. Royce.
3. Results from Blood Transfusion in the Treatment of Severe Posthemorrhagic Anemia and the Hemorrhagic Diseases. Edward W. Peterson.
4. The Antiseptic Action of Ether in Peritoneal Infections. John Sahba.
5. The Diagnosis of Enteric Fever (Typhoid and Paratyphoid A and B) by Agglutination Tests. Wilbur C. Davidson.
6. The Treatment of Human Rabies with Quinin and with Phenol. Frank S. Fedder.
7. Complete Syphilitic Alopecia, with Report of a Case. Loyd Thompson.
8. Diarsenol Versus Salvarsan. James A. Gardner.
9. Injury to Eye from Explosion of Golf Ball. Edward J. Bernstein.
10. A Protecting Ointment. Frank H. Jackson.
11. Typhoid in the Large Cities of the United States. Special Article.

1. Spasm of the Stomach and Duodenum from a Roentgenologic Point of View.—Russell D. Carman says that the favorite playground of spasm, whether of intrinsic or extrinsic origin, is the stomach. Three forms of spasm due to gastric ulcer may be distinguished: (1) The incisura or hour-glass stomach. The incisura is a spastic contraction of the circular muscle fibers in the plane of the ulcer, and shows as an indentation of the opposite curvature. Usually narrow, but of variable depth, persistent and permanent as to situation, it suggests at once the nature of the lesion and points toward its site. (2) Diffuse spastic distortion, to which gastric ulcer often gives rise, affecting a considerable extent of the pyloric segment. The stomach well outlined in its upper portion shades off into a poorly filled, vaguely outlined, antral area which may resemble the filling defect of a pyloric cancer. (3) Spasm of the pyloric sphincter. An ulcer situated in the pyloric segment is frequently accompanied by retention from a six-hour meal, as well as ulcers situated well away from the pylorus. This retention has been variously ascribed to impairment of peristalsis by the ulcer, to reflex pylorospasm, to gastric hypotonus, and to pyloric spasticity excited by hyperacidity. Cancer of the stomach aside from the organic filling may also produce more or less spastic distortion of the gastric contour. All the above spastic phenomena are intrinsic, that is, they originate from lesions of the stomach itself. Quite as frequent are the extrinsic spasms, which may be traced to a number of different sources. The differentiation of the types of spasm is best carried out by a process of exclusion and there are, according to the author, certain practical tests by which differentiation can be effected in most instances. Deformity of a gastric outline produced by an organic lesion is persistent, constant in situation, and unvarying in aspect. It cannot be made to disappear by giving an antispasmodic. Spasm resulting directly from an ulcer or cancer of the stomach is manifested usually in the segment involved, and especially in the area opposite the lesion. It is constant in situation. It is persistent and unvarying, though it is claimed that shallow erosions may cause intermittent spasm. If the spasm takes the form of an hour glass or incisura, its borders are clear cut, but if a large area is involved, it may show as an indefinite zone of incomplete filling. The lesion provoking the spasm may be seen as a niche, accessory pocket, or a neoplastic filling defect. The progress of the meal may or may not be retarded, depending on the extent and situation of the lesion rather than on the spasm. Spasm of any sort, whether intrinsic or extrinsic, disappears under general anesthesia; the practical test on which most roentgenologists rely for the exclusion of reflex spasm is the administration of belladonna or its alkaloid. In the duodenum a probable form of intrinsic spasm which has not hithertofore been emphasized is that accompanying duodenal ulcer. Intrinsic spasm plays an important part in the roentgenological evidence of duodenal ulcers, and in the absence of spasm no deformity of the bulb will be seen in many instances. It appears that in the presence of an unchanging bulbar distortion one can safely assume that the spasm is due to an intrinsic cause.

2. Sarcoma of the Base of the Skull.—C. E. Royce reports a case and writes that he has found reports of only twenty instances of sarcoma of the bones of the base of the skull. The patient complained for nearly two years previous to his death of headaches, varying from a dull pain in the left temple to a very severe pain radiating to the right temple and sometimes to the occiput. He also complained of roaring in the ears, dizziness and diplopia and gradually lost the sight, first of the left eye and then of the right. While the man

looked decidedly ill and sallow there were few definite physical symptoms aside from those just mentioned. A decompression over the left temporal region revealed nothing but increased intracranial pressure, hernia cerebri forming at once. The only point of interest in the necropsy was the head. The under surface of the brain presented a globular mass much more dense than the brain substance about 9 cm. in diameter and intimately connected with the periosteum of the sphenoid bone between the two lesser wings. The description of this tumor very well illustrated the nature of these tumors. In general they are well encapsulated, and separated from the brain substance by pia-arachnoid, altering the brain substance by pressure changes only. The cranial nerves sometimes give the only evidence of the presence of such a growth, as in those growths involving the Gasserian ganglion. Frequently, however, there is extracranial evidence appearing in the nasopharynx, the hollow portions of the bones adjoining the nasal cavity, the ear, or in metastases, especially to the cervical lymph nodes.

3. Results from Blood Transfusion in the Treatment of Severe Posthemorrhagic Anemia and the Hemorrhagic Diseases.—Edward W. Peterson. (See MEDICAL RECORD, April 15, 1916.)

4. The Antiseptic Action of Ether in Peritoneal Infections.—John Saliba writes that he has used ether for over a year as a routine in all cases of peritoneal infection that came under his care at the Elizabeth City Hospital, N. C. He makes an instillation of one ounce of ether into the peritoneal cavity for a child above four years of age and three ounces for an adult, and employs proctolysis and Fowler's position in the after treatment. In all the cases in which this treatment was used there were no untoward after effects that could be attributed to an overdose of ether excepting in two instances out of a series of 248 cases, and these cases were of an exceedingly grave nature at the time of operation. The writer reports five cases of appendicitis in which he employed this measure.

The Lancet.

April 1, 1916.

1. An Address on Gunshot Wounds and Injuries of the Spinal Cord. James Collier.
2. The Dissociation of Cutaneous Sensations in Injuries to Peripheral Nerves. Donald E. Core.
3. Gunshot Injuries of the Peripheral Nerves: The Syndrome of Compression. John S. B. Stopford.
4. Investigations of Strains of Tubercle Bacilli Derived from Sputum. A. Stanley Griffith.
5. Pain in Renal and Vesical Lesions: Its Characteristics, Its Anomalies, and Its Misguiding Manifestations, with Twelve Illustrative Cases. David Newman.
6. A Simple Percentage Chloroform Inhaler. Charles T. W. Hirsch.
7. Food Economies in Relation to the War. Harry Campbell.

1. Gunshot Wounds and Injuries of the Spinal Cord.—James Collier has made his observations on cases some time after the receipt of the injury. He makes no attempt to deal systematically with the subject, but brings up such items of his individual experience as he believes will excite interest and stimulate discussion. He classifies the lesions he has met as: (1) Direct lesions, or those caused by the passage of a missile across the spinal canal, whether it touch the cord or not. (2) Indirect lesions, those due to the indriving of bone, etc., into the spinal canal. (3) Secondary lesions, such as perithecal and intrathecal hemorrhage, medullary hemorrhage and thrombosis, meningitis and edema. (4) Remote lesions which may be found anywhere in the spinal cord, and chiefly near the surface; spots of necrosis, sieve like rarefaction, punctiform hemorrhage, edema, swelling of exons. Severe indirect injuries of the spinal cord may occur from the bursting of high explosive shells when the back is turned towards the force of explosion without any external wound occurring, without any detectable lesion of the bones, and without even bruising of the soft tissues. The writer cites three such cases. In these three cases and in several others of which he has heard the lesion was in the lower dorsal region. He comments particularly upon intrathecal hemorrhage pointing out that blood effused into a free thecal space finds its way with the stream of cerebrospinal fluid into the lower part of the thecal space around the cauda equina and lumbosacral enlargement, and if massive in quantity may extend that space and may cause such matting and cicatrization as may completely destroy by pressure and evascularization the cauda equina, and if it extend high enough the lumbar enlargement as well. Smaller effusions by clotting and condensing adhesions may cause local signs of nerve root involvement. In a severe condition of this kind the physical signs may resemble exactly those of a complete lesion of the cauda equina or lumbo-sacral enlargement. In the less severe lesion of this kind the physical signs may be difficult of explanation unless the possibility of intrathecal hemorrhage and its results are kept in mind. A second remarkable condition referred to was that of total necrosis of the distal segment of the spinal cord which was found in one patient. The lesion was a total transverse lesion at the level of the third dorsal segment. Another important point which experiences in this war have brought out is that the influence of the higher nervous system upon the reflex action and muscle tone of the spinal cord is strictly homolateral so far as the cord is concerned. That is to say that a total unilateral lesion of the cord produces complete flaccidity with loss of knee and ankle jerks and reduction of superficial reflex upon the side of the lesion. The writer suggests certain points by means of which a distinction can be made between root lesions and central lesions, brings out certain points of interest in connection with disturbances of sensibility and cites a remarkable case of cervical shivering in whom the cervical laminæ were smashed in upon the cervical enlargement. Finally he gives a number of interesting prognostic indications.

2. The Dissociation of Cutaneous Sensations in Injuries to the Peripheral Nerves.—Donald E. Core during the last eighteen months has carried out a series of observations for the purpose of comparing the relationship to each other of the areas of anesthesia to different forms of cutaneous stimuli resulting from injuries to the peripheral nerves. The study of complete nerve injuries was carried out in postoperative cases in which the completeness of the division is certain. The author has found that it is not always easy to make quite sure that the lesion is or is not complete in those cases which are termed "severe" from the extent and intensity of the symptoms alone. The types of dissociation are sometimes mixed so that it is not easy to assign their true cause, other than to say that they are not due to complete division nor to pure compression. The statement may be made, however, that it is possible in the great majority of cases to diagnose the condition of the affected nerve from the dissociation of cutaneous sensations met with. In complete division the loss to brush is more extensive than to needle-point (cutaneous pain). In pure compression the loss to brush is less extensive than to needle-point. A dissociation characteristic of complete division associated with one of compression is occasionally met with. This leads to a lateral displacement of the two areas of sensory loss; it is met with when more than one nerve is injured, and when the nerves involved supply contiguous areas of the skin. It indicates the complete division of one of these and the compression of the other. When such a

dissociation is met with in the territory of one nerve it is possible that it is the result of partial division of the nerve with compression of the undivided fibers. In the course of this investigation several cases were seen that differed from the majority in that intense pain was a prominent symptom. The patient did not give any precise description of its whereabouts, further than that it was in the palm of the hand or sole of the foot. It was found that this condition was associated with incomplete injury of the nerve affected, the nerves most commonly affected in this way being the median and great sciatic.

4. Investigations of Strains of Tubercle Bacilli Derived from Sputum.—A. Stanley Griffith has been making these investigations for the Medical Research Committee. He has analyzed the results obtained from 212 cases of phthisis pulmonalis. Of the 212 strains, 205 were of the standard human type; four were of an atypical human type and three were of the standard bovine type. The bacteriological characteristics of the atypical strains are described. On the clinical side the cases have not presented any unusual features. These atypical strains resembled the human type in their pathogenic effect on rabbits and guinea pigs and in their mode of growth on serum and glycerine serum. Microscopically they exhibited very irregular morphology, there being many long, curved and beaded forms both in the sputum and in cultures. They differed from the standard human tubercle bacilli in the way they grew on agar, potato, and broth. On these media they were dysgonic and save from very minor differences on glycerine agar they have displayed characters which would entitle them to classification with bovine tubercle bacilli. The cultural features of three of the strains were practically identical. In making his cultures he had used the simple method which he has previously described of obtaining the cultures direct from sputum by means of antiformin. Further experience with this method has served to show that the use of high percentages of antiformin with short exposure possesses advantages over low percentages with long exposure.

British Medical Journal.

April 1, 1916.

1. The Toxicology of Salvarsan. William Henry Wilcox and John Webster.
2. A Case of Gas Grangrene Exhibiting Unusual Proofs of Blood Infection. G. T. Mullaly and W. McNee.
3. Amputations at Base Hospitals in France. C. Gordon Watson.
4. After-treatment of Amputation Stumps. C. W. G. Bryan.
5. A Method of Treating Gunshot Fractures by an External Fixation Apparatus. B. Sangster Simmonds.
6. A Note on Dysenteric Arthritis. T. Gillman Moorhead.
7. [illegible] Note on a Disease Called "Bangpagga," Found in the Northern Territories of the Gold Coast. C. R. Patton.
8. An Observation in Pernicious Anemia. O. Leyton.

1. The Toxicology of Salvarsan. — William Henry Wilcox and John Webster call attention to the fact that at the outbreak of the war it was found desirable that dioxydiamido-arsenobenzol should be manufactured in England. The English product was known as "kharsivan," and before being placed on the market was submitted to the writers for careful chemical and physical tests; these gave practically identical results with salvarsan. The toxic action of kharsivan was certainly not greater than that of salvarsan. The writers describe in detail the chemical and physiological tests that they have made and the preparation of salvarsan and neosalvarsan for intravenous and for cutaneous injection. After an injection of 0.6 gram of salvarsan they have found arsenic in the blood one hour after the injection, the amounts found in two cases being respectively ½ and ⅓ mg. in 100 c.c. of blood serum. The blood clot was found to be almost free of arsenic, this being found only in the blood serum. Salvarsan is excreted mainly by the kidneys and bowel; it is present in the urine and feces for at least three weeks after an intravenous injection. In cases of death after the administration of salvarsan it is found in the abdominal viscera. A most interesting feature is that arsenic seems to be almost entirely absent from the brain and nervous system, so that symptoms of profound toxemia in cases of salvarsan poisoning are certainly not due to the action of the arsenic as such on the central nervous system. The writers investigated the influence of salvarsan on the milk of a lactating woman to whom the drug had been administered and found that arsenic was almost entirely absent from all the samples though the most delicate tests were employed. It thus appears that the benefits resulting to a syphilitic baby, who is suckling from an infected mother to whom salvarsan is given, cannot be due to the presence of salvarsan in the milk. The importance of a careful physical examination before the administration of salvarsan is emphasized and attention called to the contraindications, such as renal disease, in which the advisability of administering salvarsan depends upon the excretory efficiency of the kidney, disease of the circulatory system, serious bronchial conditions, and advanced degenerative conditions of the central nervous system. In discussing the treatment of salvarsan toxemia the authors emphasize the importance of prophylactic treatment. They advise an aperient the night before the remedy is administered and the avoidance of alcohol and tobacco for twenty-four hours before and after the administration. The patient should remain in bed on the day in which salvarsan is given and for twenty-four hours afterward. If there are slight symptoms the patient should be kept on a light diet and remain in bed until the temperature has become normal and all symptoms have cleared up. When serious symptoms, such as collapse, twitchings, stupor, or delirium occur, an intravenous injection of two or three pints of physiological saline solution should be given and repeated if necessary. Saline solution may also be given with advantage subcutaneously and by rectum. Where the blood pressure is not low venesection should be done. If the patient becomes comatose nourishment should be continued by stomach or nasal tube. In case of collapse strychnine may be given hypodermically every four hours in 1/40-grain doses, and oxygen, or oxygen passed through alcohol may be administered.

3. Amputations at Base Hospitals in France.—C. Gordon Watson refers to the fact that there has been considerable criticism of the flush amputation as performed at the base hospitals by surgeons at home. He states that, nevertheless, this method after a run of eighteen months is still the operation of choice in the class of cases for which it came into use, namely, severe sepsis threatening life. He shows the disadvantages of flap amputations under these conditions, and says that the advantage of flush amputations are: 1. Rapidity with minimum shock. 2. A plain open surface for dressing, which is favorable to the subsequent control of sepsis and which prevents pocketing. 3. Great diminution in the risk of secondary hemorrhage. 4. The operation provides the best mechanical relief of gas tension by dividing all the tissues at right angles to the muscle planes. 5. It allows a *temporary amputation to be performed close to the site of injury*, so that a permanent amputation can be performed later (when sepsis is under control) *a little above the injured area.* 6. In cases associated with fracture the proximal end of the bone can be, and should be, left intact (that is, not sawn through) and projecting beyond the plane of muscle section, thus minimizing the risks of osteomyelitis and also providing a useful medium (*a*) for the

application of pressure by means of dressing in case of hemorrhage (a practical point of great value), (*b*) for moving and fixing the limb, (*c*) for the application of extension to the skin. The secondary amputation should be done as soon as the sepsis is under control and the general condition of the patient is favorable to further amputation, and before extensive cicatrization has occurred. The details of the secondary amputation are important. If flaps are cut and muscle planes opened up, a "flare up" may be expected, but if the muscle attached to the bone is carefully separated from the periosteum by snipping with scissors until the amount of bone to be removed has been bared, and if the bone is divided without lacerating the granulation tissue, the operation can be done without any local or general reaction. The writer gives the details of the technique of the secondary operation, which experience has shown to contribute to its success.

6. A Note on Dysenteric Arthritis.—T. Gillman Moorhead finds that the occurrence of arthritis, single or multiple, as a complication or sequel of amebic dysentery has received very little attention at the hands of writers, though Phillips, Manson, and Osler have mentioned it. He says that in all cases of arthritis occurring in their troops a history of dysentery should be inquired for, and if such a history is obtained, a course of emetine should at once be ordered. He relates his experience with six recent cases in which emetine cleared up the arthritis most rapidly after other treatment had failed.

Berliner klinische Wochenschrift.

March 27, 1916.

Early Diagnosis of Progressive Paralysis.—Piotrowski refers to a published case of Nonne's in which beginning paresis was diagnosticated solely by the reactions of the cerebrospinal fluid. The diagnosis was confirmed by autopsy. Clinically the picture was quite negative and before the biological tests the case had been regarded as neurasthenia. The mind was perfectly intact, and the end of the case in suicide was in accord with a depressive cast of temper. In Nonne's case the form reactions all fell out positively. Since reading this case the author has made the same diagnosis from a single reaction, a positive WaR in the spinal punctate. The patient was a soldier, aged 33, who denied not only venereal disease but exposure to infection as well (this doubtless refers only to his former life as a recent gonorrhea is mentioned). There was an old history of genitourinary disease—cystitis, orchitis, etc., and a record to the effect that he had been treated in 1915 for nephritis, gastric catarrh, neurasthenia and hypochondria. Upon examination his mind reacted correctly, the eyes and the reflexes were normal and there was negative WaR in the blood. His moroseness passed into ideas of persecution, but only at intervals. At a later period the WaR was obtained in the lumbal punctate. Did this find justify a diagnosis of commencing paresis? Lues cerebrospinalis could be excluded, likewise tabes, by the terms of the reaction alone. A vigorous treatment was instituted with HgKI and salvarsan, but even in the midst of this the picture of paralysis suddenly emerged in stormy fashion, an acute hallucinatory insanity having developed with evidences of dementia, while the general state became cachectic. There were, however, few phenomena which implicated the cranial nerves, the pupils remaining normal. Mania with anger affects was excluded by the diminished intelligence. Dementia præcox hardly came in question. The positive WaR in the spinal punctate spoke either for a lues or metalues, and the former could be excluded through the failure of specific treatment. Hence metalues—save for its remote possibility of an unrelated psychosis—must in this case mean beginning paresis. The denial of venereal infection made when the mind was clear was at variance with some of the patient's mental content after he had become confused and self-accusatory.

Perforation of the Uterus with Prolapse of Intestines.—Heimann refers to the relative frequency of perforation of the uterus as a result of curettage for abortion. He relates the case of a woman aged 34, with history of three spontaneous births and a miscarriage. The puerperium had always been afebrile. When first seen she gave a history of three periods missed, with a profuse flowing during the past ten days and apparent escape of an ovum. The uterus was enlarged and the os admitted one finger. Remains of placental tissue could be palpated, and as these could not be detached with the finger an ovum forceps was used. In drawing forth the instrument a loop of intestine was found in its clutch. The patient was at once taken to the hospital. There were evidence of internal hemorrhage due to laceration of the mesentery. Median laparotomy revealed a perforation of the uterus at the left tubal angle, at which placental residues had been located. The torn away loop of intestine was resected after it had been drawn back into the abdominal cavity, and the tear in the mesentery sutured. The perforation in the uterus was closed with four catgut sutures. Despite the character of the intervention the patient made a good recovery.

Münchener medizinische Wochenschrift.

March 28, 1916.

Amyloid Degeneration as the Expression of an Infection with the Bacillus Capsulatus (Friedländer Group.)—Frank mentions Virchow's original discovery that amyloidosis follows upon chronic suppurations. Czerny apparently showed that sterile pus could produce this result in animal experiment, which seemed to exclude a bacterial origin. Krawkow, however, produced amyloidosis by means of cultures of pyogenic cocci, but only in rabbits; in dogs neither pyogenic cocci nor sterile (chemical) pus gave positive results. It was found later that bacteriotoxins and enzymes could be made to produce the lesions. The whole subject seemed to end in a *reductio ad absurdum.* The author therefore returned to studies of the clinical disease and in a man aged 60 he succeeded in cultivating a microorganism from the blood. This subject, previously intact, had contracted a pneumonia which had gone to the stage of gray hepatization with plastic pleurisy and diffuse amyloidosis. In this case prolonged suppuration could be excluded. The sole causal factor which could be accused was the so-called pneumobacillus of Friedländer which had been responsible for the pneumonia and was also present in the circulating blood. The specimens found, however, did not completely correspond with the Friedländer, but clearly belonged to the same group of capsulate bacilli.

Blood Transfusion in War.—H. Fischer of New York, who has been serving at Oppeln, reviews the subject of transfusion with especial reference to recent work in the United States. The suture method of Carrel is naturally not adapted to military surgery without modifications, and even these are open to the criticism that the transfused blood cannot be measured. In all competitive procedures, the blood must become exposed to the air, so that certain chemicals which can delay coagulation must be used. The best known of these anticoagulants are herudin, sodium citrate, sodium oxalate, peptone and

glucose, and of this number sodium citrate has shown itself the choice. Credit for the introduction of this resource must be given to Hustin of Belgium although R. Lewisohn of New York not only made the same discovery independently but developed its possibilities as a result of much experimental investigation. His report appeared in July, 1915, and the author employed the technique in one case before leaving New York. As he finds nothing to suggest that Lewisohn's method has been essayed in Germany he asks his German colleagues to test it. To his New York case already mentioned the author is able to add a German case in the Military Reserve Hospital at Oppeln. The patient had not been injured in battle, but was suffering from an incoercible hemorrhage which followed extraction of a tooth. Much blood had been lost and the patient was in a serious condition. Five hundred c.c. of blood from a healthy donor were at once infused. The immediate results were rise of temperature to 40° C. and rigors. On the next day, however, he was feeling perfectly well, and was able to sit up in his bed. The benefit was permanent.

Deutsche medizinische Wochenschrift.

February 24, 1916.

Treatment of Acute Inflammations of the Air Passages in Nurslings.—Peiper discusses influenza in its most frequent manifestation of acute rhinitis. The symptoms are nearly the same as in the adult. By the second or third day the nose is occluded and the nursling is of course quite unused to mouth-breathing and as a result the respiration rate is much augmented. Asphyctic periods are experienced. Nursing becomes almost impossible, as it leads to dyspnea. Aside from this the child may refuse the breast or bottle. The younger the infant the worse the symptoms, and in the newly born acute rhinitis is a menacing condition. Active treatment is always indicated. If the nose is obstructed with crusts, the latter must be softened with olive oil, to which menthol should be added (½ per cent.). Weak antiseptic and astringent solutions must be introduced on pledgets or by means of a camel's hair brush; or ointments may be used. For antiseptics hydrogen peroxide or weak boric acid, for astringents silver salts. A little suprarenin should be added. While the nostrils are clear the child should be fed. If all other methods fail, pure suprarenin solution (1:5000) must be used to clear the nostrils. Purulent discharge from the nose, mixed with blood or not, suggest very strongly that nasal diphtheria is present. No chance should be taken here, as the mortality in nurslings is over 50 per cent. The local treatment is practically that of simple rhinitis—hydrogen peroxide, suprarenin. The condition may pursue a tedious course. Acute rhinitis may extend backward and produce a rhinopharyngitis which is usually accompanied by angina; or these affections may begin *de novo*. The presence of the deep-seated inflammation is usually made evident by swelling of the lateral chain of cervical lymphnodes, and later of the deep neutral nodes. The nose must not be sprayed or irrigated and the rhinopharynx must be reached from below through the mouth. Antiseptic and astringent powders may be insufflated *per os*. Packs for producing sweating are of much value in rhinopharyngitis. After a cool bath the child is wrapped in a wet bath towel, covered with flannel and hot water bottles applied. Retropharyngeal abscess may complicate influenza and is ushered in by fever. The symptoms are steadily aggravated day by day as the pus is gathering and the picture is absolutely characteristic, the head being held on one side and rigid. Liquids are regurgitated and choking spells are common. The dyspnea is comparable with that of laryngeal stenosis. The diagnosis is usually possible with digital exploration and external palpation for lymphnodes. In doubtful cases the *x*-ray will solve the doubt. Erroneous diagnosis or unskillful treatment may lead to aspiration of escaping pus. The left index finger should be used as a guide for the knife, which must be properly protected save for the point. At the word of command, the instant the knife is withdrawn, the nurse bends the infant forward to prevent aspiration of pus. With sufficient opening relief is instantaneous.

Is Tetanus an Intoxication from Locally Elaborated Toxins?—Menzer asks this question and also "Does antitoxin act only antitoxically?" From its method of preparation bacteriolysins should also be produced. In the latter case bacterial endotoxins would be set free. In the present war tetanus there must be much mixture of infection, which does not occur in animal laboratory tetanus. Exceptionally one sees a generalized tetanus bacillemia, and this may be more common than is believed. Of thirty autopsies on subjects dead of tetanus, nineteen showed mixed infection of the wound, and in sixteen there were bronchopneumonic foci; meteorism was practically constant, and both phenomena are probably due to aspiration during the crises, although clinically the former were demonstrated in advance of the latter. Pulmonary infections often follow ordinary infected wounds. The author is inclined to attribute the lung complications of tetanus to this cause. It is possible that tetanus bacilli may be able in rare instances to cause metastases. To turn to the summation of the action of antitoxin, it has been noted that convulsions may be increased after an injection. The author attributes this behavior to the bacteriolytic action of the serum in setting free bacillary endotoxins. This should be especially noteworthy in tetanus bacillemia and metastases. In certain severe cases with probable hopeless outlook death seems to result more rapidly under antitoxin than under expectancy, especially the warm bath treatment which cannot avert death but seems to prolong life. Death in such cases may be due to a terminal sepsis. To sum up, war tetanus is often a sepsis, and at times perhaps a tetanus sepsis, so to speak. Antitoxin can liberate endotoxins if there is a tetanus bacillemia and aggravate the convulsions. In such cases it is better to use warm baths and isolation with a certain fixed amount of morphine.

Spinal Anesthesia.—L. L. Stanley has made observations on 280 cases of spinal anesthesia at the San Quentin prison, tropacocain being the agent employed. The series of cases includes operations for varicose veins, various operations on the legs, fistula in ano, hemorrhoids, operation on the scrotum, hernia, appendectomy, and gastroenterostomy. The writer describes in detail the method of procedure and, in commenting on the results, says: "In this series of 280 cases there has been no fatality. There has been comparatively little shock. Headache has occurred in only 8 per cent. of the cases. There has been no pneumonia following operations. There have been very few postoperative complications. There have been no permanent paralyses following the anesthetic. The period of convalescence has been shortened. With the relaxed muscles closing of the adominal muscles has been greatly facilitated. The blood pressure has fallen in most cases, but in the average case not to a dangerous degree. The height to which the anesthetic is effective is influenced by the length of time the patient is in the Trendelenburg position. The pulse rates is not influenced to any marked degree by tropacocain intraspinally." *Jour. of the Am. Med. Association.*

Book Reviews.

SURGICAL OPERATIONS WITH LOCAL ANESTHESIA. By ARTHUR E. HERTZLER, A.M., M.D., PH.D., F.A.C.S. Surgeon to the Halstead Hospital, Kan., the Swedish Hospital, Kansas City, Mo., and to the General Hospital, Kansas City, Mo. Second Edition. Price, $3.00. New York: Surgery Publishing Co., 1916.

THE first edition of this work appeared in 1912 and comprised 205 pages and 104 illustrations. The present volume contains over 100 additional pages and 69 more cuts. This growth is due largely to suggestions from readers that the work be amplified from a manual for "occasional" operators, devoted to relatively minor intervention, to a volume covering the entire field of local anesthesia, and adapted to the needs of capital surgery. Hence automatically, so to speak, the book becomes a manual of operative surgery so far as the latter is practicable with local anesthesia, this term including the intravenous method. The special technique is given for each class of regional operations, save that sacral blocking receives a separate chapter. Anociassociation is not considered, doubtless because it involves the use of resources other than simple nerve blocking. The book may be warmly recommended for the steady operator, occasional operator, and undergraduate.

A MANUAL OF PATHOLOGY. By GUTHRIE MCCONNELL, M.D., Assistant Surgeon, Medical Reserve Corps, U.S.N.; formerly Professor of Pathology and Bacteriology in the Philadelphia Dental College and in the Medical Department, Temple University; Formerly Demonstrator of Pathology, Medicochirurgical College of Philadelphia; Formerly Assistant Demonstrator of Histology, University of Pennsylvania, etc. Illustrated. Third edition, thoroughly revised. Price, $2.50. Philadelphia and London: W. B. Saunders Company, 1915.

THIS little manual has evidently proved useful, for it appears in a third edition, revised and brought up to date. The chapter on the blood is entirely new; other parts of the book have been rewritten; and, as a whole, the volume may be said to contain those points which are essential to the understanding of the subject of pathology.

MANUAL OF SURGERY. By ALEXIS THOMSON, F.R.C.S. Ed., Professor of Surgery, University of Edinburgh, Surgeon Edinburgh Royal Infirmary, and ALEXANDER MILES, F.R.C.S. Ed., Surgeon Edinburgh Royal Infirmary. Fifth Edition, Revised and Enlarged. Volume I, General Surgery. Pp. 801, with 289 illustrations. Volume II., Regional Surgery. Pp. 948, with 301 illustrations. Price per volume, $3.50 net. Edinburgh, Glasgow and London: Henry Frowde and Hodder & Stoughton; New York: The Oxford Press, 1915.

IN this edition of Thomson and Miles' well known surgery we have a most satisfying treatise covering all branches of general surgery. There are three volumes in the set: Volume I being devoted to general surgery, Volume II to regional surgery, and Volume III (the last edition of which was reviewed in the MEDICAL RECORD May 23, 1914) covers operative surgery. In the first volume all subjects are treated which would naturally be included in works on the principles of surgery, such as inflammation, suppuration, and processes of repair; ulceration, gangrene, tuberculosis, syphilis, and tumors; fractures and dislocations; injuries in general and as affecting the various tissues and regions; and diseases affecting the various tissues such as bone, muscle, blood vessels, nerves, etc. In this volume we find numerous evidences that the revision has been most painstaking; for views are expressed and other details given that show a familiarity with the most recent literature. This is particularly manifest in the chapters on the blood vessels, the nerves, and certain chapters on diseases and injuries of bones and joints.

In the second volume the various lesions affecting different regions are taken up in detail, often with a preliminary summary of the essential points in the surgical anatomy and suggestions as to the conduction of the examination. The discussion of the different topics is generally all that could be desired, and in this volume, perhaps still more than in the first, the authors have shown themselves to be in touch with the later opinions and suggestions of authorities. For instance, we find it emphasized that Paget's disease of the nipple and areola begins in the deeper structures rather than on the surface, as was long taught; and the sections on the spleen and pancreas and on gastric and duodenal ulcers show the influence of recent operative experience and reflect the latest views on etiology, symptoms, and treatment. The text devoted to the abdomen and the various intraperitoneal organs covers about 300 pages and is most valuable; for exhaustive discussion is accorded the more important subjects and considerable attention is paid to differential diagnosis and other topics of especial importance in the question of the moment. We note with satisfaction that in this volume we find an unusual number of references to the work of American surgeons.

BONE-GRAFT SURGERY. By FRED H. ALBEE, A.B., M.D., F.A.C.S. Professor of Orthopedic Surgery at the New York Post-Graduate Medical School and the University of Vermont; Visiting Orthopedic Surgeon to the New York Post-Graduate Hospital and Blythedale Hospital; Consulting Orthopedic Surgeon to the Mary Fletcher Hospital, Burlington, Vt., Sea View Hospital, N. Y., Muhlenburg Hospital, Plainfield, N. J.; German Hospital, Newark, N. J., and Waterbury Hospital, Waterbury, Conn.; Member of the American Orthopedic Association; Corresponding Member of the German Orthopedic Association, etc. Octavo of 417 pages with 332 illustrations, three of them in colors. Price, $6.00 net, Philadelphia and London; W. B. Saunders Company, 1915.

IT is perhaps hardly necessary to remind the reader that Albee's work has not only revolutionized the treatment of certain special types of fractures, but also many departments of bone surgery. While it is true that much experimental work had been done and that many of the cardinal priciples involved had already been worked out, it remained for Albee to grasp the latent possibilities in bone transplantation and to work out a technique and apply the graft, not on the surface or in the medullary cavity, but as an inlay.

In this book we find a complete exposition of the principles involved in bone work of this sort and a complete description of the author's armamentarium and methods in handling the various lesions in which he has found the inlay bone-graft of service. Tables of contents should seldom find a place in the review of a book, but in this case the enumeration of the chapter headings seems the best way to briefly indicate the nature and scope of the work. There are eight chapters, as follows: The fundamental principles underlying the use of the bone-graft in surgery; author's electric motor operating outfit and technique of usage; the bone-graft in the treatment of Pott's disease and other lesions of the spine; the inlay bone-graft in the operative treatment of fractures; operative methods for remodeling or ankylosing the hip joint; the inlay bone-graft for fixation of tuberculous knee joints; infantile paralysis; osteoarthropathy (Charcot's disease); the wedge graft for habitual dislocation of the patella; the bone-graft in the treatment of diseases and deformities of the foot and leg, and miscellaneous surgical uses of the bone-graft. From this it will be seen that the author has covered the subject most completely.

FIRST AID IN EMERGENCIES. By ELDRIDGE L. ELIASON, A.B., M.D., Assistant Surgeon University of Pennsylvania Hospital; Assistant Surgeon to the Howard Hospital; Assistant Surgeon to the Philadelphia General Hospital; Assistant Surgeon American Stomach Hospital; Former Lecturer on "First Aid and Emergencies" in the University of Pennsylvania Medical School, etc.; 204 pages. Philadelphia and London: J. B. Lippincott Company, 1915.

THIS work, of pocket size and provided with a thumb index, is intended for firemen, the police, lifeguards, sailors, boy scouts, explorers, factory workers, and the laity in general. The conception and execution are alike excellent, although many will differ with the author in regard to some of his statements. Does anyone seriously believe to-day, that a man in uremic convulsions can usually be recognized by ammoniacal exhalations? Recent authorities have shown that in markedly convulsive uremia, nitrogen retention is much more likely to be absent than present. In true azotemia convulsions are never pronounced and are often absent. Writers of reference works should seek to exclude traditional errors and past-truths, although there is a strong temptation to give some criterion rather than confess ignorance.

Society Reports.

COLLEGE OF PHYSICIANS OF PHILADELPHIA.

Stated Meeting Wednesday, March 1, 1916.

Dr. WILLIAM J. TAYLOR, VICE-PRESIDENT, IN THE CHAIR.

Hysterical Mutism, with Reports of Cases and Exhibition of a Patient.—Dr. G. HUDSON MAKUEN defined hysteria as essentially a disease of the mind—a psychical disease with many and varied psychophysical manifestations and symptoms, saying that it had been variously defined as "psychologic disaggregation," "a psychologic immobilization," a "psychologic forgetfulness," a "psychologic lesion," and a "disease of the personality." The feeling of reproach which formerly attached to the diagnosis of hysteria had been superseded by the present knowledge that hysteria was an actual rather than a purely imaginary disease. No disease, the author thought, so strongly emphasized the close relationship of the mind and body. Freud's psychoanalytic method now engaging the attention of the psychological neurological world and which consisted chiefly in an effort to ascertain the hidden causes of the various psychoneuroses by the use of so-called association tests and the analysis of dreams was mentioned. The differential diagnosis of hysteria and neurasthenia, always difficult, was made still more difficult by the frequently simultaneous occurrence in the same individual. Hysterical mutism was described as a form of mutism by no means common, bearing a close resemblance to the other manifestations of the disease, occasionally existing quite independently of all other hysterical symptoms, and differing from other forms of mutism in that it is of the profoundest character. As observed by Charcot, the mute is muter than mute. While Dr. Makuen had seen but two well defined cases of hysterical mutism, 71 cases had been collected by Marcel Natier of Paris more than twenty-five years ago. Dr. Makuen's first case was reported before the American Laryngological Association in 1906 and was one of so-called traumatic hysteria in which the hysterical symptoms resisting all the known methods of relief yielded to an emotional excitement of an explosive nervous attack in the form of a nightmare or hysterical fit, during which he uttered several sentences with normal and phonatory and articulatory precision, following which his speech had remained normal for the several years he had been under observation. The second case and that of the patient exhibited was a girl of 13, who had always been more or less subjective minded and melancholy. Three years before she had had four convulsive seizures, preceded for several months by failing health and with some loss of power in the limbs, presumably the result of severe fright. The mutism was complete and the futility of attempting to cure her in her home environment being evident she was about to be placed in a hospital when she was taken by friends to a religious camp-meeting and induced to "pray back" her voice. The enthusiasm and excitement were said to have been intense and the girl was urged to pray long and loud. Apparently this was the process necessary to bring about a mobilization of the child's psychical forces enabling her to speak with a laryngeal sound after many months of complete aphonia. While probably contended by those healing in this way that the cure was purely in answer to prayer, the author conceded that the exercise of faith was doubtless an important factor in the psychic change. A fuller history of the child's early illness showed a positive Wassermann test obtained on two occasions. While this finding might change the etiological importance of the original convulsive seizures and hemiplegia the author thought it scarcely explained the mutism with its peculiar history and manner of cure. In both cases Dr. Makuen thought the final successful issue had probably been made possible by the psychophysical training leading up to it, and was convinced that his failure actually to cure his patients was due to his lack of ability to arouse in them the psychic representations necessary for the production and externalization of the symbols of speech. He believed that if physicians were better practised in the art of psychotherapy there would be fewer so-called miraculous cures reported outside the pale of the regular profession, and thought it probable that a more accurate knowledge of hysteria as a disease would give physicians a better understanding of the phenomena of the more serious psychoses.

Dr. J. HENDRIE LLOYD spoke of the necessity of differentiating mutism, aphonia, aphasia, and dysarthria. He defined mutism as a condition in which speech was suspended, not abolished, in which the patient had not lost the power to speak, but simply the will—an affection entirely mental. In aphonia there was not the abolition of speech, but the abolition of voice. The manifestation of the affection was entirely in the larynx. Motor aphasia, he explained, was due to an organic brain affection, in which the patient had lost the memory or the power of making speech. The patient could still vocalize and might even be able to utter a few words, but his cortical speech centres were affected and he could not make words in his mind. Dysarthria also he described as due to a brain lesion, and as caused by a paralysis of the muscles of speech, the lips, the tongue, and the vocal cords; it was probably best seen in pseudobulbar palsy. Mutism was described as the symptom. as a rule, of a profound mental disorder. It was most commonly seen in the affections known as stuporous melancholia, or melancholia attonita. It might also be seen in the catatonic form of dementia precox. Cases had been recorded in which it had lasted for years to end in recovery. Dr. Lloyd had seen within a few days a case with a beginning second attack of atonic melancholia with mutism. In the previous attack the patient had remained mute for nearly a year and then recovered. While the mental state of such a patient was one of profound depression and negativism there was as a rule no dementia. The recovery of speech was sometimes sudden. Dr. Makuen's case raised the question whether it was really a form of dementia precox. One of the nice questions confronting neuropathologists was the possible relationship of syphilis to dementia precox. That mutism, as defined by Dr. Lloyd, might be a symptom also of hysteria seemed to be established by the testimony of some competent observers. Dr. Lloyd was so convinced of the comparative rarity of pure mutism in hysteria, that in any given case of alleged hysterical mutism he should want to be fully assured that the more grave psychoses, such as stuporous melancholia and dementia precox, had been carefully excluded. The organic speech defects, such as aphasia and dysarthria, in his opinion, formed a class apart and could not be discussed in brief space. It was usually not difficult, however, to differentiate them from the so-called functional disorders, such as mutism and aphonia.

Dr. ALFRED GORDON said that apart from the mental affections, such as catatonic forms of dementia precox and stuporous insanity, where the mutism could be easily detected and formed one of the symptoms of the general picture of the disease, the condition presented no difficulty in recognition. Illustrative of the association of functional disturbance in the field of sensory disorders with organic disease of the nervous system, a case was cited of a woman of thirty-two with a strongly positive Wassermann reaction of the blood and spinal fluid, in whom there were optic neuritis and palsy of the third nerve with total hemianesthesia on the left side and concentric contraction of the visual field on this side. Under stress of a severe fright the woman became totally mute. This tended to confirm Dr. Gordon's opinion that the hemianesthesia was functional in nature, in spite of the symptoms of organic involvement of the nervous system. Two weeks later the woman had a quarrel and immediately thereafter entirely recovered her speech. In Dr. Gordon's judgment, mutism occurring under such circumstances was in 99 per cent. hysterical. In Dr. Makuen's case he believed that parallel with the organic condition indicated by the Wassermann test and the presence of the Babinski sign there was a distinctly typical hysterical mutism.

Dr. CHARLES K. MILLS said that mutism as defined by Dr. Lloyd when present in a case of mental disease was due to a profound, delusional, depressive state, and that the existence of the delusional condition was usually recognizable by concurrent symptoms. If hysterical aphonia in a broad sense might be regarded as delusional, it was nevertheless distinctly different from the mutism of well defined mental disease and needed to be studied independently of the latter. In this case the aphonia or mutism was due to suggestion, it might be sometimes to autosuggestion, which, however, might have its origin in outside suggestion. In the hysterical case the suggestion acted especially upon the cerebral volitional mechanism rather than upon that logical mechanism the disorders of which produce the delusions or obsessions at the basis of insanity proper. Treatment should be instituted with these views in mind. Mutism of a delusional origin, if not self-limited,

at least seemed to be limited by influences beyond comprehension, and the question of treatment Dr. Mills regarded as difficult. Cases of true hysterical aphonia were open to more definite treatment, one based very largely upon the use of strong suggestion, which might, however, be accompanied by other methods. In his own practice Dr. Mills had frequently used a form of respiratory treatment, vocalizing associated with forced respiratory movements, which sometimes served to bring back speech, and had sometimes proved very efficacious in connection with other methods of suggestion. In the case of syphilitic hemiplegia, referred to by Dr. Gordon, there undoubtedly was not only a syphilemia, but in addition an hysterical or functional affection. With this in mind the explanation was not so difficult. The influences of the toxic agents upon the central nervous system were such as to reduce the cerebral powers of resistance and render the brain more susceptible to impressions from without and suggestions from within. Treatment in such a case should be directed to the relief of the blood state by the best possible modern methods and the use of strong suggestion.

Dr. JOHN H. W. RHEIN who had examined Dr. Makuen's case at his request had failed to find any evidence of hysteria; the examination had been negative, with the exception of the Babinski sign on the left side. In view of the fact that the Wassermann reaction was positive he felt justified in saying that the child probably had an organic lesion at the time she suffered from the hemiplegia. The symptoms referable to the mental condition and mutism he was inclined to explain as due to a specific psychosis plus syphilitic cerebral spinal involvement, or possibly, as suggested by Dr. Lloyd, a dementia precox. He did not believe the symptoms were entirely hysterical.

Dr. MAKUEN, closing the discussion, said he had hoped to have a fuller discussion of the differential diagnosis between hysterical mutism and motor aphasia. The only objective difference seemed to him to be that in the former the mutism was complete; in the latter, that the patient usually gave expression to more or less disconnected words and phrases. Contrary to Dr. Lloyd's observation that the patient had the power but not the will to speak, in the two cases studied by Dr. Makuen both patients desired very much to speak, both tried very hard to speak, but they seemed to have forgotten how; and, although they finally learned the articulatory movements of speech, they were unable to produce any vocal sounds. Dr. Makuen had concluded therefore that they had lost the necessary psychic representations for phonation. While, as stated by Dr. Rhein, the long illness in the case presented might be the result of the demonstrated specific infection, there could be no doubt concerning the hysterical character of the mutism. The changes in the color fields also, although not pathognomonic of hysteria, were at least suggestive of the condition. The mutism, however, could scarcely be anything other than hysterical. Supporting this, as stated in the paper, it was not unusual to have one or more hysterical symptoms in connection with organic disease.

A New Method of Injecting the Facial Nerve for the Relief of Facial Spasm.—Dr. GEORGE M. DORRANCE said that because of the rather confusing definitions found in the text-books of medicine, particularly those of a few years ago and because of the difference in treatment, he had taken the liberty of giving a brief differential diagnosis between facial spasm and tic, or so-called habit spasms. While alcoholic injections were ideal in facial spasm, they were entirely contraindicated in tics. True facial spasm was a reflex act occurring in a single muscle or group of muscles, and was thought to be due to some form of irritation in the muscles or the nerves of spinal or bulbar reflex arc. Tics, on the other hand, were voluntary contractions which had become a habit. The condition was a psychoneurosis and not a spasm. According to Patrick, "In spasm, the movement is an antomical disorder; in tics a physiological one." Facial spasm at the onset might be confined to one part of a muscle. Later it involved the entire distribution of the facial nerve, and no more, and was practically always unilateral. Tics never involved only a part of a muscle and rarely involved all the facial muscles at any given time affecting associated groups of muscles and varying these from time to time. They were often bilateral. Facial spasm was painful and incapacitating; tics gave a sense of relief and caused no interference with function. Spasms were found in the mentally strong; tics in the neuropathic type. Another form of tic occurring after facial palsy was that in which the tic was synchronous with the winking. This form, likewise, should never be injected. The reasons for devising a new method of injecting the facial nerve were that the older methods were inaccurate and dangerous. In the speaker's method it was impossible to hit the jugular vein, but it was possible to inject the nerve accurately at its foramen of exit from the skull. The needle (trocar and stylet style) which was 10 cm. long and 4 mm. thick, graded in centimeters, was inserted at the angle of the jaw (the skin having been painted with 5 per cent. tincture of iodine and anesthetized with 0.5 cm. novocain), and directed backward and upward until the point impinged upon the base of the mastoid. The handle of the needle was elevated and the point depressed, feeling the way carefully down and pushing the point backward and inward until the needle felt its way into the stylomastoid foramen. The styloid process prevented the needle from proceeding too far inward and obviated any possibility of hitting the jugular vein. If blood flowed upon removal of the stylet, one should not inject, as the point might have pierced a small vein. One should withdraw, clean the needle, and puncture again. If no bleeding occurred, a few drops of alcohol should be injected. Immediate facial paralysis occurred upon hitting the nerve. Two cc. more of alcohol should then be injected. The needle was removed and no dressing was required. Pain was relieved by hot compresses. The eye should be protected with goggles and washed out with boric acid solution at least twice a day. The method differed from the fifth nerve injection in the absence of trophic changes and corneal ulcers. The face should be massaged daily to prevent atrophy of muscles. The speaker had on several occasions injected one of the branches of the seventh nerve going to one or more muscles by sticking the branches anterior to the parotid. The results, however, here did not compare favorably with those of injection at the stylomastoid foramen. For injection at the stylomastoid foramen he used 2 cm. of 70 per cent. alcohol; for that of the branches, not over 50 per cent. alcohol. The spasm never recurred at the time of return of voluntary power, varying from a month to several years. In some cases there was no recurrence.

Dr. ALFRED GORDON, who in 1914 had presented before the college a paper with very similar title, concluded from his experimental work that a motor nerve treated with alcohol injected into the sheath or into the nerve itself suffered no damage to the nerve fibers and had found that there was complete restoration of the paralysis when the facial nerve was injected with alcohol. On the other hand, when the infraorbital was injected he had found marked trophic disturbance in the area of its distribution. This same observation was made regarding the sciatic nerve. A practical point gained from his experience regarding the point of injection was that the moment the facial nerve was touched there was flinching on the part of the patient. It was also to be noted that if the facial nerve is struck immediate and absolute paralysis will follow.

Dr. DORRANCE, in closing, explained his interest in the work because of failure in four or five instances in injecting the facial nerve. The paper, he said, contained nothing new, except the method of striking the nerve, which now made it possible to accomplish this without uncertainty. Because of the very greatly complicated condition of the whole subject Dr. Dorrance was disinclined to discuss it at the present time.

Some Facts and Fallacies Concerning Abdominal Adhesions and Bands.—Drs. GEORGE G. ROSS and J. BERNHARD MENCKE contributed this paper. The authors believed that much of the existing confusion concerning adhesions, bands, membrane, etc., might be obviated by the clearer grasp of certain fundamentals and an effort to distinguish between various groups and varieties of the structures instead of attempting to make one theory of etiology explain every case. All abdominal adhesions and bands they suggested might be grouped into the following classes: (1) Those adhesions and similar structures whose character and location made it evident that they were the result of peritonitis. (2) Those structures in which some doubt might exist concerning their being the result of peritonitis. The former class, they believed, gave more data upon which to form a conclusion; the latter formed the class about which discussion among surgeons was at the present centered. Membranes and adhesions not frankly the result of peritonitis might be again divided into (*a*) Structures whose character and location made it possible that they might be the result of fetal mal-

development; and (*b*) Similar membranes in localities in which this causation was not so plausible. The explanation of both these types which had been attempted upon numerous grounds was briefly outlined. The authors believed, since the existence of not infrequent antenatal peritonitis was proven, that adhesions found not to have been caused by a peritoneal inflammation after birth, were the result of a similar condition in the fetus; and that, whereas many of these adhesions were congenital, they were not developmental in origin. From such an origin, however, they excluded those instances in which there was but an accentuation or simple enlargement of a peritoneal membrane, fold or process normally present. From a consideration of the opinions of clinicians and experimenters it was shown that there was no agreement concerning these bands or membranes. Fallon even stated, it was said, that Jackson's membrane was always present and was a normal structure. With this view the authors were not at all in accord, and felt that there was every reason to believe that practically all of these structures were the result of peritoneal inflammation. Concerning adhesions frankly the result of one or more attacks of peritonitis after birth they believed the fact was frequently lost sight of that such adhesions were principally an effort of Nature to effect a cure or to limit infection. Progress in the diagnosis of abdominal adhesions was to be especially made by means of the *x*-ray. A less pleasing subject for contemplation was the present inability to deal effectually with such adhesions.

Dr. JOHN B. DEAVER, while believing that embryology played a rôle in the cause of adhesions, thought it played a much more conspicuous rôle with surgeons with little experience in dealing with peritonitis in all its stages; those operating upon many thousand cases were more impressed with the rôle played by inflammation. He had never been very much impressed by the rôle played by Jonnesco's membrane or Lane's kinks. Personally his results had been sufficiently satisfactory to warrant his continuing his present methods. He felt that men were governed by their experience.

Dr. ROSS, in closing, called attention to the fact that the word congenital, used in connection with the adhesions, was not offered in explanation; the adhesions were present at birth, while the ordinary conception of congenital was developmental. He did not believe the adhesions to be developmental, but inflammatory, although the inflammation occurred in the fetus. In dealing with adhesions he had followed all lines of procedure and all had been failures, and it was to him a cause of the greatest amount of chagrin to have these definite entities and not know how to handle them.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held March 21, 1916.

DR. NELLIS B. FOSTER IN THE CHAIR

A Case of Ochronosis Associated with Melanuria.—Dr. B. S. OPPENHEIMER reported this case. He said that the history of ochronosis was linked with several distinguished names. Fifty years ago Virchow described the first case and gave the name to the disease. Ochre meant pale yellow. It was not perfectly clear why Virchow selected this name since he himself described the cartilage and the cartilaginous structures as being black. The case he reported showed an aneurysm of the aorta and arthritis deformans. In 1902 Albrecht noted the occurrence of alcaptonuria with ochronosis; two years later Osler showed that the cases had clinical interest and could be diagnosed during life and should not be left entirely to the pathologist for study. He described the disease as it occurred in two brothers; one of them was for a time refused life insurance until it was discovered that he had not glycosuria but alcaptonuria; in fact, this was the first case of alcaptonuria recognized in the United States. The brother of this patient similarly was considered a diabetic in Paris, Carlsbad, Berlin, and London; but a short time subsequently Dr. Futcher of Baltimore determined that this was also a case of alcaptonuria. After the association of ochronosis with alcaptonuria had been established Ludwic Pick, in 1906, first drew attention to another group of cases in which ochronosis was accompanied by carbolic acid poisoning. Eleven such cases of ochronosis due to the use of carbolic acid wet dressings had now been recorded. In addition, Pick was the first to suggest the theory that the aromatic substances which were formed in the blood from the absorption of carbolic acid were converted into melanin by an enzyme "tyrosinase." In the cases of ochronosis with alcaptonuria, he believed that the homogentisic acid was the body that was attacked by the enzyme to form the pigment. Dr. Oppenheimer reported what was the fortieth case of ochronosis. The patient was a man forty years of age, occupation a presser. The family history was negative as far as the condition of ochronosis was concerned. There had been no consanguineous marriage such as had been recorded in previous case histories. Venereal history was denied. On being questioned about the peculiar bluish discoloration of the cartilage of both ears, he stated that it had existed previous to a frost bite. His urine had been reddish for the last three months and he had often noticed that his underwear was stained black. On further investigation it was learned that eight years previous he was supposed to have had sugar in his urine. His present illness dated back eighteen months, when bathing in the surf he experienced sharp, stabbing pains along the spinal column, radiating forward along the intercostal spaces to both hypochondriac regions. The pains grew more and more severe. He also had stiffness of all of his muscles of the back. He had a cough, never blood tinged until three weeks before admission, night sweats, loss of weight, and general weakness. He was treated for tuberculosis. Dr. Oppenheimer thought that the symptoms which were supposed to be due to tuberculosis were really the result of a chronic bacterial endocarditis, of which they found lesions at autopsy. When admitted to the Montefiore Home on November 8, 1915, he complained of lancinating pains along the spinal column, radiating along the intercostal spaces and to both sides of the abdomen. He had cough, occasional hemoptysis, obstinate constipation, and a general weakness. He weighed 104 pounds. Both ears showed a peculiar blue color. The sclera of both eyes also presented a faint bluish tint. In addition, there was a wedge-shaped bluish-black area of pigment on the sclera to the right of the cornea. Both axillæ were diffusely bluish-green in color. There was a pale, brownish diffuse pigmentation of the neck and temporal regions. The fingers and toes were clubbed. The lungs showed a few signs of suspicious tuberculosis. There was a loud systolic murmur. The arteries showed slight thickening. The liver was palpable 4 cm. below the free costal border and was very tender. The reflexes were all increased. The vertebral column was absolutely rigid and showed a general bow deformity. The spinal lumbar curve was obliterated. There was also a great deal of tenderness of this rigid spine, both in the thoracic and lumbar regions. The hip and shoulders appeared to be involved. The patient vomited persistently and ran an irregular sub-febrile temperature until the day of his death, when the temperature rose to 103° F. A half-hour after death the house officer noticed that the entire eyeball, exclusive of the cornea, had become a brownish-black color. On the day following it was noticed that the pigment in the axilla had become much darker than during life. The diagnosis was readily made on the greenish-blue color of the ears and axillæ, in addition to the black pigment in the urine that had been left standing. *X*-ray plates of the lesions were shown. Pathological specimens prepared by Dr. A. S. Kline were also presented. The essayist believed that the frequent association of chronic cardiovascular disease with ochronosis was very striking, especially in the alcaptonuria cases. This disease presented a well-defined picture, a disturbance in the intermediary metabolism, which resulted in ochronosis, in the deposit of pigment in the urine, possibly in cardiovascular changes, and finally in metabolic osteoarthritis and spondylitis.

Chemical Observations and Examinations.—Dr. N. W. JANNEY presented the results of chemical observations in this case. He stated that the urine was amber colored, of low specific gravity, turned black on standing. It did not contain albumin nor glucose, failed to rotate the plane of polarized light. Fermentation of the urine with yeast gave a negative result. Benedict's solution was reduced on heating, ammoniacal silver solution in the cold. With ferric chloride a green color was produced which immediately vanished. In the belief that alcaptonuria was present systematic efforts were made to isolate and identify homogentisic acid by the ester method of E. Schumm and by means of the lead salt. No homogentisic acid could be found. A colorless melanogen occurred in the fresh urine. On becoming alkaline

and standing exposed to the air the brown black melanin coloration developed. By a specially devised method, depending upon the insolubility of the melanin in 12.5 per cent. acetic acid, the pigment could be obtained from the urine, purified and analyzed. Similar preparations could likewise be obtained from the costal cartilages. The melanin was also present in various other organs and in the prostate in the form of concrements, one of which was analyzed. It was found to contain carbon, hydrogen, oxygen, nitrogen, sulphur, and iron. The analysis would be published later. Their results and the chemical behavior of the melanin classed it in the group of protein melanins, such as have been found in tumors. Alcaptonuria can be excluded in this case by the absence of homogentisic acid and the presence of a melanin pigment in large quantity which resembled the protein melanins.

In considering the pathogenesis of ochronosis the speaker said the known cases of ochronosis are divisible into three groups with regard to their origin, (a) ochronosis due to carbolic acid poisoning, (b) ochronosis due to alcaptonuria, (c) ochronosis cases in which both carbolic acid poisoning and alcaptonuria could be excluded. It seemed at first sight scarcely possible to find an explanation for the occurrence of the ochronosis syndrome in such divergent conditions. The work of Abderhalden and Guggenheim might, however, be applied to this problem. These authors showed that the ferment tyrosinase, which was present in various animal tissues, exerted a specific action on substances containing the *oxyphenyl* group, $C_6 H_3.O H$. Melanin formation from the simpler phenol bodies, homogentisic acid, the amino-acid tyrosin and tyrosin containing polypeptids was essentially one and the same process, consisting very probably of oxidative syntheses involving oxyphenyl groups. It seemed then entirely reasonable to assume, as Pick has already done, for the carbolic-acid poisoning cases, that fermentative melanin formation taking place in the presence of excessive amounts of substances containing oxyphenyl groups was the underlying cause of ochronosis wherever met with. The carbolic-acid and alcaptonuria group of cases could be readily understood and explained on this basis. In the third group of cases (c), to which the writers' ochronosis patient belongs, the cause of the pigmentation was not so apparent. In these it was probable that as a result of disordered protein metabolism, the formation of melanin pigments related to protein took place from complex substances having the nature of protein or polypeptids containing the oxyphenyl group. The probable relationship of the melanin in this case to the protein melanins could be adduced in support of this view. In this way it was thought that a satisfactory explanation of the pathogenesis of ochronosis might be afforded by means of which all cases could be brought into correlation. The speaker stated that the full report of the chemical examinations, as well as a detailed development of the theoretical considerations growing out of this study would appear later.

Dr. George R. Elliott said his attention had been called to the rigid spine in this patient at one of the hospitals in the city and he had also seen him at the Montefiore Home. The diagnosis of ochronosis had been overlooked until the patient entered the Montefiore Home. The careful study by Drs. Oppenheimer and Janney had added materially to the knowledge of the subject. The spinal rigidity in this case was interesting as not involving the cervical region. This he believed true of similar cases reported. Dr. Oppenheimer had referred to degeneration of the intervertebral cartilages and "lipping." The *x*-ray findings seemed to show considerable ankylosis of the lower three-fourths of the vertebral column, together with considerable new bone formation. This form of rigid spine clearly belonged to the so-called degenerative rather than to the true infective type of spinal rigidity. The primary lesion here was clearly intervertebral cartilage degeneration. All the other changes were added unto it. The so-called "lipping" and further new bone formation seen in the *x*-ray picture were the result of irritation, chiefly incident to the cartilage degeneration. In short a so-called osteoarthritis as contrasted with a true infectious ankylosis, as for example in the rhizomelic type where little or no new bone was thrown out, but where the small articulations were solidly glued together, so to speak, with no excess of new bone thrown about the edges of the articulations. There appear to be a number of different diseases giving rise to the type of rigid spine which this case illustrated, the so-called metabolic etiology where some chemical substance had played a part plus the irritation products incident to the trauma produced through the intervertebral cartilage degeneration.

An Aspirating Bougie for the Esophagus and Stomach.—Dr. Max Einhorn presented this instrument. He said that in the examination of patients with strictures of the esophagus they used the bougie. There was a certain disadvantage in the use of the olives that when they reached the place of obstruction they came away clear with nothing attached to them. Therefore it was desirable to learn what would be caught in the opening of a tube; if the latter were a stiffer instrument they would readily see if the parts touched contained decomposed material or not. Therefore he devised a so-called combined instrument: a bougie was provided with an opening to which an olive could be screwed on and the material aspirated; this instrument could be used either as a tube or as a bougie. The stilet could be placed in to facilitate its introduction, when removed, the syringe could be attached and the fluid contents aspirated. The insertion of the wire simply stiffened the tube a little.

Massive Hemorrhages from the Stomach Without Demonstrable Ulcer.—Dr. Alexis V. Moschcowitz read this paper. He said that early in 1916, within a period of less than one month, he had the opportunity of operating upon four patients upon whom the unequivocal diagnosis of a bleeding ulcer of the stomach had been made both by himself and by several very competent colleagues; and yet in none revealed the slightest tangible lesion of the stomach. In spite of the most unfavorable outlook in all these cases they all recovered. The fortunate outcome, however, while very gratifying, left him nevertheless with a sense of incompleteness of the study of the pathological data inasmuch as his observations were based only on the examination of the unopened stomach *in vivo*, and not on post-mortem material. The histories of the four cases he intended to report in full, but the time limit enabled him to report but the one he considered the most interesting.

A graduate nurse, 25 years of age, was admitted to the hospital on February 14, 1915. She had had typhoid fever nine years before. About three years ago, while in training school and on night duty, she suffered from a gnawing feeling in the epigastrium after a midnight meal, and this lasted for a few days. The test meals taken then were negative. She was considered to be a neurasthenic and she never was ill enough to be relieved of her duties. On February 14, at 2 P. M. she vomited about 30 ounces of blood and without any premonitory symptoms; at 4 P. M. a like amount of blood was vomited; at 9 P. M. 50 ounces of blood were vomited, and then the patient fainted. She was transferred to the hospital and treated with morphine, rest in bed, and ice-bag to the epigastrium. On the following day the hemoglobin was 47 per cent. In the evening she vomited 30 ounces of blood and again fainted. During the next three days there was a cessation of the vomiting, but there was a continuous melena, and, in consequence, the hemoglobin percentage dropped lower and lower. Operative interference was considered inadvisable on account of the patient's poor condition. On February 19 she was transfused by the citrate method by Dr. Lewisohn; this procedure raised the hemoglobin percentage from 35 to 55 per cent. In spite of this transfusion the condition became worse. She was so anemic that no accurate measurements of the hemoglobin percentage were obtainable with the Sahli instrument. Therefore operation was decided upon. At midnight on February 20, after a preliminary transfusion by Dr. Lewisohn, the stomach was exposed. All the viscera in the upper part of the abdomen were thoroughly explored, particular attention being paid to the stomach and duodenum. After carefully exploring the anterior wall of the stomach and finding nothing suspicious, the lesser peritoneal sac was entered through the gastrohepatic omentum and the entire posterior wall examined with the utmost care and absolutely nothing abnormal was found. In sheer despair Dr. Moschcowitz made a posterior retrocolic gastroenterostomy and excluded the pylorus. On the following day her condition was excellent. There was still some melena which could be readily accounted for by the bleeding which had occurred prior to the operation. On February 22 the condition of the patient was perfectly satisfactory; but at noon of that day the speaker was summoned to the hospital because the patient had gone into collapse and was in a moribund condition. An acute dilatation of the stomach was considered possible; therefore he passed a stomach tube and withdrew over a quart of bright red blood; this he followed by a lavage of the stomach with ice water until the

washings returned clear. From then the condition of the patient began to improve; the percentage of hemoglobin slowly increased and the patient was discharged from the hospital four weeks later, cured. The history and course of this case was typical of the "exulcerative simplex of Dieulafoy." The sudden profuse hematemesis without any preceding gastric symptoms was particularly suggestive. The post-operative course was also most interesting. The recurrence of an almost fatal hemorrhage thirty-six hours after operation was very interesting and would no doubt be regarded my many as proof of the failure of the operation. To his mind, however, such an argument was entirely erroneous. At best it might be argued that he selected in this case an indirect method to stop the hemorrhage. Had the condition of the patient been better he said he would have incised the stomach and searched for the bleeding point and with certainly a greater promise of success. Dr. Moschcowitz then gave a review of the literature on this subject.

Dr. MAX EINHORN said that he had been very much interested in the paper just read because he had paid considerable attention to this subject for some time and he had seen many patients with severe hemorrhages such as had been described and at operation nothing had been found to account for the condition. His cases, however, were only the exceptional ones where operation was required, but he had seen several of them. He reported the case of a lady who had been operated upon at the Mount Sinai Hospital one or two years ago. She had such severe hemorrhages that it was thought she should be operated upon. At operation nothing abnormal was found in the stomach. She made a good and complete recovery. But these cases did not explain to them that there was nothing present to account for these profuse, massive hemorrhages. Certain conditions should be borne in mind. One might be dealing with a hemorrhage due to a diapedesis from the gastric mucosa; there might again be an erosion in the stomach which led to an opening of a blood vessel. This was a condition described by Dieulafoy in which an artery was involved. And again there might be small ulcers present that were not discovered. Also there might be present ulcers which caused bleeding above or below the stomach; some might discharge blood into the esophagus. These were conditions which were not very frequent, but they might happen and should be borne in mind. In Dieulafoy's cases the symptoms of hemorrhage appeared in patients who were practically well. But the history of these cases did not separate those from gastric ulcer, cases in which there were no symptoms manifested before the hemorrhage. At operation they would find an ulcer anyway. Dr. Einhorn said he had been in Paris at the time when Dr. Dieulafoy spoke of a certain type of ulceration or erosion and brought out the point that in a great many instances they had to deal with some acute disease, such as pneumonia or appendicitis. Many of these cases were complicated by acute infectious diseases. They were accompanied with sudden and severe hemorrhages. What Dieulafoy had brought out tallied closely with the teachings of Rosenow to-day. In regard to the treatment Dieulafoy was of the opinion that all these cases should be operated upon, but Dr. Einhorn said he believed that many of these cases should not be operated upon in a hurry. If treated by rest and medical means there would follow a great percentage of cures, at least temporary cures. He believed that Dr. Moschcowitz would concur in his belief that in these massive hemorrhages four-fifths of the patients would recover if they were not interfered with. In closing Dr. Einhorn reported the instance of a lady who had these massive hemorrhages and severe pains. Because of the rise in temperature he was afraid of a perforation. However, operation was performed and nothing was found in the stomach to account for it. This patient died two days later, and what the real cause of her death was he did not know. No autopsy could be obtained.

Dr. RICHARD LEWISOHN said that he had been present at two operations performed by Dr. Moschcowitz when he had searched very carefully for the cause of the hemorrhage and could not find it. Hemorrhages might occur from small ulcerative processes. They all knew that at post-mortem examinations a very careful search of the organs of patients who had died from profuse hemorrhages of the stomach often failed to show the cause for the bleeding. There might be a small opening in one of the arteries in the arterial system in the stomach wall. Dr. Lewisohn referred to one of the cases somewhat more in detail which had been reported by Dr. Moschcowitz. The patient was three years of age. On account of repeated profuse hemorrhages from the stomach transfusion was done four or five times, but the bleeding recurred time and time again; it happily stopped ultimately, so that the child was able to leave the hospital in apparently a normal condition. Since then examination showed that she had an enlarged spleen and he thought this was a possible cause of the hemorrhages from the stomach. The question as to what should be done in these cases was a difficult one to decide. Many of the patients made a good recovery and in a short time without surgical interference. As Kussmal had stated, "these patients must be practically bled to death before they recover."

Dr. MOSCHCOWITZ closed the discussion. In answer to Dr. Lewisohn regarding the child who was two years and three months old and who was first admitted to the pediatric service of Dr. Koplik on April 24, 1914, with a profound anemia, a short systolic murmur at the apex, not transmitted, and a congenital dislocation of the left hip, etc., and who was discharged June 20 very much improved, but was readmitted on June 25, the physical examination revealed in addition to the previous findings and the anemia, a spleen which reached 1½ cm. below the free border of the ribs. He was quite in accord with the other remarks of Dr. Lewisohn, as Dr. Lewisohn described only a typical Dieulafoy's ulcer. Replying to Dr. Einhorn, he would say that all of the four reported cases were treated before the operation exactly by the method outlined by Dr. Einhorn. The treatment of gastric hemorrhages was not under discussion, but as the subject was mentioned, he would like to state that he was of the opinion that such treatment should be surgical; he saw no reason for the advice that gastric hemorrhages should be allowed to continue until the patient fainted from the loss of blood. As already stated, however, this was not under discussion, as it would be a topic sufficient unto itself.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

COLORADO STATE BOARD OF MEDICAL EXAMINERS.

January 4, 1916.

ANATOMY.

1. Locate and explain the selective point for the withdrawal of cerebrospinal fluid.
2. Compare the general characteristics of the radius and ulna.
3. Define the different types of movable joint, giving illustrations.
4. Explain why "the clavicle is more frequently broken than is any other single bone in the body" (b) What influences the position of the outer fragment?
5. Describe formation and location of superficial and deep palmar arches.
6. Name branches and distribution of celiac axis.
7. Name and describe valves of the heart.
8. Describe the liver.
9. Give surface relations of the liver.
10. Name and describe the ligaments of the uterus.

PHYSIOLOGY.

1. Follow a molecule of sugar through the process of its digestion and tell what becomes of it in the body.
2. What is the physiological rôle of the adrenals? Name their secretion. What tissues depend most on this secretion?
3. What is the origin of the red-blood corpuscle, and what becomes of it?
4. Describe the physiological formation and uses of lymph.
5. Give a detailed description of the physiology of the liver.
6. Define secretion and excretion and give example of each.
7. Describe the physiology of the mammary glands.
8. What do you understand by cutaneous senses?
9. Give the functions of the cerebellum, the pons, and the medulla.
10. Give the nucleus of origin, the function, and distribution of the fifth cranial nerve (trigeminus).

CHEMISTRY.

1. What is meant by chemical incompatibility in medicine? Give example.
2. What chemical test will show the presence of alcohol?
3. Write the reaction which takes place when hydrogen peroxide comes in contact with pus or blood.
4. What is nitroglycerin? Write the formula.
5. What chemical test will detect albumin in urine? Explain the test.
6. What are the properties of bases?
7. What is a chemical antidote? Give two examples.
8. What is the difference between an oxidizing agent and a reducing agent?
9. What relation do amines or amides bear to alkaloids?
10. Explain the formation of ammonia in urine.

TOXICOLOGY.

1. Give the possible sources, symptoms, and treatment of poisoning by phosphorus.
2. Name three indigenous poisonous plants. What are their symptoms?
3. Name two forms of fish poisoning.
4. Symptoms and treatment of snake venom.
5. Give the sources and symptoms of acute mercury poisoning.
6. Give the sources and symptoms of chronic mercury poisoning.
7. Sources, symptoms, and treatment of acute plumbism.
8. Sources, symptoms, and treatment of chronic plumbism.
9. Name two methods of rapidly emptying the stomach.
10. Differentiate between opium poisoning and three diseased states that resemble it.

PATHOLOGY.

1. Describe the pathology associated with cerebral apoplexy.
2. Describe injuries at the shoulder joint.
3. Describe pathology associated with pyloric stenosis.
4. Describe the pathology of pyelitis.
5. Describe the pathology of tumors of the bladder.
6. Define sapremia, septicemia, infarction, embolism, thrombosis.
7. Describe the pathology of gonorrheal arthritis.
8. Describe osteomyelitis of tibia.
9. Give the pathology of puerperal infection.
10. Give the pathology of carcinoma uteri.

ANSWERS.

ANATOMY.

1. Cerebrospinal fluid is withdrawn in the interspace between the third and fourth lumbar vertebræ. This interspace is wide, and is easily found, and the spinal cord terminates at the top of the second lumbar vertebra.

2. The *ulna* is the longer bone; it is larger at its upper extremity, it takes the chief part in the formation of the elbow joint. The *radius* takes a small part in the formation of the elbow joint; it is larger at its lower end, and it takes a large part in the formation of the wrist joint; the radius is also mainly responsible for the support of the hand.

3. *Types of movable joint.* (1) *Ginglymus*, a hinge-joint, which permits of considerable motion, but only in one plane, as the joint between the humerus and the ulna. (2) *Trochoid*, or pivot-joint, where the movement is limited to rotation, as the superior radio-ulnar articulation. (3) *Condyloid*, in which an ovoid head is received into an elliptical cavity, allowing of flexion, extension, abduction, adduction, and circumduction, as the wrist joint. (4) *Reciprocal reception*, or saddle-joint, in which the articular surfaces are concavo-convex, allowing of flexion, extension, abduction, adduction, and circumduction, as the carpo-metacarpal joint of the thumb. (5) *Enarthrodial*, a ball and socket joint, in which a globular head is received into a deep cup-like cavity, and allowing of flexion, extension, abduction, adduction, circumduction, and some axial rotation, as hip or shoulder joint. (6) *Arthrodial*, which permits of gliding movement, as the bones of the carpus on one another.

4. The clavicle is so liable to fracture, on account of its exposed position, and also because it is the only bony connection between the upper limb and the trunk. In fracture of the clavicle, the *outer fragment* is displaced downward by the weight of the arm, forward by the action of the pectoral muscles, and inward because the clavicle normally keeps the shoulder away from the chest.

5. The *superficial palmar arch* is formed by the ulnar artery, and is completed by the ulnar artery anastomosing with a branch of the radial (superficial volar or princeps pollicis). It gives off the four digital branches. The surface marking is a line drawn transversely across the palm from a point where the web of the thumb joins the palm. The *deep palmar arch* is formed by the radial artery, and is completed by the radial artery anastomosing with a deep branch of the ulnar. Its branches are the palmar interosseous, perforating, and palmar recurrent arteries. The surface marking is a line drawn transversely across the palm, one-half inch nearer the wrist than the superficial arch.

6. The *branches of the celiac axis* are the gastric, hepatic and splenic. The *gastric* supplies the stomach, esophagus, lesser omentum and liver; the *hepatic* supplies the liver, stomach, pancreas, great omentum, duodenum, and gall-bladder; the *splenic* supplies the spleen, pancreas, stomach, and great omentum.

7. VALVES OF THE HEART. "The *mitral* and *tricuspid* valves are situated in the left and right ventricles respectively, at the auriculo-ventricular orifices, and prevent the passage of blood into the auricles during the ventricular systole. They consist of flaps or cusps, two in the mitral, and three in the tricuspid, connected by their bases to the auriculo-ventricular orifices; their free margins and lower surfaces give attachment to the chordæ tendineæ which connect them with the musculi papillares. They are formed of a duplicature of the lining membrane of the heart, strengthened by connective tissue. During the ventricular systole, the pressure of the blood in the ventricles presses their free edges, or rather their marginal surfaces, together, the musculi papillares regulating the tension of the chordæ and preventing the valves from becoming retroverted into the auricles.

"The *semilunar valves* guard the aortic and pulmonary openings. They consist of three semicircular folds attached by the convex margin to the wall of the artery at its junction with the ventricle, and are formed by a reduplication of the lining membrane strengthened by fibrous tissue. In the center of each free margin is a little nodule, the corpus Arantii, the three meeting in the centre when the valves are closed. On each side of the corpora Arantii is a thin semilunar marginal surface, where the fibrous tissue is absent, called the lunula; these surfaces come in contact when the valves close."—(Ashby's *Notes on Physiology.*)

The *Eustachian valve* is found in the right auricle, between the anterior margin of the postcava and the auriculo-ventricular orifice. It is semilunar in shape and is formed by a duplicature of the lining membrane of the auricle. The *coronary valve* is a semicircular fold of the lining of the membrane of the right auricle; it protects the orifice of the coronary sinus.

8. "The *liver* is the largest gland in the body, measuring in its transverse diameter from ten to twelve inches, and its anteroposterior six to seven, and its thickest part about three inches, and weighing about three to four pounds. It occupies the upper part of the abdominal cavity, and the right hypochondriac, epigastric, and a portion of the left hypochondriac regions. Its upper surface is convex and rests against the diaphragm and a small portion of the abdominal parietes in front. Its lower surface is in contact with the duodenum and stomach, the right kidney and suprarenal capsules, and the hepatic flexure of the colon. It is divided by the longitudinal fissure into the right and left lobes. The liver has five fissures, five lobes, five ligaments, five sets of vessels, and is inclosed in a fibrous coat, continuous at the transverse fissure with the capsule of Glisson. It is also invested by the peritoneum, except at the attachment of the coronary ligament." (Young's *Anatomy.*)

The *fissures* are: umbilical, of ductus venosus, of gall bladder, transverse, and for inferior vena cava.

The *lobes* are: right, left, caudate, quadrate, and spigelian.

The *ligaments* are: Falciform, 2 lateral, coronary, round and of ductus venosus.

The *vessels* are: Hepatic artery and veins, portal vein, and hepatic duct.

9. *Surface markings of the liver.* "*Upper limit of right lobe*—is along line from right fifth chondrosternal

articulation extending horizontally outward to a point about one inch below the right nipple, thence downward to the seventh rib at lateral aspect of chest. Upper limit of left lobe—along line from right fifth chondrosternal articulation extending across sternum slightly downward to a point about two inches to left of gladiolus, on a level with left sixth costal cartilage. *Lower limit of right margin* corresponds with line passing from behind forward about half inch below the lower margin of the right thorax to right ninth costal cartilage, thence obliquely across the subcostal angle to left eighth costal cartilage. Lower limit of left margin is represented by a curved line, with outward convexity, from left eighth costal cartilage to a point two inches to left of gladiolus and on a level with left sixth costal cartilage. *Lower border of liver in middle line*—about half way between xiphoid cartilage and umbilicus. *Convex surface of liver on right side* corresponds with seventh to eleventh ribs inclusive; and in front, with ensiform cartilage and sixth to ninth costal cartilages inclusive. Authorities differ considerably upon the relations of the liver to the thoracic wall." (Bickham's *Operative Surgery*).

10. The LIGAMENTS OF THE UTERUS are: (1) *Broad ligaments*, which extend outward on each side from the side of the uterus to the side of pelvis. (2) *Rectouterine ligaments*, which extend backward from the intraperitoneal portion of the cervix uteri to the peritoneal investment of the rectum. (3) *Round ligaments*, which extend from the uterus just below the Fallopian tubes, through the inguinal canal to the labia majora. (4) The *ovarian ligaments*, which extend from the superior part of the uterus, behind the Fallopian tubes, to the inner end of the ovary. (5) The *uterosacral ligaments*, which extend from the highest part of the cervix uteri to the sides of the sacrum opposite the lower border of the sacroliac synchrondrosis.

PHYSIOLOGY.

1. Sugar is taken up by the columnar epithelium covering the villi of the small intestine, and is carried by the blood stream of the portal vein to the liver; here it may be stored; it is carried by the blood around the body. The chemical changes which occur either in the blood or liver or other tissues are many: a molecule of dextrose gives rise to two molecules of glyceric aldehyde, each of these yields a molecule of lactic acid, the latter becomes pyruvic acid, which becomes acetaldehyde, which in turn becomes acetic acid, and this is oxidized to carbon dioxide and water, both of which are excreted.

2. The physiological role of the adrenals is the production of an internal secretion, called adrenalin or suprarenin, or epinephrin. This secretion causes constriction of arterioles, raises blood pressure, and stimulates muscle fibers which are supplied by the sympathetic system. There is supposed to be some connection between the adrenals and the thyroid and pituitary bodies.

3. In embryonic life the red blood cells are formed in the area vasculosa. Later on they are formed in the pulp of the spleen; in postnatal life they are formed in the red marrow of bone. They are broken down in the liver and spleen, and the hemoglobin aids in the formation of bile pigments and the pigment of the hair, skin, etc.

4. *Formation of lymph:* There are three main theories: (1) Ludwig's theory, or the filtration theory, coupled with osmotic changes between the lymph and blood; (2) Heidenhain's theory of lymphagogues; and (3) Starling's theory of the permeability of the capillary walls, the second [illegible] by E. A. Bainbridge as follows: "Lymph formation is not a secretory process, but is brought about by purely physical proc[illegible] concerned in its production are (1) the capillary pressure, (2) the degree of permeability of the capillary walls, and (3) the metabolic activity of the tissues. There is no reason to suppose that in health the permeability of the capillaries alters, and therefore the formation of lymph is increased chiefly by variations in the first and third of these factors."

Function of lymph: (1) It conveys nutriment to all cells not directly reached by the blood; (2) in the intestines, it absorbs nutrient material (chiefly fat) and pours it into the blood stream for distribution; (3) it takes certain waste matters to the blood to be later eliminated by the lungs, kidneys, and skin.

5. "The liver plays an important part in the metabolism of all three classes of foodstuffs, especially in the preliminary changes which they undergo after absorption. In the first place, it serves as a storehouse for glycogen, which it forms from the carbohydrate absorbed during digestion, and which it converts into dextrose and returns to the blood stream in order to keep constant the percentage of sugar in the blood. Secondly, it desaturates the fatty acids reaching it from the fat depots, and prepares them for the further metabolic changes which occur in the tissues. Thirdly, it removes the amino group from part of the amino-acids absorbed from the digestive tract, converting them into keto- or oxy-acids and transforming the ammonia thus set free, and also that reaching it from the portal vein, into urea." (Bainbridge and Menzies' *Essentials of Physiology*.) Other functions of the liver: Secretion of bile; conversion of hemoglobin into bile pigment; formation of uric acid, creatinin, and antithrombin, and production of heat.

6. *Secretion* is the process by which certain organs (glands and membranes) separate from the blood certain constituents which are further elaborated and serve some further office in the economy. *Example*, saliva.

Excretion is a similar process by which there are removed from the blood waste materials, and products of no further use to the body, and which if retained would be injurious. *Example*, urine.

7. "The mammary gland consists of a number of lobules embedded in fat and areolar tissue. Each lobule is composed of alveoli lined by columnar epithelium, resting on a basement membrane. The ducts open on to the nipple, and are lined by cubical epithelium; their walls are said to contain unstriated muscular fibers. During the secretion of milk the superficial part of the cells, which contain fat globules and secretory granules, disintegrates and is cast off to form part of the secretion; during the periods of rest the cell substance is reformed. The development of the mammary gland during pregnancy is brought about by the influence of hormones derived from the reproductive organs. In the earliest stage of pregnancy a hormone appears to be formed in the corpus luteum, and if a Graafian follicle is artificially ruptured in an animal the mammary glands develop for a short time apart from pregnancy. Later, another hormone is possibly formed by the fetus itself, since it has been shown that injection of an extract of fetal tissue into a virgin rabbit leads to growth of the mammary glands. That their development is due to chemical and not to nervous influence is further indicated by the fact that, even after the severance of all nerves to the mammary gland, it undergoes normal development during pregnancy." (Bainbridge and Menzies' *Essentials of Physiology*).

8. The *cutaneous senses* include the senses of touch, pressure, warmth and cold, which were all formerly summed up under the general term, "sense of touch."

9. The *functions of the cerebellum* are: Co-ordination of muscular movements, and maintenance of equilibrium.

The *function of the pons* is to provide a bridge along which impulses may travel to and from the cerebrum.

The *functions of the medulla oblongata* are: (1) It is a conductor of nervous impulses or impressions from the cord to the cerebrum, from the brain to the spinal cord, also of coordinating impulses from the cerebellum to the cord; (2) it contains collections of gray matter which serve as special nerve centers for the following functions or actions: respiration, salivary secretion, mastication, sucking, deglutition, speech production, facial expression; it also contains the cardiac and vasomotor centers.

10. FIFTH PAIR OF CRANIAL NERVES. *Origin: Superficial*, from side of pons Varolii; *deep*, from medulla, and floor of fourth ventricle. *Distribution and functions: First*, ophthalmic; sensory to anterior half of scalp, conjunctiva, and skin of upper eyelid, cornea, skin of nose, mucous membrane of nose, lacrymal gland. *Second*, superior maxillary; sensory to conjunctiva and skin of lower eyelid, nose, cheek, upper lip, palate, upper teeth, and alveolar processes. *Third*, inferior maxillary; sensory to external auditory meatus, side of head, mucous membrane of mouth, anterior two-thirds of tongue, lower lip, teeth and alveolar processes of lower jaw. It is also motor to the muscles of mastication (temporal, masseter, two pterygoids), mylohyoid and anterior belly of the digastric.

CHEMISTRY.

1. By *incompatibility* is understood the simultaneous administration or combination of substances not suitable for such combination. *Physiological incompatibility*

occurs when two remedies are thus administered which offset each other's physiological action, so that they are inert. *Chemical incompatibility* occurs when remedies which are mixed together undergo chemical decomposition or explosion.

The following prescription shows chemical incompatibility:

℞
Ammonii carbonatis ʒj.
Syrupi tolutani,
Syrupi scillæ aa ʒiv.
Aquæ q. s. ad ʒvj. M.
Sig. Take half an ounce every four hours.

In this prescription, the syrup of squill contains free acetic acid, and this acting on the ammonium carbonate produces effervescence and forms ammonium acetate. If the prescriber intended this, the prescription is not considered incompatible.

2. *Test for alcohol.* If alcohol is heated with a small quantity of solution of potassium dichromate, and acidulated with dilute sulphuric acid, the mixture acquires an emerald-green color, and the peculiar fruity odor of aldehyde is evolved.

3. In the presence of pus or blood hydrogen peroxide is decomposed into water and oxygen: $2H_2O_2 = 2H_2O + O_2$.

4. *Nitroglycerin* is, chemically, trinitroglycerol or glycerol trinitrate; it is also called glonoin. The formula is $C_3H_5(NO_3)_3$.

5. *The heat and nitric acid test for albumin in the urine:*

"The reaction is first observed. If it be acid, the urine is simply heated to near the boiling point. If the urine be neutral or alkaline, it is rendered *faintly* acid by the addition of dilute acetic acid, and heated. If albumin be present, a coagulum is formed, varying in quantity from a faint cloudiness to entire solidification, according to the quantity of albumin present. The coagulum is not redissolved upon the addition of HNO_3.

"Albumin is soluble in alkaline liquids. The urine is therefore rendered acid, to prevent small quantities of albumin remaining in solution upon the application of heat, and thus escaping detection. Albumin is also slightly soluble in dilute HNO_3, therefore acetic acid is used. It is also soluble in a large amount of acetic acid, therefore the addition of acetic acid should be limited to the amount necessary to produce an acid reaction. A urine rich in earthy phosphates deposits, on boiling, a precipitate closely resembling that of coagulated albumin, therefore HNO_3 is added after heating. It dissolves the phsophates, but does not affect the albumin. Nitric acid cannot be used alone as a test for albumin, because, if the urine contain an excess of urates, these are decomposed upon the addition of acid, and the almost insoluble uric acid is precipitated, and might easily be mistaken for albumin."—(Witthaus' *Essentials of Chemistry*.)

6. *Properties of bases:* They have an alkaline taste, and a soapy feel; when acted upon by an acid they form a salt and water; in strong solutions they are corrosive.

7. *Chemical antidotes* act as such by uniting chemically with the poison and thus converting it into a harmless or insoluble compound. *Examples:* Salt with silver nitrate; magnesium sulphate with lead.

8. An *oxidizing agent* is a substance which is able to give up oxygen to other substances.

A *reducing agent* is a substance which is capable of removing oxygen from a compound.

9. The liquid, volatile alkaloids are amines; the solid alkaloids are amides.

10. *Ammonia in the urine.* "Ammonia is produced in the body as the result of protein catabolism, and most of it is converted into urea. Some, however, is used to neutralize the acids which circulate in the blood, and so the body is protected against "acidification." The excess of ammonia salts so produced appears in the urine, so that, to a certain extent, the amount of ammonia in the urine is an index of the amount of acid in the circulation."—(Lyle's *Physiology*).

TOXICOLOGY.

1. *Poisoning by Phosphorus. Sources:* Acute, from ingestion of poisonous doses of phosphorus, or match heads or rat poison; and chronic, affecting those who are employed in the manufacture of matches. *Symptoms of acute phosphorus poisoning:* "Eructation of gas having the odor of garlic. The mouth, when observed in the dark, is frequently faintly luminous (phosphorescent). After several hours, pain in the throat, a sense of heat in the epigastrium, nausea, and vomiting. The vomited matters are sometimes bloody and frequently luminous when agitated in the dark. The abdomen is tender, and there are diarrhea and colicky pains. After one or two days these symptoms cease, there remaining only pain in the back and limbs and a feeble pulse. Death sometimes occurs suddenly in from two to four days. Usually about the fourth day the patient becomes jaundiced, suffers from headache, insomnia, and retention of urine, rapidly becomes delirious and comatose, and dies."—(From Witthaus' *Essentials of Chemistry and Toxicology.*) *Treatment:* By an emetic or the stomach tube remove from the stomach all of the poison which has not been absorbed; then give old French oil of turpentine or potassium permanganate; the food must be free from fats and oils.

2. *Three indigenous poisonous plants:* Aconite, tobacco and stramonium.

Symptoms of poisoning by aconite usually manifest themselves within a few minutes; sometimes are delayed for an hour. There is numbness and tingling, first of the mouth and fauces, later becoming general. There is a sense of dryness and of constriction in the throat. Persistent vomiting usually occurs, but is absent in some cases. There is diminished sensibility, with numbness, great muscular feebleness, giddiness, loss of speech, irregularity and failure of the heart's action. Death may result from shock if a large dose of the alkaloid be taken, but more usually it is by syncope.

Symptoms of poisoning by tobacco: Weakness, nausea, vomiting, giddiness, cold and clammy skin, rapid pulse, dyspnea, and extreme depression.

Symptoms of poisoning by stramonium: Dryness of the throat, thirst, difficulty of deglutition and spasms upon swallowing liquids, face at first pale, afterwards highly reddened, pulse extremely rapid, eyes prominent, brilliant, with widely-dilated pupils, complete paralysis of accommodation, disturbances of vision, attacks of giddiness and vertigo, with severe headache, followed by delirium, occasionally silent or muttering, but usually violent, noisy, and destructive, accompanied by the most fantastic delusions and hallucinations. Usually the urine is retained, and the body temperature is above the normal. The delirium gradually subsides, and the second stage, that of coma, is established, with slow, stertorous respiration, and gradually failing pulse, until death occurs from respiratory or cardiac paralysis, or sometimes in an attack of syncope during apparent amelioration.

3. *Two forms of fish poisoning:* Poisoning by a species of tetrodon, and by mussels.

4. *Symptoms of snake venom:* Intense shock, severe pain in part bitten, area of pain rapidly increases, local partial paralysis, intense swelling of the injured part which later becomes livid and gangrenous, fainting, vomoting, small frequent and irregular pulse, hemorrhages, bloody stools and urine, lethargy, difficult respiration, convulsions and death.

Treatment: Thoroughly suck or cup the wound; cauterize or excise the part; subcutaneous injection of potassium permanganate; iodine locally; antivenene; coffee; stimulants; electricity; keep the patient warm and quiet; transfusion of blood, or intravenous injection or normal salt solution.—(From Brundage's *Toxicology.*)

5. ACUTE MERCURIAL POISONING. *Source:* Ingestion of calomel, corrosive sublimate, or other mercurial preparations; external application of mercurial ointment. *Symptoms:* A burning pain in the mouth, pharynx, and stomach; the mouth and tongue are white; the vomitus is white, with shreds of mucous membrane, and tinged with blood; bloody stools, also salivation may occur.

6. CHRONIC MERCURIAL POISONING. *Source:* Certain occupations in which mercury is used (such as silvering of mirrors). *Symptoms:* Teeth tender and becoming carious, ulcerations of mouth, anemia, tremor or palsy, slow pulse, an eczematous eruption.

7 and 8. The most *common sources of lead poisoning* are the following: "The contamination of drinking water from lead pipes. Contamination of articles of food or drugs by contact with leaden vessels, or from being enclosed in tinfoil containing an excess of lead. Drinking beer, cider etc., which has been drawn through leaden pipes or allowed to stand in pewter vessels. The ingestion or constant handling of lead or its compounds, as the acetate, nitrate, carbonate (white lead—painter's colic), Goulard's extract, etc. The use of hair dyes containing lead.

The *symptoms of acute lead poisoning* are: "Metallic taste; dryness of the throat; thirst; severe colicky ab-

dominal pains, referred particularly to the umbilical region, and relieved by pressure; pulse very feeble and slow; great prostration; constipation; urine scanty and red; violent cramps; paralysis of the lower extremities; convulsions; and tetanic spasms."

9. *Two methods of rapidly emptying the stomach:* (1) The use of the stomach tube; (2) hypodermic injection of apomorphine hydrochloride, gr. 1/10.

10. The following table (from Eisendrath's "Surgical Diagnosis") gives the diagnosis:

APOPLECTIC COMA.	UREMIC COMA	ALCOHOLIC COMA.	OPIUM POISONING.
Deep coma; sudden onset. If any injury, only a scalp wound.	Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused by supraorbital pressure unless very profound.	Can be aroused unless very deep.
Pupils unequal or dilated. Contracted in hemorrhage into the pons.	Albuminuric retinitis.	Pupils normal or somewhat dilated.	Pupils contracted to pin-point size.
Pulse full and slow, often arteriosclerotic high-tension pulse.	Pulse rapid.	Pulse more rapid than normal and full.	Pulse rapid, may be irregular.
Respiration slow and irregular.	Respiration frequent and irregular.	Regular respiration.	Respiration very slow —may be 6 to 8 per minute.
Temperature higher on paralyzed side, but lower in rectum.		May be low or normal.	
Urine contains trace of albumin, but may be same as in uremia.	Urine shows albumin, casts, and low urea percentage.	Normal.	Normal.
Hemiplegia with convulsions on one side.			

The *treatment of acute lead poisoning* consists in removing the cause and administering the antidote, "magnesium sulphate, which brings about the formation of the insoluble lead sulphate, while the purgative action of the magnesia is also useful. It should be preceded by an emetic, or by the use of the stomach tube." —(Witthaus' *Essentials of Chemistry.*)

Chronic lead poisoning: "The early symptoms are often very obscure. Various symptoms of indigestion are first noticed with progressive emaciation and mental depression, with anemia and a peculiar whiteness of the skin probably due to contraction of the peripheral capillaries. Sometimes a blanching of the fundus of the eye or amaurosis due to a similar contraction of the capillaries is an early symptom. Then a twisting, grinding pain around the umbilicus comes on and gradually becomes more severe. It may be relieved by pressure. The abdomen is hard and restricted. As a rule the bowels are obstinately constipated, but occasionally there may be scanty, hard, clay colored, painful evacuations. The urine is diminished or suppressed, the skin sallow, cold, and clammy, the breath fetid, mouth and throat dry, and a blue line on the edge of the gums next the teeth, most noticeable next to the incisors, which are discolored and brown. This blue line may be developed as early as three days after ingestion of the poison. The gums are tender and bleed easily. The pulse is generally decreased in frequency. As the case progresses, or after repeated attacks, paralysis begins to appear, affecting chiefly the extensor muscles of the forearm, though not limited to them, sometimes extending to the interossei, and generally affecting first those muscles which are most imperfectly supplied with blood. The paralysis is symmetrical, generally affecting the corresponding muscles in both arms, and is often preceded by numbness of the fingers and hands. The affected muscles become more or less atrophied, leading to general debility ("lead palsy"). The nervous system becomes affected, and headache, vertigo, amblyopia, amaurosis, delirium (sometimes furious) and epileptoid convulsions precede death. Albuminuria is frequently, and jaundice occasionally, present. In many cases severe pain in the joints is one of the most prominent symptoms, probably due in some manner to interference with the functions of the kidneys.

Treatment: "For the removal of lead from the tissues with which it has entered into a more or less stable combination potassium (or sodium) iodide in doses of 10 grains three times a day has long been recognized as one of the best. It is but just to say that its efficacy has recently been called in question by some of our best clinicians. Warm sulphur baths have been found useful. Atropine or morphine and atropine may be given hypodermically for relief of the colic. Cocaine hypodermically has also been successfully used to relieve both the pain and constipation. Calomel and gamboge, castor oil, or olive oil, may be given to overcome the constipation. Belladonna or hyoscyamus may be added with advantage to either of the cathartics. Alum sometimes acts well as a cathartic in these cases. As a prophylactic measure tea as a drink and a dose of sulphur occasionally, both act by precipitating lead from solution."—(Riley's *Toxicology.*)

PATHOLOGY.

1. In *cerebral apoplexy* "the internal capsule is almost always involved. The pons is quite frequently the seat of hemorrhage, and occasionally the cerebellum, but very rarely the medulla. The size of the involved area depends upon the amount of blood extravasated and upon the density of the tissue. It is more diffused in the white than in the gray matter. The effects of the hemorrhage may be primary or secondary. Primary effects are tearing and compression of the brain-substance. If the patient does not immediately die, softening occurs. As a result of the staining by the retained hemoglobin the area is known as red softening.

Shortly after the blood escapes it undergoes coagulation, forming a cerebral hematoma. This acts as a foreign body and sets up an inflammatory reaction, with more or less hyperplasia of the surrounding neuroglia. The fluid portion finally becomes absorbed, the corpuscles broken down, and the pigment liberated, which stains the walls of the cavity. Occasionally a cyst filled with a clear fluid may form. If all fluids are absorbed, the walls of the cavity may come in contact and a scar result.

Other primary effects are distant ones in the form of paralysis, both motor and sensory, and generally on the side of the body opposite to the seat of the hemorrhage. Although there may be a considerable return of the lost faculties, yet in a majority of cases permanent damage is done. This is due to the secondary effects—the *secondary degenerations.* These are systemic, and follow the directions of the nerve impulses. The commonest degeneration is one of the pyramidal tracts. The optic tract and fibers from the temporosphenoidal area may also be involved. In the brain there is finally loss of nerve-cells, without, however, destruction of the neurogliar fibers."—(From McConnell's *Pathology.*)

2. The commonest injury of the shoulder joint is dislocation. When this occurs there may be rupture of ligaments, muscle fibers, nerves and vessels; the joint and neighboring tissues are infiltrated with blood; if the dislocation is reduced promptly, the blood is absorbed and repair is brought about by proliferation of connective tissue.

If the dislocation is not reduced within a certain time, the tissues that are pressed upon by the bones may atrophy; the articular end becomes covered with connective tissue derived from the lacerated capsule, the cartilage becomes fibrilated, and new bone may be formed; these various changes may be followed by ankylosis or may result in periostitis.

3. *Pathology of congenital pyloric stenosis:* "The essential lesion is the thickening of the pyloric ring from hyperplasia of the circular muscular fibers. The pyloric canal assumes a funnel shaped or a cylindrical form, hard and incompressible. On section its walls are thick and dense. The pyloric orifice may be so contracted that only the passage of a fine probe is possible. The duodenal end of the pylorus projects into the

duodenum, and suggests the appearance of the cervix uteri projecting into the vagina. The mucous membrane of the pyloric canal usually shows one large, single, longitudinal reduplication with many smaller parallel folds. This longitudinal reduplication or projection of the mucous membrane still further increases the stenosis. The muscular hyperplasia fades gradually away on the stomach side of the pylorus, but terminates rather sharply at the pyloric ring, although it is possible for muscular hypertrophy to extend outward a short distance into the duodenum. The longitudinal fibers are but little affected, although in a few instances the muscular layer shares to a small degree in the hyperplastic process. The stomach itself is usually dilated. Its wall in the pyloric half shows evident muscular hypertrophy, which fades away toward the fundus so that the wall of this latter portion of the stomach is of normal thickness, or may even be thin."—(Lockwood's *Diseases of the Stomach.*)

4. *Pathology of pyelitis.*—"A diffuse inflammation spreads upward from the pelvis of the kidney along the straight tubules. It may lead merely to formation of fibro-cellular tissue, or there may form small abscesses, cylindrical in the medullary, more spherical in the cortical portion, which show as streaks and points of pus when the gland is cut. Taken alone the latter are indistinguishable from the minute abscesses of pyemia. Sometimes a large collection of pus, even 3 or 4 pints, forms in the pelvis of the kidney. Such a collection distends the pelvis and the capsule of the kidney, dilates the calyces, and flattens the renal tissue against the circumference, while coincident nephritis reduces it to fibrous tissue. Septa remain to mark the divisions between the calyces, and the whole organ forms a large loculated abscess. In the abscess cavity stones are often found. Bacterial decomposition of the urea sometimes renders the urine alkaline, and then phosphatic concretions will form on the wall of the renal pelvis, or on the stones."—(From Bain's *Medical Practice.*)

5. *Tumors of the bladder.*—"*Polypoid* thickenings of the musoca are quite frequently found in chronic inflammations of the bladder. *Fibromata* generally appear as small villous outgrowths, covered by epithelium; they are very vascular and may give rise to such considerable hemorrhage that grave or fatal anemia ensues. Occasionally bits of the papillary growths may break off and be passed through the urethra or they may be large enough to cause obstruction. These tumors are benign, but there is a possibility of their becoming malignant. True connective-tissue tumors, particularly sarcoma, are rare. *Carcinoma* in the form of a squamous epithelioma is an infrequent primary tumor. It occurs as a cauliflower mass that frequently undergoes ulceration. The neighboring organs are generally involved by contiguity. Secondary *carcinoma* may follow malignant disease of the sexual organs, of the rectum, or of the prostate by direct extension. The bladder is very rarely the seat of a metastatic growth. Cysts are very infrequently found."—From McConnell's *Pathology.*)

6. *Sapremia* is the condition due to the absorption of putrescent substances, but not of the microorganisms which cause them.

Septicemia is the presence in the blood of microorganisms (usually pyogenic) but without the development of metastatic abscesses.

Infarction is the plugging up of an end artery and so causing an area of degeneration.

Embolism is the obstructing of a blood vessel by the lodgment of a foreign body.

Thrombosis is the coagulation of blood within the vessels during life.

7. *Gonorrhea arthritis.*—"One or several joints may be involved, generally the former, the knee, ankle, and wrist being most frequently affected. The inflammation may be acute or chronic, and varies in extent as well as in degree. Although the synovial membrane alone may be involved, the ligaments and periarticular structures are very apt to be thickened and infiltrated. Except in the mildest cases, the pain is severe and there is fever. Suppuration may occur, and ankylosis is very prone to follow even the milder cases."—(Stewart's *Surgery.*)

8. Osteomyelitis of Tibia. *Pathological Changes:* "The area of the medulla affected becomes hyperemic; exudation occurs in the cancellous spaces, Haversian canals, and under the periosteum. Pus soon forms in these three situations. If the disease begins in the superficial part of the bone, the pus may only be subperiosteal, the deeper part of the bone escaping, though large areas of the superficial portion may die from the combined action of (1) stripping up of the periosteum by the pus, (2) strangulation of the vessels in the bone by the pressure of the exudation, and (3) the toxic action of the bacterial products. . . . When the disease begins in the deeper layers of the bone, the pus may reach the periosteum, or extend along the medullary cavity, so that the veins becomes filled with septic thrombus, which may be disintegrated and carried off as septic emboli (pyemia). There is profound toxemia, and necrosis of the whole diaphysis may occur. . . . If the infection is mild, a chronic abscess may be formed in the cancellous tissue. The usual course of an acute case, if a patient survives, is that there is some necrosis of the shaft of the bone. The abscess bursts externally, and there are numerous openings in the skin leading through openings (cloacæ) in the periosteum and involucrum down to the sequestrum. The sequestrum becomes loose in six weeks to six months."—(From *Aids to Surgery.*)

9. *Pathology of puerperal infection.*—"As a result of injury to the uterus or vagina during or after delivery and the action of bacteria which may gain access to the tissues in this vulnerable state, the puerperal uterus is liable to become the seat of a series of severe and often destructive inflammatory and necrotic changes. These may be confined to the uterus; they may induce serious alterations in surrounding parts; they may lead to an involvement of the peritoneum or to septicemia or pyemia and its accompanying lesions in the most distant parts of the body. In some cases a more or less extensive gangrenous inflammation of the mucous membrane and the underlying parts may lead to the casting off of larger and smaller shreds of necrotic tissue and the formation of deep and spreading ulcers, which may be accompanied by severe parametritis and fatal peritonitis.

In other cases the inflammation is membranous and may affect the vagina, leading to necrosis, gangrene, ulceration or peritonitis. In connection with either of the above forms of inflammation, or without them, there may be thrombosis of the uterine sinuses, purulent inflammation of the veins, suppuration and abscess in the uterine wall, suppurative inflammation of the ovaries and tubes, and, owing to the generalization of the infectious material, metastatic abscesses in the lungs, spleen, kidneys, etc. Or acute pleurisy, ulcerative endocarditis, erysipelas, purulent inflammation of the joints, hyperplastic swelling of the spleen and lymph-nodes, thrombosis or thrombo-phlebitis of the saphenous veins, etc., may follow. In some cases which rapidly pass to a fatal termination the local lesions may be but slightly marked and general alterations characteristic of pyemia, such as metastatic abscesses, etc., be entirely wanting. Death is, in such cases, apparently, due to toxemia or septicemia."—(Delafield and Prudden's *Pathology.*)

10. *Pathology of carcinoma of the uterus.*—"Cancer of the body of the uterus occurs in less than 2 per cent. of all cases. It is more frequent in nulliparæ than carcinoma cervicis, and tends to occur rather later in life than cancer of the cervix. The disease begins superficially or deeply in the mucosa. Epithelioma, malignant adenoma, adenocarcinoma, and pure carcinoma are found, the latter being of the scirrhous or medullary type. In the malignant adenoma there is an atypical proliferation of the glands; they become folded up irregularly; the intervening connective tissue may be very scant, and the gland spaces may touch at points. They are lined with a single layer of columnar epithelium.

In the adenocarcinoma, parts may show the structure of the malignant adenoma, and parts that of the ordinary cancer where the loculi are filled with epithelial cells. These growths form swellings in the wall. When near the cavity, the mucosa may ulcerate over them. Gradually the uterus becomes excavated. Adhesions may form with adjacent structures, and secondary desposits develop in the peritoneum, ovaries, tubes, vagina, etc. The epithelioma may grow diffusely through the whole cavity, or as an isolated fungoid growth, which may become polypoidal. Metastatic nodules may form in different parts of the uterine wall. These tumors are covered with layers of polyhedral cells; very rarely pavement epithelium is found like that in ordinary epithelioma. The mucosa of the body gets thinned."—(Webster's *Diseases of Women.*)

(To be concluded.)

BULLETIN OF APPROACHING EXAMINATIONS

STATE	NAME AND ADDRESS OF SECRETARY	PLACE AND DATE OF NEXT EXAMINATION†
Alabama*	W. H. Sanders, Montgomery	Montgomery...July 11
Arizona*	J. W. Thomas, Phoenix	Phoenix...July 4
Arkansas	T. J. Stout, Brinkley	Little Rock...May 9
California	C. B. Pinkham, Sacramento	San Francisco...June 27
Colorado	David A. Strickler, Empire Building, Denver	Denver...July 4
Connecticut*	Chas. A. Tuttle, New Haven	New Haven...July 11
Delaware	J. H. Wilson, Dover	Dover...June 20
Dist. of Col'bia	E. P. Copeland, Washington	Washington...July 11
Florida	E. W. Warren, Palatka	Jacksonville...June 13
Georgia	C. T. Nolan, Marietta	Atlanta, Augusta...June 1
Idaho*	Charles A. Dettman, Burke	Boise
Illinois	C. S. Drake, Springfield	Chicago
Indiana	W. T. Gott, Crawfordsville	Indianapolis...July 11
Iowa	G. H. Sumner, Des Moines	Iowa City...June
Kansas	H. A. Dykes, Lebanon	Topeka...June 13
Kentucky	J. N. McCormack, Bowling Green	Louisville...June 13
Louisiana	E. L. Leckert, New Orleans	New Orleans...June 8
Maine	F. W. Searle, Portland	Augusta...July 6
Maryland	J. McP. Scott, Hagerstown	Baltimore...June 20
Massachusetts*	W. P. Bowers, State House, Boston	Boston...May 9
Michigan	B. D. Harison, 205 Wilcox Building, Detroit	Ann Arbor...June 13
Minnesota	T. McDavitt, St. Paul	Minneapolis...June 6
Mississippi	E. H. Galloway, Jackson	Jackson...June 13
Missouri	J. A. B. Adcock, Jefferson City	St. Louis...June 12
Montana*	Wm. C. Riddell, Helena	Helena...Oct. 3
Nebraska	H. B. Cummins, Seward	Lincoln...May 10
Nevada	S. L. Lee, Carson City	Carson City...
N. Hampshire	Walter T. Crosby, Manchester	Concord...June 26
New Jersey	A. MacAlister, Trenton	Trenton...June 20
New Mexico	W. E. Kaser, East Las Vegas	Santa Fe...April 10
New York	H. H. Horner, Univ. of State of New York, Albany	New York, Albany, Syracuse, Buffalo...May 16
N. Carolina	H. A. Royster, Raleigh	Raleigh...June
N. Dakota	G. M. Williamson, Grand Forks	Grand Forks...July 4
Ohio	Geo. H. Matson, Columbus	Columbus...June 6
Oklahoma	R. V. Smith, Tulsa	Oklahoma City...July 11
Oregon	B. L. Miller, Portland	Portland...July 4
Pennsylvania	N. C. Schaeffer, Harrisburg	Philadelphia, Pittsburgh...July 11
Rhode Island	G. T. Swarts, Providence	Providence...July 6
S. Carolina	H. E. Boozer, Columbia	Columbia...June 13
S. Dakota	P. B. Jenkins, Waubay	Pierre...June 13
Tennessee	A. B. DeLoach, Memphis	Memphis, Nashville, Knoxville...June
Texas	M. P. McElhannon, Belton	San Antonio...June 20
Utah	G. F. Harding, Salt Lake City	Salt Lake City...
Vermont	W. Scott Nay, Proctorsville	Burlington...July 11
Virginia	J. N. Barney, Fredericksburg	Richmond...June 17
Washington*	C. N. Suttner, Walla Walla	Tacoma...July 4
W. Virginia	S. L. Jepson, Charleston	Clarksburg...July 11
Wisconsin	J. M. Dodd, Ashland	Milwaukee...June 27
Wyoming	H. E. McCollum, Laramie	Laramie...June 14

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†Applicants should in every case write to the secretary for all the details regarding the examination in any particular State.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

VITAL FUNCTION TESTING METHODS AND THEIR INTERPRETATION. By WILFRED M. BARTON, M.D. Published by Richard G. Badges, Boston. 255 pages. Price, $1.50.

ENDEMIC DISEASES OF THE SOUTHERN STATES. By WILLIAM H. DEADERICK, M.D., and LLOYD THOMPSON, M.D. Published by W. B. Saunders Company, Philadelphia & London; 546 pages; with 117 illustrations. Price, $5.00 (cloth); $6.50 (Half Morocco).

A TREATISE ON MEDICAL PRACTICE. By OTTO JUETTNER, A.M., Sc.M., Ph.D., M.D. Published by A. L. Chatterton Company, New York; 519 pages. Price, $5.00.

YEAR BOOK OF PHARMACY. Published by J. & A. Churchill, London. 512 pages.

STUDIES IN SURGICAL PATHOLOGICAL PHYSIOLOGY, FROM THE LABORATORY OF SURGICAL RESEARCH. Published by the New York University, New York. With illustrations.

TWENTY-SECOND ANNUAL REPORT OF THE MANAGERS AND OFFICERS OF THE CRAIG COLONY FOR EPILEPTICS. Printed by the J. B. Lyon Company, Albany, N. Y. 158 pages, with illustrations.

THE PRACTICAL MEDICINE SERIES. Comprising ten volumes on the year's progress in medicine and surgery. Vol. I.—GENERAL MEDICINE. Published by the Year Book Publishers, Chicago, Ill. 384 pages, with illustrations.

AMERICAN PUBLIC HEALTH PROTECTION. By HENRY B. HEMENWAY. Published by The Bobbs-Merrill Company, Indianapolis. 283 pages. Price, $1.25.

Therapeutic Hints.

Myocarditis.—In the stage of insufficiency, J. M. Anders recommends the observance of absolute rest and in suitable cases the administration of the following:

℞ Strychninæ, gr. 1/5.
Sparteini sulphatis, gr. ij.
Caffeinæ citratis, gr. xvi.

M. et div. in pil. No. VIII.—*Penn. Med. Journal.*

Grippal Colds.—Dr. Beverley Robinson recommends the following as a safe and efficient remedy in the treatment of influenza and grippal colds:

℞ Caffeinæ, gr. v.
Ammonii salicylatis, ʒi.

M. et div. in capsulas No. XX. Sig.: Two of these capsules should be taken by an adult, every two hours, for four or five doses, and then every three or four hours. If the capsules cause slight nausea, which is rare, this may be relieved by drinking a little vichy with each dose.—*N. Y. Med. Jour.*

Hemoptysis.—

℞ Pulveris ipecacuanhæ et opii, gr. xx.
Aluminis, gr. lx.
Sacchari, gr. xxx.

M. et div. in chart No. VI. Sig.: One powder every 4 to 6 hours to a child of one to two years.

Dutch Buttermilk.—Let one quart of milk stand in a warm place till it is thick. Put it in the butter churn and churn for 20 minutes. Put in a saucepan 1 heaping tablespoon flour, and 1 heaping tablespoon granulated sugar. Mix them well, then add slowly the contents of the churn. Put the saucepan on a good fire and stir till the milk boils. Then take it off. Put in a bottle as much as baby will take. For young baby dilute with water, but as soon as able leave water out. Feed as warm as possible.—Edward A. Keller.

Herpes Genitalis.—Queyrat recommends the following:

℞ Mentholis, gr. x.
Guaiacolis, gr. x.
Zinci oxidi, dr. 1½.
Unguenti aquæ rosæ, oz. 2.

M. et div. fiat unguentum.—*Paris Médical.*

Acid Dyspepsia in Infants.—

℞ Pulveris ipecacuanhæ, gr. i.
Pulveris rhei, gr. iv.
Sodii bicarbonatis, gr. xxiv.

M. et div. in chart No. XXIV. Sig.: One powder every four to six hours to a child of one to two years.

Myalgia.—

℞ Tincturæ aconiti
Tincturæ iodi, āā ʒij.
Tincturæ opii, ʒiv.
Linimenti chloroformis, ʒiij.

M. Sig.: For external use.

Seasickness.—

℞ Hyoscyamina
Strychninæ, āā gr. ss.
Extracti gentianæ, gr. xx.

M. et div. in pil. No. XI. Sig.: One pill every 10 minutes for 1 hour, then every 20 minutes.

Facial Erysipelas.—Nobécourt claims to have obtained excellent results in the treatment of this condition by the continued application of a 5 per cent. solution of methylene blue. The solution is applied by a camel's-hair brush or a cotton swab to the diseased surface and for an inch beyond on the surrounding healthy tissue. The application is renewed twice daily, morning and night.—*Journal de Médecine.*

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Original Articles.

CHRONIC TRIGONITIS.

BY H. W. E. WALTHER, M.D.,

NEW ORLEANS

CLINICAL ASSISTANT IN GENITOURINARY AND VENEREAL DISEASES, TULANE UNIVERSITY OF LOUISIANA, SCHOOL OF MEDICINE; ATTENDING UROLOGIST, PRESBYTERIAN HOSPITAL; VISITING GENITOURINARY SURGEON, CHARITY HOSPITAL.

A REVIEW of the more recent text-books on genito-urinary surgery will show that the subject of inflammation of the trigone of the urinary bladder has been totally ignored. J. W. Thompson Walker[1] has recently called attention to the fact that in the majority of cases of cystitis the inflammation does not affect the whole surface of the bladder mucous membrane, but involves most frequently the base (trigone) while the rest of the bladder escapes. Follen Cabot,[2] in his monograph on disorders of the bladder, contends that this subject has never received the attention it deserves. The European writers have contributed the most valuable descriptions we have concerning this disease.

Of the synonyms under which chronic trigonitis has been described might be mentioned cystitis colli vesicæ, cystitis papillomatosa, "irritable bladder," cystitis colli proliferans edematosa and cystitis colli proliferans s. vegetativa.

Knorr,[3] in 1900, was the first to accurately describe chronic trigonitis. In his first paper he reported thirty cases and the desciption of the symptomatology and pathology of this disorder as given by him are so complete as to leave little for others to describe. The second contribution of Knorr[4] to this subject appeared five years later, in which he reiterated and further confirmed his opinions as laid down in his earlier writings. Zuckerandl,[5] Winter,[6] Heymann,[7,8] Gorodistsch,[9] and Zechmeister and Matzenauer[10] have been among the most prominent German writers to contribute to the subject. Stoeckel,[11] in his monograph on cystoscopy, gives a very accurate picture of the disease.

Of our own writers, Garceau[12] has perhaps given us the best and most complete description of chronic trigonitis to be found in American literature. Pilcher[13] in his excellent work on cystoscopy gives a very graphic description of chronic trigonitis, and closes his remarks on the subject by stating that "many cases of chronic cystitis resolve themselves into chronic trigonitis." Furniss[14] has recently stated that about 30 per cent. of the cases seen in the gynecological department under his care complain of some disturbance of urination, either alone or in association with diseases of the genital organs, and of these fully 90 per cent. have cystitis colli or trigonitis. Cary[15] and Sommer[16] have also added to the valuable literature on this subject. Cary states that "one of the most frequent causes of bladder irritability in women is chronic, local cystitis involving the trigone," and on the same subject Sommer says "there is a large class of sufferers in whom the affection (chronic trigonitis) is limited to the bladder neck and adjacent trigone."

Anatomy.—The floor of the urinary bladder is divided, arbitrarily, into two main parts, viz., the anterior and posterior segments, the anterior half being known as the trigonum and the posterior half being known as the bas-fond or fundus. Only the anterior or trigonal portion will be considered here.

The boundaries of the trigone are formed by the two ureteric ostia and the internal vesical sphincter. The base line of the trigone (2 to 2.5 cm. in length) being a slightly elevated ridge extending from one ureteral orifice to the other is known as the ligamentum interuretericum, the muscle band of Bell or the bar of Mercier. It is this bar which furnishes such material aid to the beginner in cystoscopy in finding the orifices of the ureters. The lateral boundaries (1.8 to 2.5 cm. in length), leading up to the apex of the triangle, are formed by lines from the ureteral orifices to the internal vesical sphincter.

Fenwick describes this triangular area in the bladder as smooth and of a dull red appearance, very sharply marked off by this color from the yellow, sandlike shore of the adjoining postero-superior and lateral walls. It is to be recognized by its well-defined area, its slight elevation from the rest of the vesical mucosa and its characteristic color. The area of the trigone may present slight differences in the male and female. The prostate gland in the male causes a fairly even prominence, although this may be absent, while in the female there is a prominence due to the cervix, with rather deep lateral recesses to either side.

Pathology.—The bladder changes in chronic trigonitis are confined chiefly to the trigonum vesicæ, although it is rare to find the internal vesical sphincter and posterior urethra totally free from involvement in the process. In the beginning nothing more than an intense redness of this part of the bladder may be noted. At times it may be difficult to differentiate this stage of true inflammation from simple hyperemia of the trigone. The intense redness is seen to extend at times beyond the confines of the trigone proper, and may be seen in spots or splotches adjoining the trigonal border. Engorgement of the capillary vessels is early noticed. Later, as the process advances, besides the deep scarlet color, the mucosa becomes swollen from edema and rises up here and there quite sharply from the remaining surface and takes on a spongy, woolly or cumulus appearance. Later the mucous membrane is thrown up into stiff folds or ridges, with occasional shreds of muco-pus or desquamated epithelium adhering to it. Bierhoff,[17]

in particular, has called attention to this particular inflammatory thickening of the epithelium which rise above the trigonal surface and appear cystoscopically as miniature polypi or villi. At times it is impossible to differentiate between this pseudopolypoid growth and true papillomata of the bladder. Bierhoff has seen cases where these polypi cover the entire surface of the trigone. Ulcers are not commonly seen, as is shown by the report of Knorr, who, in thirty cases of chronic trigonitis, found but one case with an ulcer. Occasionally varices, erosions, and petechiæ are observed, and when seen probably account for the hematuria in some of the cases of trigonitis. These spots will bleed with the slightest instrumentation.

Marked changes of the vesical sphincter accompany the trigonal inflammation, of which loss of contour, swelling and blanching are the most noticeable. Excrescences may be seen about the sphincter as above described on the trigone, and at times reach large dimensions. Garceau speaks of one of his cases, where a polyp grew just outside of the sphincter in the urethra, which gave rise to much pain during micturition and was the cause of long-continued partial incontinence. Legueu[21] speaks of vesicles or tiny cysts of the trigone and urethral orifice often seen to accompany this condition. Zachmeister and Matzenauer affirm that intense injection of the posterior urethra constantly accompanies chronic trigonitis.

Microscopically Garceau has found the inflammatory changes to be subepithelial in character. In a case of his, small massed collections of lymphocytes forming an area similar to lymphoid tissue, and a few lymphocytes in the stratified epithelium were found. In addition, pathogenic organisms were always found.

Etiology.—The cause of this disease has been divided by most writers into two classes, viz., (*a*) those in which there has been a primary infection, and (*b*) those in which the infection has, secondarily, become engrafted upon a simple hyperemia of the trigone due to the engorgement of these parts accompanying some pelvic disorder. The commonest cause of primary infections is, undoubtedly, uncleanly and rough catheterization or other instrumentation of the bladder. Trigonitis is much more prevalent among women than among men. Of the infections caused secondarily to some other condition, Peyer, Winter, and Guterbock classify the etiological factors under three groups, namely: (1) urethral, (2) vesical, and (3) perivesical.

1. Urethral. Urethritis, fissure of urethra, condylomata, urethral caruncle, malignant tumors, periurethral processes.

2. Vesical. Cystitis, hyperemia, varices, tumors, foreign bodies, ulcerations, vesical atrophy, trauma.

3. Perivesical. In the female: uterine tumors, pregnancy, malpositions of uterus, new growths of the cervix uteri, exudates, parametritis, perimetritis, metritis, salpingitis, ovaritis, hematocele, pelvic abscess, pelvic peritonitis, cellulitis, extrauterine pregnancy, vulvitis, colpitis and intestinal changes.

In the male inflammations or new growths of the prostate, seminal vesicles, vas deferens, testis or epididymis, and intestinal or pelvic gland changes. These latter (perivesical) causes usually bring the infection to the vesical trigone through the hematogenous or lymphogenous routes.

The bacteriology of chronic trigonitis varies during the course of the disease. In some cases very little if any organisms are ever seen upon microscopical examination of centrifugalized specimens of the urine. Bierhoff[18] has reported fifty-seven such cases observed by him in the Berlin General Polyclinic, in which the urines were repeatedly found bacteria-free, in whom he found epithelium, pus and blood cells—often in excess—and upon cystoscopy found only the trigone of the bladder the seat of any demonstrable inflammation. In none of these cases did he find a tuberculous bladder. Byford[19] calls attention to hyperacidity, the result of faulty metabolism, as the probable causative factor for the persistence of trigonal inflammations of this type, and makes a plea for medical (dietary) treatment of these cases in conjunction with the local treatment. Kelly[20] has also found hyperacidity a factor in trigonitis.

However, when bacteria are present one will at times encounter a mixed infection at one examination and at another time the urine of the same case shows a pure culture. There is a tendency for one bacterium to predominate, while the other organisms will be noted in very small numbers. The colon bacillus is the most frequent offender. Staphlococci, streptococci, gonococci, proteus, pneumococci, bacillus pyocyaneus, typhoid bacillus, and pseudodiphtheria have been among the other organisms noted.

Symptomatology.—Chronic trigonitis is always ushered in with a marked diurnal frequency of urination. At the start this frequency may be painless, but as time elapses the patient will complain of pain during the act of micturition, and this symptom is accompanied by urgency and tenesmus. At this later stage the frequency becomes nocturnal as well as diurnal, and pain over the suprapublic region and the urethra may be complained of. In rare instances one will see a case with no pain whatever, and the only symptom which brings them seeking relief is the frequent urgent desire to void urine. Hematuria is often marked to the degree of being noticeable to the eye—at times frankly blood red in color. Cloudy urine, due to the bacterial, pus, blood and epithelial content is also commonly observed, although clear urine (to the eye) is seen at times in these cases, and here it requires the assistance of the centrifuge and microscope to make the diagnosis. Seventeen out of the thirty cases found by Knorr had clear urines. Garceau has pointed out that the absence of pus or other cellular elements in the urine has thrown many off the track in the diagnosis, and these cases are then erroneously considered neuroses. Chronic trigonitis does not commonly cause febrile reactions or constitutional symptoms unless the true causative factor be a constitutional disorder.

My experience with cases of chronic trigonitis has convinced me of the fact that the symptom which gives the patient the most trouble is the marked, uncontrollable frequency and urgency of urination, which will always be present at the height of the inflammation. This affection will be so distressing at times as to force patients to void urine every fifteen minutes, day and night. When this stage is reached they will be found reluctant at the thought of, or even refuse outright to leave their homes for even short walks, for fear that the frequency and urgency, which now borders almost upon incontinence, may overtake them while out and cause embarrassment. Mere existence

itself becomes burdensome to these unfortunate individuals. Very despondently they come to consult the urologist, and when any hope is held out to them, when relief or even cure is emanant of attainment, expressions of eternal gratefulness from these sufferers form no little share of our reward.

Diagnosis.—The cystoscope alone can make the diagnosis of chronic trigonitis with accuracy. This instrument will demonstrate the presence of any local change, their seriousness, and the extent of their pathological characteristics. In studying these cases thoroughly, both the bladder and the posterior urethra must be included in the examination. For this particular class of cases I generally employ the Acmi model (convex, close vision) sheath with the large examining lens system of the Brown-Buerger combination cystoscope as made by Wappler. My plan has been to make these instrumental examinations as painless as possible, and so, usually a half hour before cystoscopy, I have a quarter grain of morphia administered hypodermically, and at the same time, after having preliminarily washed out the bladder well with warm boracic acid solution, I instill several ounces of a 0.5 per cent. solution of alypin into the viscus and allow same to remain for from fifteen to thirty minutes, as advocated by Braun. A few minims of adrenalin to each ounce of the alypin solution usually enhances its anesthetic value, will not cause excessive blanching, and acts as a retarder to the mucosa so that the alypin is but slowly absorbed. I have used alypin freely in cystoscopic work without any dangerous sequelæ.

In making an orientation of the bladder successful the viscus should be fairly well distended so that the folds of the mucosa are all smoothed out, so as to avoid falsely interpreting as abnormal something that might be perfectly normal. One should also bear in mind the fact that should the bladder be over-distended with fluid the mucosa may appear artificially anemic, and, when compared with the trigone, which is often more deeply injected than the rest of the bladder, the examiner may be misled by considering a normal trigone to bet the seat of a chronic trigonitis.

However, when the disease is present, the entire trigone is found to be the seat of a well-marked inflammation. The mucous membranes, from the ligamentum interuretericum to the sphincter internus, appears of a deep red color, while the surface presents a metaplastic process of the epithelial cells, grayish white to grayish red in spots, cumulus in appearance, the result of the diminished power of reflection of the inflamed membrane. The rest of the bladder is normal. Some writers describe the mucosa of the trigone as taking on a satiny appearance, and Viertel[22] states that this appearance was due to the beginning formation of papillæ. This same writer has also called attention to the fact that the trigone, in these inflammations, is frequently the seat of a large number of small cysts, varying in size from a poppy seed to that of a millet seed. These cysts often extend from the apex of the trigone through the sphincter into the urethra.

Bierhoff[15] has noted the diffuse hypertrophy of the papillæ at the trigone in some cases. "The surface of the inflamed mucosa," he says, "presented a satiny, roughened apearance; on closer examination, I believed, I was able to discover papilla-like excrescences. To decide the question I employed the ureter cystoscope, passing a ureteral catheter into the bladder, and laid it directly upon the inflamed area, into which it sank, revealing in most beautiful distinctness the rosy, satiny, nontransparent, hypertrophied individual papillæ standing out clearly in contrast to the brown color of the catheter." I personally have never seen either the small cyst formations spoken of by Viertel or the diffuse hypertrophy of the papillæ as observed by Bierhoff. The cases observed by me have shown the trigone and bladder neck dark red in color, with the mucosa in this area thrown up in thick folds, due to the metaplasia of the epithelium, and here and there tiny pseudopolypoid-like formations. The ureteral ostia were included in the inflamed area in one of my cases, almost totally obscuring the ureters from view. The balance of the bladder mucosa was normal in all my cases, except that one showed marked trabeculation in the bas-fond, but not accompanied by any inflammatory condition in that area. In one of my cases colliculitis was present.

Therefore, in routine urological examinations, where the cause of a bacteriuria, a pyuria, a hematuria, or a combination of these symptoms is being sought for—should the ureteral catheters rule out the kidneys and ureters, and a careful examination of secretions microscopically rule out the seminal vesicles, prostate and urethra, and where the typical red, inflamed trigone and vesical neck present themselves in the cystoscopic picture with the rest of the bladder perfectly normal—trigonitis should be considered the cause of the symptoms presented.

Trigonitis must be differentiated from the psychoses, such as: (*a*) hysteria with vesical symptoms; (*b*) "stammering bladder" or the "bégaiement urinaire" of the French writers, and (*c*) essential incontinence. At times such differentiation is fraught with many difficulties, and it will often require much patience on the part of the examiner to come to the correct conclusions. A study of the individual, noting his peculiarity in one way or another; a careful study of the history of the case; a complete examination of the reflexes, and a thorough examination, chemically and microscopically, of the urine should help one to reach a decision.

Treatment.—Chronic trigonitis is undoubtedly one of the most distressing ailments that the physician is called upon to treat. In regard to the prophylaxis of this disease it might be said that the ingestion of irritating drugs or foods, excessive indulgence in alcoholics, too violent an exercise which ends in near exhaustion, exposure to cold or wet, and the prolonged voluntary retention of urine should be conditions to be avoided. Any perivesical or pelvic disease should be remedied so as to avoid future trouble.

Absolute rest in bed is essential to the favorable management of the severe forms of this disorder. Nourishing, nonirritating liquids and light foods should be given. Alcoholic beverages are forbidden. Forced water drinking is usually contraindicated. Warm baths to keep the skin active are an adjunct.

The bowels should be kept active with the cathartic waters such as Carabaña, Hunyadi Janos, or Apenta. To alleviate the pain in the bladder and vesical sphincter, a mixture of a dram of tincture of hyoscyamus and a dram of potassium acetate well diluted in water is given every four hours. A suppository containing ten grains of anesthesin

placed in the rectum at bedtime will often give these patients a comfortable night. Hot sitz-baths morning and night, followed by a hot water bag to pubic region also gives much relief at times. When these and similar remedies fail, morphine sulphate in quarter-grain doses must be given.

Urinary antiseptics internally have their place here, and I believe urotropin, in 15-grain doses repeated every three hours, to be superior to all others. The alkalis must obviously be dispensed with while giving the urotropin. Should the urine fail to show a strongly positive acid reaction to litmus, acid sodium phosphate or sodium benzoate in 20 to 30-grain doses should be given at the same time, but not with the urotropin.

As regards the local treatment, it seems to be conceded by all the writers on this subject that irrigations do little if any good. A warm irrigation, combining in solution a 1/10,000 silver nitrate with a 1/8,000 potassium permanganate can be tried. With 1 per cent. boric acid solutions distention of the bladder can be practised, using hydrostatic pressure. Cary uses a two-way catheter of Dickinson for this irrigation.

It is with the instillations and topical applications of silver nitrate, however, where results have been most gratifying. By first producing anesthesia locally in the bladder with alypin, novocain, or eucain, instillations of thirty to sixty minims of silver nitrate in strengths of from 0.25 to 2 per cent, can be employed twice weekly. Through the Kelly cystoscope applications can be made directly to the trigone by using a 5 per cent. silver solution on a cotton swab; the pure lunar caustic stick is also used in this way. Cysts on the trigone should be punctured; diffuse hypertrophy of the papillæ in this area, when tending toward chronicity should be curetted. These two last-mentioned procedures can be performed through an operative cystoscope in the male and through a Kelly tube in the female.

Should all of the above-mentioned procedures fail, it may be found necessary, as a last resort, to do suprapubic cystotomy, thoroughly remove the pathologic process on the trigone by curettage or otherwise apply the necessary treatment through the surgical incision and then drain the bladder, for a time, through the suprapubic wound, with a Pezzer or Pilcher catheter.

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MACHEN BUILDING

THE ROLE OF THE WISH IN THE MANIFESTATIONS OF THE EPILEPTIC TYPE OF NERVOUS CONSTITUTION.

A RATIONAL INTERPRETATION AND TREATMENT FOR THE EPILEPTIC SANE.

By RUSSELL G. MACROBERT, M.D.,

NEW YORK.

ASSISTANT PHYSICIAN IN OUTDOOR DEPARTMENT, NEUROLOGICAL INSTITUTE.

A TEXT book has for years classified epilepsy as one of the "diseases of the nervous system without known nervous anatomical basis."[1] There it stands, by the side of its sister disease hysteria. The mystery of hysteria has been exploded, and now perhaps no disease exists which permits of such exact and rational treatment; but epilepsy remains a mystery, and is generally regarded as one of the most serious afflictions that can befall the human race. It has been for years the predominating mystery of human ailments. Its explanation has seemed dependent upon the explanation of human existence, so profound were the depths to which the human being seemed plunged by its manifestations, and so profound the amnesia with which he returned. The disease epilepsy has long been classed as a psychoneurosis, but perhaps something of the ancient atmosphere and superstition which styled it the sacred disease persisted about it and served as a protection from the rational explanation due. Mechanistic conceptions have been unhesitatingly applied to other human affections, but something seems to have restrained us from tackling the mental side of epilepsy with our mental mechanisms, for although it is unhesitatingly styled a psychoneurosis, a physical or chemical causation is diligently sought.

Many gross bodily reactions, though showing both physical and chemical change, can be demonstrated as resulting from the dominance and sway of a nonconscious mental motive. In fact, all organic reactions have a purpose. Purpose is back of every physical, as well as every mental act. The logical purpose in every bodily change is not possible of demonstration. The change is an attempted adjustment of existing conditions, but is in relation to organic laws we do not always understand. Psychic change can be more readily demonstrated to have a purpose in view, because the purpose is in definite relation to some known laws and to the character or constitution of the psyche. There should not be doubt, however, that a purpose is behind every unit of life, every system of units, and every combination of systems. In sudden anemia of the brain, as in a faint or cardiac syncope, loss of consciousness is automatically induced, the horizontal position results, and the anemia of the brain

is overcome by the return flow of gravity—a striking example of a nonconscious purpose. The loss of consciousness of the epileptic has not this mechanical cause; has no explainable pathological change in the brain as its cause. Its admitted cause is "psychoneurotic," and being so the evidence is with him who says that the cause is mental and has a mental significance.

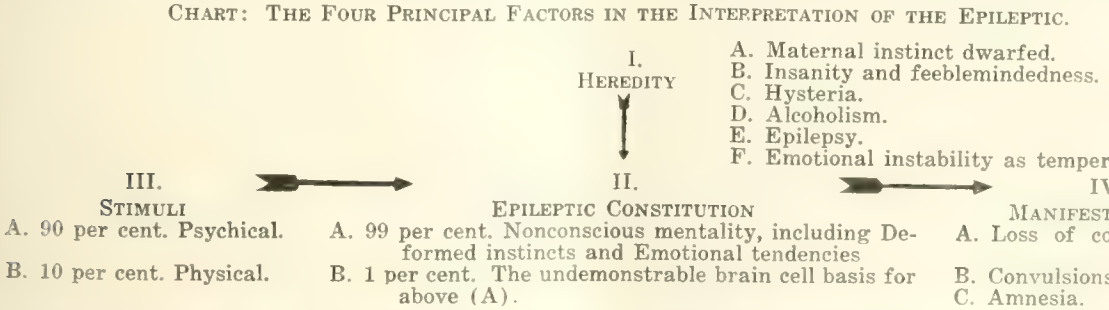
The mental significance of acts arising in the nonconscious is often obscure. The loss of consciousness of the epileptic is in accord with a nonconscious purpose, and has a nonconscious mental significance. It is a purposeful effort of the driving forces, whose direction is almost altogether nonconscious. If some irritant substance enter the intestine, nonconscious processes proceed to deal with it, and they expel it without consulting conscious systems as to the degree of increased peristalsis required. The reason for the action remains entirely nonconscious. If some irritant arise in connection with the psychical processes, it is dealt with also by the nonconscious systems, or psyche, and according to the character and constitution of the psyche. Differences in the character or constitution of the psyche will result in different ways of dealing with difficulties. One type will encounter a difficulty with added force, another will choose a different path around the difficulty, and another will retreat or withdraw from the situation. Differences in physical constitutions are apparent by the difference in the size of the skeleton, the character of the fleshy covering, and in the vigor of the various vital functions; differences in mental constitutions are apparent by the difference in the character and quality of thoughts, opinions, and methods of dealing with the situations confronted. A mental constitution is recognizable in this way by its manifestations, and has no physical representation that is patent.

The epileptic type of nervous constitution[2] exists on the basis of this classification of an individual, by a set of manifestations. It indicates a class of individual that deals with difficult situations in a characteristic manner. The convulsions and sudden loss of consciousness indicate certain peculiarities of mental make-up. The epileptic is acting according to the nonconscious direction of his specific mental make-up, and is accomplishing some desire, or attempting to do so, by his manifestations. This desire is wholly nonconscious; and the manifestations, which are its gratification, are wholly nonconscious in significance. A proper understanding of the epileptic is obtained only by clearing up the confused relation between the physical and psychical sides of the problem. I beg, then, for a consideration of the epileptic under three heads, his constitution, irritations, and manifestations.

the morbid phenomena. This implies a normal condition of the neuron up to the point that lies within the possibility of present means of investigation. The changes that occur in the nerve cell beyond this point have to do with the highest nerve processes, such as thought and association. The reactions of the hysteric register no change up to this point; no lesion responsible for a hysterical paralysis can be demonstrated in the muscle or up the nerve tract to the brain cells. No change can be here discovered by the pathologist, who is obliged to say that the normal stimulus to the muscle is interfered with by the mind or the section of the cells through which mental function operates. Another action of the mind can so operate as to banish absolutely what was to all appearances a complete paralysis and accomplish it instantly. If a change in the cellular structure does occur with these mental processes, which cause an hysterical paralysis, it is of such a nature that it can be instantly neutralized.

In the picture I wish to draw of the epileptic type of nervous constitution, I shall allot to the functional nerve change producing the epileptic manifestations, a 1 per cent. physical basis, and a 99 per cent. psychical basis. My division is purely arbitrary, and the 1 per cent. is cautiously granted for two purposes: to allow for the possible neural change that at some future time may be demonstrated, occurring in the cell accompanying mental function, and to give a basis for all the psychical elements such as instincts and emotional tendencies which are the determinants of mental function, for want of some more definite basis for them to rest upon. The latter are recognizable only by their manifestations but it is in the brain cell that we lose the thread in tracing an instinct or an emotion. As fire is frequently recognized by its smoke only, so is the existence of instincts and emotions recognized only by their outward or objective manifestations. They are obviously present, and obviously heritable, but their secrets are tied up in the mystery of the brain cell or—beyond. I make, then, the two divisions in the epileptic constitution: the psychical—to do with conscious mental actions, instincts, emotions, and all the vast nonconscious mental life; and the physical—consisting of brain cell constituents, that are the residing place of characteristic determinants of psychical function. Of this physical portion, no part lies within the possibility of present day demonstration methods. Of the psychical portion of the epileptic constitution, many characteristics have been widely observed and their peculiarities noted. His conscious mental life is replete with evidence, in many instances, sufficient to group the epileptic with his epileptic fellows. His mentality is characterized, for the most part, by a

Chart: The Four Principal Factors in the Interpretation of the Epileptic.



The Epileptic Type of Nervous Constitution.—*Functional* is a term applied to nervous diseases in which no known anatomical change underlies feebleness, unreasonableness, lack of insight, and irritability. Some show waywardness, vicious impulses, and lack of will power. There are many

epileptics, however, whose conscious mental life is normal and even vigorous, and these are mostly the ones that are all about us, whom we know not of, and represent a class which is as great as that whose psychical degeneration, symptoms, or circumstances, demand their custody and statistical enumeration. The conscious mental life of the epileptic, indicates, we may say, only 5 per cent. of his characteristic features, as against 95 per cent. indicated by the nonconscious mental life; the division again being necessarily arbitrary, and used only as a basis of approximate illustration.

The very foundations of the epileptic character are in the peculiar constitution of his nonconscious mental life. Any personality has a nonconscious basis. Actions, reputations, and character depend upon the constituents of our nonconscious mentality and its functioning. Actions are reflexes, and their character is the result of the coordinating and regulating influences of nonconscious processes. The nonconscious determines involuntary action, mental and physical. The nature of our nonconscious is determined by the character of the equipment and tendencies, with which we are supplied by heredity, to deal with our experiences. The manner of dealing with the situations by which we are confronted is determined for us, therefore, to a great extent by heredity. A disfigurement of this inherited equipment, such as is caused by dwarfed instincts and misshapen emotional tendencies, will certainly influence and color the manifestations that arise from our nonconscious mental life.

Deformed instinct endowment will transfigure and cripple our reactions to reality. Nonconscious activity has a character which is commensurate with the ability, and in accordance with the construction, of the nonconscious mentality, but works always to conserve the organism, and its manifestations are logical to the nonconscious purpose, though to all else, in most instances, void of significance. The significance of the manifestation to the nonconscious purpose will be found to be in the nature of an adjustment, or an attempt at adjustment, to some irritating condition, physical or psychical, interpreted through sensations coming to the brain. A deformed nonconscious mentality, presupposes a weak or deformed manner of dealing with the situation in hand. The epileptic nonconscious is a medley of deformed instincts and emotions, and the result of their play on the organism which they control. The epileptic may be, in some way, physically deformed, but he is frequently well within the normal range. He is, however, without exception nonconsciously feebleminded, and family trees and other statistics show him actually more closely related to the feebleminded than to any other class of individual. His constitution is solely the product of heredity, so the equipment for his specific reactions is present at birth. His psyche is infantile in type, and its reactions of a primitive order. The epileptic reactions appear in some cases in early infancy, and as their significance to the organism is present at that time, we may expect, when we come to consider them, to find them of a very elemental nature.

The infantile behavior as a reaction to various situations, with which the nonconscious is confronted for solution, persists through life because the deformed instincts and primitive motives persist, and are the very basis of the epileptic constitution. I consider the cause of the epileptic reactions to be a controlling mental mechanism that is infantile and deformed, and void of the mature logic of perfect instinct equipment. The reactions present no adult or mature logic, and as infantile are on the principle of a pain and pleasure motive of elemental nature. Picture the epileptic, therefore, possessing a very primitive mental or adjusting mechanism, reacting in accordance with its direction, when his nonconscious is embarrassed by irritating or difficult situations. His psychical equipment, in this way, produces the reactions by which an individual is readily classified as possessing the epileptic type of nervous constitution. A great variety of stimuli may act as inciting factors, but without this specific constitution the specific reactions could not occur. The nature of the irritation bears no relation to the end result. The reactions are merely the epileptic's way of responding to a difficulty or embarrassment occasioned by irritation of almost any nature.

Heredity produces the epileptic constitution. All evidence confirms that fact. The manner of this heritage is not altogether clear. In a previous paper[2] I brought out what seemed to me the immense culpability of a defective mother instinct as an influencing factor in the prenatal development of the epileptic type of nervous constitution. Of other predisposing hereditary elements varying percentages must be allotted to such factors in the forebears as insanity and feeblemindedness, hysteria, alcholism, epilepsy and emotional instability as exemplified by uncontrollable temper. There are possibly others, unknown but equally important.

As the physical nature of the epileptic's trouble is perhaps still a matter of strong opinion in certain of my readers, and they are trying to reconcile what is being said with their experience of physical factors in epilepsy, I will enter at once on the role of the various irritations which have been noted as apparent stimuli to this type of nervous system and incitors of its specific reactions.

The Irritations or Stimuli That Excite the Manifestations.—If we regard the epileptic constitution, then, as a feeble or infantile nonconscious mental life, which results from the inheritance of a deformed instinct and emotional equipment, we see immediately, the position—as stimuli—of the great variety of physical and psychical troubles, which at different times have been considered the cause of epilepsy, and the possible secret of the whole problem.

These stimuli, acting upon the epileptic constitution, may be either of a physical or of a psychical nature. Of the physical, perhaps among the most important are those arising from the gastrointestinal tract: disturbances of the bowel such as constipation, intoxication, chronic inflammation, or anomalies of its structure, exercise great influence on the prevailing moods of mental life. This is a matter of common observation and need not detain us. Glandular dystrophies and irregularities in the balance of the internal secretions play a part for discord in nonconscious mental activities. A brain tumor or other pathological condition of brain tissue or its envelopes may act as the irritating influence. Perhaps these and all other derangements from the physicochemical plane are in all no more than 10 per cent. of the irritations which excite this peculiar nervous organization to its specific reactions. The other 90 per cent. are psychical—when the stimulus appears to originate in the highest brain cells, or the cells concerned with thought and association.

These psychical stimuli fall readily into three

groups: 1. Prolonged nerve strain, such as mental overwork and worry. 2. Acute nerve strain, such as fright, which is common. 3. Ideogenous, which are strictly nonconscious and nonapparent stimuli, that may arise from situations in dreams, or nonconscious mental adjustment processes. Those of the former two groups have often been noted. The latter group, however, is probably much the largest, and hence the reason why in epilepsy "exciting causes are not present in the majority of cases," to quote from the recent edition of Dana's text-book.[4] It is partly because of the previous inaccessibility of the stimuli of this group that past treatment of epilepsy has been so futile. Lucky was the epileptic who presented very evident physical disturbance as the inciting factor of his attacks; its removal or alleviation was usually responsible for the cure in the few cases in which epileptics were cured.

This great inaccessibility of the large percentage of the excitants of epileptic attacks is sufficient reason for an attempt to solve the problem from another direction. A thorough investigation into the nature of the specific reactions has resulted. The realization that the reactions are always the same, no matter what the character of the stimuli, opens the first door to the treatment of the epileptic. They are but the bad habits of a certain personality. They are resorted to whenever the irritation is sufficiently provoking. To the epileptic the source of irritation does not matter. He has a habit that will serve him in any instance. He can withdraw from the difficulty he cannot face. Once his manifestations are seen definitely as originating from the nonconscious mental life the solution is another door nearer to us. The signficance of any mental accident is found in the answer to the questions, "What is the task which the patient does not wish to fulfil? From which necessary difficulties of life does the patient try to withdraw himself?" as put by Jung of Zurich.[5] In the case of the epileptic the fact that the manifestations are the result of a nonconscious desire to withdraw from some irritation, physical or psychical, is a light in our path. They are the disguised fulfilment of a nonconscious desire, and serve in some way that seems particularly beneficial to the infantile motive behind, to relieve him of his irritations. The steps in the interpretation of the manifestations let us consider in turn.

The Specific Manifestations of the Epileptic.—The typical manifestations of the epileptic character are sudden loss of consciousness, convulsions, and amnesia.

The *loss of consciousness* ought to be regarded without controversy as manifestly a psychic demonstration. In the first instance consciousness is a condition of awareness of mental processes. Loss of consciousness is the deprivation of this awareness. There is no tenable theory for the loss of consciousness of epileptic seizures that will connect it with any physical lesion supposedly responsible for it. The loss of consciousness can be explained in only one way. It is essentially a manifestation of the biological mental activities. It occurs with a purpose, and plays a part in the dominating idea expressed in the epileptic seizure. Consciousness is not compatible with the situation adopted by the nonconscious motive, and so is summarily dismissed. In an hysterical manifestation the organism lives again through a situation of the past. In the epileptic manifestation a situation of the past is also enacted, but, unlike the hysteric, is marked by a profound loss of consciousness; so we should expect the situation represented by the epileptic seizure to be a situation in his past life where consciousness did not exist.

The fit of the adult may be an exact counterpart of the fit of infancy, but the significance of the situation relates to a still earlier date. The fit represents an attempt of the epileptic to realize himself again *in utero*, which gives him a feeling of security and protection, by the reversion to a previous stage in his development where irritations were unknown.

The *convulsions* of the epileptic have all the outward appearance of a very thorough physical demonstration. They do not so readily appear of a psychic nature as does a disturbance of consciousness. There is no ailment that shows with anything like the rapidity of an epileptic attack such a complete involvement of the body in every plane of activity—sensorimotor, physicochemical, and psychical. The rapidity and certainty of the involvement is indicative of a very powerful motive behind. The movements, often described as "a clotted mass of movements," represent no conceivable purpose that can be connected with a physical derangement. This very irregularity of movement, when viewed in the light of the psychic purpose, is full of significance. The seizure represents a stage of intrauterine existence. This is a time when coordination over muscular movements is not developed, coordination only commencing in a small way some time after birth, and being not very far advanced for several years. The incoordinated movements of the fit supply a muscular realization of the former state. The epileptic feels the situation represented, in every cell and system of his body. The aimless movements of the child *in utero* are performed, because the organism is, for the time being, dominated by the idea of its return to that state. The situation is represented with all the vigor of which the organism is capable, which is quite characteristic in this respect of all mental accidents. The whole situation bears a close resemblance and relation to sleep walking, or the enacting of a situation that is being dreamt. Some people in their sleep laugh, cry out, walk, struggle, or by other muscular movements enact the experience of the nonconscious mental activity of their dreams. The epileptic acts out his dream, as it were, more thoroughly. He is transferred to his situation with a vigor and thoroughness that are characteristic of and only possible to a powerful mental motive. The epileptic seizure has never been comprehended through the ages because it was never conceived that the organism could be so forcibly thrown back to a former situation by a trick of the mind. The revelation that in an hysterical manifestation the organism usually reverts to a past situation makes this now understandable. It is only one step farther to see that the epileptic manifestation represents a situation that is previous to birth and has the accompanying loss of consciousness of that time. The text-books have been recently warning that the distinction between epileptic and hysterical fits was by no means the easy matter that it was formerly considered, and that the old cut and dried rules of distinction would have to go. Cabot[6] in 1912 said there was no way in which they might positively be distinguished, in certain instances, and Dana says that "epileptic seizures of characteristic type may be caused by psychic states."[7] This only helps us to see that in the mechanism the two are closely related. Both epileptics and hysterics are

controlled by a nonconscious mental motive and both revert to the past. The situation represented by the epileptic seizure is of a time previous to birth, that of the hysterical seizure any time from birth on. The real distinction in certain difficult cases rests exactly on the point as to whether there was a profound and certain loss of consciousness. Men who did not consider that the psyche had this important role in epileptics must frequently have been astonished by the close relation of the hysteric to the epileptic seizures in certain instances.

The *amnesia* that follows the profound epileptic seizure is in comparison to the depth to which the nonconscious purpose realizes its endeavor. Conscious memory of the situation experienced never occurs. It is not possible to get the epileptic to recall where he has been or to relate the happenings in his spell. He cannot interpret what he has felt. A nonconscious mental system has broken through and acted out something that the conscious governing faculties would not approve. If the action of the nonconscious motive were understood by consciousness it would not be allowed to perform. It is imperative that the action should be void of significance to the conscious controlling systems, so all vestige of memory is peremptorily dismissed. A nonconscious mental system is for the time being in control, and the whole performance is according to its wishes. The epileptic is unable to return from the depths to which he descended in his fit, and bring any recollection of the experience with him. There is, however, little doubt that there is a physical memory of the situation, for a feeling of well being persists for days at least after the fit, but this is not translatable into terms the epileptic consciousness can understand. This secret nonconscious purpose has been proven by an analysis of epileptic deliria and by the interpretation of dreams, and demonstrated to be a striving on his part to return to intrauterine life.

Ferenczi[8] in 1913 drew up the analogy between attacks of temper in children and the epileptic fit. He spoke of how some children when thwarted will cry out, stamp, or roll about in a rage, and show violent reactions of anger, which are quite ineffectual to make any change whatever in conditions. The whole situation represents an absolute inability to accept or adjust. The child persists in a determined attitude that the irritating situation is not so because it just should not be so. There is an effort to force circumstances to be different by a supreme effort of thinking them different. This often finally results in the child stiffening out, losing the breath, and becoming blue—the whole performance being not unlike an epileptic fit, but passing for the not uncommon "bad fit of temper." He also calls attention to the resemblance of the movements in an epileptic fit to the normal incoordinate movements of the infant when gleeful or angry. He suggests that the epileptic fit represents regression to the infantile period of fulfilment of wishes by means of incoordinate movements.

Clark[9] in 1915, working on this basis, presented the theory that the fit of the epileptic represents strivings on his part to return to intrauterine life. He recited analyses which seem to argue this point convincingly. This flight to the mother life has for some time been observed in various psychoses. The delirium of an epileptic as analyzed by MacCurdy showed the epileptic living again his intrauterine existence. That the fit represents to the organism a return to the womb is beginning to be pretty generally believed by those interested in epilepsy, and this view is already insinuating itself into the text books[10] on neurology. Clark's explanation for this striving is on the basis of its being a psychosexual attachment of the epileptic to a parent. This fixation he considers to be of a homosexual nature because he finds that it is usually on the parent of the same sex as the epileptic.

I regard the motive and significance of the fit in a different way, considering the withdrawal of the epileptic to the intrauterine life as a reaction to difficulty, and the assumption of a situation known to the organism as one where the difficulties he is facing did not exist, the whole effort expressing a *complete renunciation of adaptivity to reality.* The significance to the epileptic of this return to the womb is of greatest importance, in view of the treatment I propose for the epileptic, so let us consider it at further length.

The Significance of Epileptic Manifestations.—A psychical mechanism is indisputably responsible for the epileptic manifestations, and nothing results from a psychical mechanism that is not fraught with meaning. The meaning in psychical accidents, such as those of the hysteric, is usually deeply disguised or symbolic, and has to a great extent the mechanism of a dream. It is found representing in a strange, often weird manner, the fulfilment of a wish. Numerous illustrations of this are in print, where manifestations of a mortifying character proved on interpretation to be wish fulfilling. When the wish was revealed and demonstrated and the whole incident clearly seen by the patient, the manifestation was dissipated—verifying the correctness of the interpretation. The reactions of the epileptic are of this nature, differing but slightly from those of the hysteric—the epileptic being transferred to a situation that existed previous to his birth; and the hysteric to one of any time from birth on. The nature of the hysteric mind is not of such a profoundly infantile type as that of the epileptic in its nonconscious activities, and is differently constituted. The reactions of the hysteric are from a higher psychobiological level. Both illustrate the dominance of the organism by a mental idea. The idea of the epileptic is a desire to consider himself free from his irritation—not born. The reaction occurs when the organism has been subject to a grievous strain, either of mental or of physical source, and the fit gives relief in some way. Almost every writer on the subject has noticed that the epileptic appears to feel better after a fit. It gives relief from the irritation and seems, as Stoddard says, "to clear the air."[11] The organism lives again for the time being, with every atom of its structure, its free and irresponsible prenatal existence, which must obviously represent to it a flight from its difficulties. Not being able to adapt itself to the difficulties that beset it, the infantile nonconscious overpowers consciousness with a feeling of freedom from them, and dominates the body with this idea. It reverts to a situation in the past, where such difficulties were not encountered and where there was no conflict, as all responsibility was assumed by the mother. It is a situation that is agreeable and proves eminently satisfactory as a temporary recreation and relief. The irritability of the epileptic before the fit is an indication of the trouble that is going on. The frailty of the infantile mind soon gives way and goes down before the force of the impulsive idea that may almost threaten life itself to accomplish its purpose.

Some conscious control of the impulse is frequently seen. I recall an epileptic who was brought to the Institute for observation. He had been having attacks every eight or ten days, with fair regularity, for a considerable time previously. They would occur usually at night. For half a day beforehand he would have an aura of numbness in the right hand. Special effort was made to witness an attack, and the patient, who was a boy of only twelve, soon became quite alarmed at the apparent seriousness of his trouble. He became so nervous and fearful lest one should occur that he stayed awake, or attempted to do so, on the nights when the aura had been experienced. If he dropped off to sleep he would awaken in alarm, fearful at having allowed himself to do so. He exercised such anxious restraint during his eight weeks in the hospital that he did not have one attack. He was allowed to go about as usual, playing, even roller skating, and no precautions were taken during his stay to diminish his liability to attacks. He had none until this anxiety and fear had subsided, a long time after he left the hospital, when they recommenced and continued as before. It serves to illustrate a very strong influence on the part of conscious systems to control the situation.

My study has, in various ways, served to convince me that consciousness would be able, in suitable cases, to exercise a prohibiting control, if properly directed and armed with an intelligent understanding of the mechanism—much as in the manner by which the hysteric has been relieved of serious mental accidents, such as blindness and convulsions. It is a consideration of the epileptic as presented here that leads me to suggest what appears to be, in the light of our recent successful treatment of the other psychoneuroses, a rational treatment of the epileptic sane.

The Treatment.—I propose to deal, in this paper, with the treatment of such epileptics only as have a fair degree of intelligence, believing that at the outset of such a radical treatment it is best to confine ourselves strictly to the more favorable cases, until large experience with the method reveals to us a manner in which to proceed that may be broader in its scope.

Between the attacks there is as a rule nothing about this class of epileptic that is particularly objectionable. The fit and the loss of consciousness are the only troublesome features, but his present position is a pitiful one. There is no treatment for him that is successful in staying the disease. The rare case recovers spontaneously; the remainder continue. There is a tendency also to psychic degeneration. Peterson draws a picture that makes part of the mechanism of this psychic degeneration plain and shows all too truly the present situation of the victims of this affection: "A study of the psychology of epileptics in general gives us a sort of composite picture, to which all of these patients conform more or less closely. The mental attitude of the epileptic is due to a variety of circumstances. In the first place, he has a consciousness of the dreadful nature of his malady. He is in a state of expectant attention as regards the sudden blackness and prostration which are to strike him unawares at any time, in any place, like the lightning from a clear sky. He can never share the social pleasures of his fellows. The schools are not open to such as he. When he becomes old enough to work he finds that no one wishes to employ him. Every avenue of education, every trade and calling, every road to mental progress, is barred. He is a social outcast, an object of commiseration, a burden to his friends, perhaps a family blemish to be kept concealed. The doctor is called in, and, taking as a rule a hopeless view of the case, abandons him to the mercy of the bromides which further his mental, physical, and moral degradation. In this way the epileptic character is evolved."[12] Certainly such a situation exists that no apology seems needed for introducing a treatment that springs from a new viewpoint.

A systematic study of the epileptic is the first step. Every possible source of local irritation should be investigated. Any slight physical or physiological fault may be an irritant, and should be corrected. Toxic conditions should be sought for and remedied. There should be a very thorough physical examination and a searching neurological one, which latter should include an investigation of the mental processes, their difficulties, and problems. Help should be rendered from the side of the *irritation* if any possible indication presents itself, and the patient put in the very best physical and hygienic condition possible.

The *constitution* of the epileptic should be strengthened in every possible way. This means education. All possible should be done to improve him mentally. He should be educated as well and as thoroughly as his circumstances permit. He should be taught self control, patience, perseverance, and tolerance. His education should include physiology and psychology and as thorough an understanding of his human machine as possible. He should be taught an interest in the world about him. Some regular absorbing occupation is to be strongly recommended. Too much cannot be said along these lines. These are points particularly helpful to all epileptics, and it is from this side chiefly that the colony treatment has been so beneficial. Too much praise cannot be given to the efforts of the epileptic colonies.

The specific treatment directed to the *manifestations* hinges on the patient understanding the meaning of his fit according to the exposition given here. It is best undertaken by one skilled in the analysis of psychological situations. The rationale of the treatment is based on the fact that the epileptic fit is the result of a mental situation, is a mental fact, and as such has a motive and meaning which are possible of discovery and adjustment. Being a mental fact, it is capable of being influenced and controlled by conscious reasoning faculties. There is required for its control a complete understanding of the situation by the patient. He must see clearly the mechanism of his condition as the fulfilment of a nonconscious desire. Its relation to the hysterical mechanism can be brought out, and illustrations used. The manifestations of hysteria are every day being shown to be the result of a distinct wish on the part of the individual. The wish discovered and demonstrated to the hysteric, the manifestation is dissipated and does not reappear. When it is perceived in its true light, for exactly what it means, it cannot act again, for it serves its purpose no longer. Consciously it is not wanted, and consciously it is recognized and under control. There are many examples of this published. Ames' cases of hysterical blindness are striking examples of wish fulfilment; and what is almost a parallel with the epileptic—the case published by Ames and me of "Psychogenic Convulsions the Result of a Wish."[14] The wish in these cases was discovered by psychoanalysis and the accidents of the hysteric completely banished by its revelation.

The plan of treatment is analytical and educational. It should take place in a succession of interviews with the epileptic, perhaps over a long period of time. By conversation the mental grasp of the epileptic can be determined and the explanations put in terms of his understanding. A thorough conception should be obtained of his knowledge of mental processes. His psychology may be very crude, but he will have ideas of some nature about his conscious and unconscious mind, and these ideas can form a basis for some explanation of the workings of his trouble. His understanding of the mind can be gradually supplemented by explanations and examples. He will realize in his own way how, for example, a disordered gastrointestinal tract causes certain vivid dreams, or gives them color, and, gradually, how physical processes influence his unconscious thoughts and make him irritable. He may be made to recall how on certain occasions he awakened in terror from a horrible dream, and even perhaps sprang out of bed. By having him recall and tell about these things, material for examples and illustrations will gradually pile up. He will soon come to understand thoroughly in a personal way how his unconscious mind, or whatever he sees fit to call it, influences his conscious actions and behavior. He can be shown how a certain amount of mental activity, of the nature of dreams or adjusting processes, is continually going on below the level of consciousness. He will supply the illustrations most of the time himself, and it is well to allow him to do so. He will see how no experience is ever lost, how incidents of years before may suddenly flash into consciousness. He will learn how these experiences are used in his dreams and nonconscious mental life. The wish psychology must be elaborated for him, and he must be led to see and to comprehend thoroughly, leading the way mostly himself by his questions and personal recollections, the influence of unconscious desire in all involuntary actions. The rôle of the wish in the hysteric he should comprehend. He should be given numerous examples showing the manifestations of hysteria as bearing always a distinct relation to the question "What does the patient wish to avoid?" and how the wish once recognized by consciousness is controlled and the hysterical manifestations dissipated. If difficulties of the epileptic nonconscious have become apparent they can be used as definite illustrations, to exhibit the mechanism of his own actions. He must be shown how his nonconscious mentality has not met its problems "like a man," as it were; how it has been irritated by certain difficulties, and has met these difficulties by literally saying "I wish I had never been born," so forcibly that the body had been suddenly dominated by the wish, and transferred as nearly as possible to the situation when he was not born. He should be made to see that his nonconscious has obtained a certain amount of relief in this way, and that he has fallen into a bad habit of thus giving vent to his temper or pent-up irritability. All questions should be met and full explanations repeatedly made in the manner that he will best appreciate. He should be told that his trouble is not of such a serious nature as was formerly believed before its mechanism was understood; how its treatment now just hinges on his ability to thoroughly understand the situation; that as he gradually realizes the whole situation it will be woven into the tissue of the personal controlling consciousness and can be banished, as all psychic occurrences can when thoroughly understood.

This is the treatment that I propose for the intelligent epileptic. I offer it as a basis to work upon. To those with experience in the analysis and treatment of psychic disorders, its use, I believe, will be productive of good results from the outset. However, upon the thoroughness with which it is pursued will rest much of its success—success to be measured solely by the disappearance of the epileptic manifestations. Upon the skill of the therapeutist will doubtless depend the quality and thoroughness of the treatment, but the whole procedure does not appear to me to be beyond the power of any neurologist or physician, with experience in the analysis and treatment of psychological situations; and to the efforts of such it is certainly best confined for the present. This treatment is offered with confident hope that it will be found successful, and will serve as the basis for the development of a treatment which will be applicable to a larger class of epileptics than that to which at present we must limit ourselves—the epileptic with a fair degree of intelligence. However, I would like to recall that the case published by Dr. Ames and me, of "Psychogenic Convulsions the Result of a Wish," was a patient who, although eighteen years of age, was far below that mentally, and was shown by the Binet-Simon test to have the intelligence only of the average child of twelve. She was, of course, of the hysteric, not of the epileptic, type, and the situation represented by her fit was one of only four or five years previously, and not so profound and remote in her mental life as that situation represented by the epileptic fit. The mechanism will appear, however, to those studying it as practically the same, and the same fortunate result should be expected.

Summary.—From the viewpoint taken in this paper, the epileptic manifestations themselves are seen to be definite psychical accidents, of much the same nature as the accidents of the hysteric; in fact, differing but little in the main features and mechanism, excepting in the point that the epileptic enacts a situation of a time previous to birth, and therefore accompanied by the profound and certain loss of consciousness of that time, whereas the hysteric enacts a situation, in his accidents, that may refer to any time from his birth on, so that they are unaccompanied by the profound loss of consciousness. The treatment is therefore of a nature somewhat similar to that which has recently been so successful in hysterical cases—the complete education of the epileptic to the point of understanding the whole mechanism and purpose of his fits. This of course must limit us in our treatment to those epileptics only who have preserved a fair degree of intelligence.

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149 EAST SIXTY-SEVENTH STREET.

WHAT LIFE INSURANCE COMPANIES CAN DO TO ASSIST IN THE CONTROL OF CANCER.*

BY HENRY WIREMAN COOK, M.D.,
MINNEAPOLIS, MINN.
VICE-PRESIDENT AND MEDICAL DIRECTOR, NORTHWESTERN NATIONAL LIFE INSURANCE COMPANY.

No more notable or inspiring phase has occurred throughout the development of life insurance than the recent interest taken by insurance companies in efforts along the line of social service. And yet it is really a natural development of this great and varied industry. Originating in the previous century largely as a gambling pastime in England, life insurance has passed through a truly remarkable adjustment. After being established on a solid mathematical basis which is without parallel in any business, life insurance succumbed to and later overcame the abuses which came not unnaturally with the rapid amassing of such huge sums of money, and is finally being conducted on the highest possible plane of business and professional ethics.

This business development has utilized and even stimulated the development of at least three learned professions—medicine, mathematics, and law. Now, as a final crowning achievement, life insurance goes a step beyond the strict business side—even the strictly scientific side of the industry—and takes its rightful place as a broadly humanitarian activity, with its social as well as financial obligations.

Anyone who has seen the exhibits of some of the insurance companies at the different world's fairs and other suitable places of public gathering during the past ten or twelve years—particularly the wonderful Prudential and Metropolitan exhibits at San Francisco and San Diego—could not but be deeply impressed by the large amount of good that these pioneer companies are accomplishing, and also by the great potential power for social service which lies within the grasp of the life insurance companies of this country to-day.

And there is available more than potential power; there is an active desire and even eagerness on the part of insurance officials to co-operate with various social agencies in any legitimate way compatible with business requirements. But while a great deal has already been accomplished, particularly in the field of the prevention of tuberculosis, a vastly increased amount of work can and will be done along similar lines.

There are two directions particularly in which insurance companies can offer invaluable aid in the control of cancer. The first is in the collection of authoritative statistics on the subject; the second is publicity and education. I shall confine my remarks entirely to suggestions in regard to the latter, as the machinery for the former has been laid out and is already in motion under Mr. Hoffman's able leadership as chairman of the Committee on Statistics of the American Society for the Control of Cancer and the Conference Committee of the American Society for the Control of Cancer for the Statistical Investigation of Cancer, which includes Mr. Hoffman, Mr. Hunter of the New York Life, Dr. Symonds of the Mutual Life, Mr. Dublin of the Metropolitan, Dr. Jaquith of the Prudential, and Dr. Wells of the Equitable.

The Equitable, the Metropolitan, and the Prudential have been particularly notable in one direction—that is, in keeping their policyholders instructed in questions of health through the medium of their excellent policyholders' publications. The company with which I am associated, the Northwestern National, has issued similar tracts and literature to its policyholders for over ten years, and many other companies are using the same means. In fact, the remarkable institution known as the Life Extension Institute, with its varied activities, is an outgrowth of insurance life salvage work, Mr. Rittenhouse, the president, having previously conducted the conservation department of the Equitable, and Dr. Fisk, the medical adviser, having made similar notable contributions while with the Provident Savings and the Postal Life.

The publicity which lies within the grasp of insurance companies, practically without expense, through the medium of their routine communications to policyholders (premium notices and receipts, policyholders' publications), through agency meetings and agency bulletins, is immense, and is rapidly becoming one of the most formidable weapons in the fight in behalf of improved health conditions and a generally increased life expectancy. And the very nature of the business of life insurance—and this campaign should include health and accident as well as life companies—makes it peculiarly fitting that through the routine channels of the business, health propaganda should find their way to the public.

There is an additional force to any formal communication if it is associated with something of more personal interest. A premium notice accompanied by a little pamphlet on some question of health preservation holds the recipient's attention more effectively than would merely the formal notice, so that such an inclosure should be an immediate help to the company and not a burden. Policyholders appreciate the personal interest on the part of the company in things which this effort suggests, and it makes them feel that their company is well up in the public health movement, which is a large issue to-day, demanding and receiving a widespread interest.

Only a part of the benefits of life insurance is included in the financial statement showing the millions of dollars paid annually to policyholders and beneficiaries. The constructive and conservative influence of the principles upon which life insurance is founded—that is to say, thrift, protection of family, and business obligations—has had, undoubtedly, a most profound impression on society, and now this influence is being expanded along definite lines of social service, a development which adds materially to the humanitarian benefactions of the business.

*Read at the midwinter meeting of the Medical Section of the American Life Convention at Birmingham, Ala., March, 1916.

There are fifty million life insurance policies in force in the United States, and there are several hundred thousand agents. Every policyholder should be the recipient at intervals of information which will make him better able to give intelligent care to his health and the health of his family, and which will give him a basis for exerting a proper influence on health questions in his community. A very large share of the neglect and opposition on the part of the laity in matters of public health is due to ignorance.

One practical result of such an educational campaign is increased company and general public expectancy, and therefore increased mortality savings.

A man who is selling life insurance should know the theory and the elements of the practice of health and life conservation. Such knowledge not only renders him a more useful citizen but also undoubtedly tends to make him a better salesman. The subject of life insurance can sometimes be opened and interest gained through the subject of health conservation.

In succession each of the newer developments of medical sciences can be given immediate publicity and made operative with a saving of time, which means a saving of lives, through such life insurance service. Take, for one example, the Allen treatment for diabetes. We have called this treatment to the attention of our policyholders; and if the results of the treatment are as favorable as now appears probable we will save a considerable sum in mortality payments, besides adding many useful years to the lives of those of our policyholders or of our policyholders' friends who are passing sugar in the urine. That the medical profession cannot be entrusted with the prompt application of such advances in their own science is shown by the numerous statements we have received from policyholders that their family physician never hear of the Allen treatment—and it has been over two years since the first reports came from the Rockefeller Institute. In some cases these physicians had a large practice in big cities.

Publicity is the secret of advance in the control of cancer. A very large proportion of American physicians are not yet thoroughly aware of the salient points in this control, and, as a matter of fact, a layman and insurance official has perhaps done as much as any physician in this field. I speak of the well-known work of Frederick L. Hoffman. Many other influential laymen are deeply interested and active in this campaign, and many are associated with some of our leading physicians and surgeons in directing the activities of the American Society for the Control of Cancer.

Very valuable campaign material has been collected by this society, as well as by the Metropolitan and the Prudential life insurance companies, and is embraced in several pamphlets which ought to be on file in every insurance office for reference. The pamphlet of which Mr. Dublin of the Metropolitan has sent me 100 copies for use at this meeting has been distributed by that company to its policyholders for several years.

This cancer symposium presented to-day, and so forcibly led by Mr. Hoffman's treatise, will bring the subject of cancer control to the attention of all insurance officials and, through insurance publications, to many insurance agents.

But merely bringing the subject to mind for temporary consideration without having stimulated definite action will lose to the discussion its greatest value. Can we not translate the sentiment now created into specific action? If every insurance office where the subject of cancer control has been brought to mind would do something about it, instead of letting the idea recede into what Grover Cleveland called "innocuous desuetude," a considerable forward step would have been taken.

There can be no doubt in any of our minds as to the force in behalf of an enlightened public which rests in the hands of insurance companies; and we must also realize that publicity, and publicity again and again, is necessary to bring about a real advance in the control of cancer. This education must be brought direct to the people. It cannot be left entirely to the medical profession. A doctor may know all about the radical cure of precancerous conditions, or he may not; but if his patient hides her knowledge of the lump until it ulcerates, the doctor's knowledge has lost any value to her.

The men and the women of this country must be made to understand:

1. That cancer is a disease that one person in eight over forty dies of.
2. That cancer is recognizable in an early, or precancerous, stage.
3. That ignorance of the early signs is very dangerous and often fatal.
4. That cancer recognized early and given prompt radical treatment at competent hands is curable in a large proportion of cases.
5. That quack, patent, non-surgical treatment of cancer is responsible for the loss of many lives annually.
6. That ignorance of the early signs and of the necessity for prompt action is a large element in the present mortality from cancer.

These represent the cardinal points, elaborated and emphasized in the tracts, papers, lectures, newspaper articles, etc., which are opening the way for a systematic effort in cancer control similar to the one which has accomplished such large results during the past two decades in the control of the white plague.

In order to put the matter into as concrete shape as possible I have prepared a small folder which will fit into the ordinary premium notice and premium receipt envelope, and which contains a short collection of some of the facts requiring publicity which the Society for the Control of Cancer has indorsed.

I would greatly appreciate the privilege of putting the matter before you in the form of a resolution, as I feel that the formal indorsement of this meeting will carry a great weight in determining action and therefore in accomplishing results. I would therefore like to move, Mr. Chairman, if such action is within my rights, that the Medical Section of the American Life Convention heartily indorse the present movement toward the control of cancer, and that we recommend that during the current year 1916, each company holding membership in the American Life Convention prepare and distribute to its policyholders and agents, in some suitable form, authoritative advice in regard to this disease, its frequency, its treatment, and general control.

The companies that will co-operate in this way will perform a double service—a service to the public and their policyholders in the saving of many useful lives among the latter; and also a service to the companies, in that it will cause a certain increased saving in mortality. If adopted, this concerted action should mark a most valuable forward step in the control of cancer.

RADIUM AND SYMPTOMATIC BLOOD PRESSURE.*

By DOUGLAS C. MORIARTA, M.D.,

SARATOGA SPRINGS, N. Y.

I HAVE two thoughts which I wish to present for your discussion to-day:—high blood pressure and its significance, and the use of radium for its relief.

The more I see of patients who have a symptomatic blood pressure, the more I am convinced that we do not give them the careful attention they require. These people are invariably moody and nervous, and the knowledge that their blood pressure is high is a constant menace to their health, as they live continuously in a state of apprehension. They are happy if the pressure is down 5 mm. to-day, and morose if it happens to be up 5 mm. to-morrow; notwithstanding the fact that this deviation from day to day is not more than the actual error of manipulation. They are usually uninformed as to the cause of the symptom, and apparently it has never been taken into consideration whether their individual index is a normal one for them or not.

So I believe that our patients should be taught the cause and significance of an increased blood pressure. This would allay the natural perturbation that is felt when they are informed of the presence of this symptom. As a rule, much of the nervousness and apprehension would not have occurred, or will disappear, when their condition is explained and they understand that a high blood pressure is only a *symptom*, and not a disease, *per se*. They should know that their increased pressure is probably a normal index for their pathological state; that its presence is essential if nature is to keep a balance in the performance of her functions; and that, while it is a symptom of a morbid condition, it is necessary, and one that will be present until the exciting cause is controlled. The best illustration we have of this statement is the number of people who go about perfectly happy, with a constant high blood pressure, until they discover that their pressure *is* high.

I do not intend to minimize the importance of this symptom, nor to suggest that it is not an anxious one. But I must deprecate the unfortunate influence which this knowledge seems to have upon our patients when they are simply told that their blood pressure is increased, without some explanation.

Consequently, when we are estimating the blood pressure of a patient and find that it is relatively high, we should go more into detail; tell him that it is the exciting cause and the pathological condition which are of importance and not the registered measure. He should be told that it is an index to either a functional or an organic derangement; that if the trouble is organic, the increased pressure is necessary, and is nature's method of balance; while if the trouble is functional, an effort will be made to control it by removing or correcting the exciting cause; and that this knowledge must be had, and this conclusion reached, in every individual case that carries an increased blood pressure, and that it is the only criterion.

It is a common observation that both physicians and patients are inclined to the continuous use of drugs to relieve high blood pressure. This is not good practice and should be avoided except to relieve some temporary condition.

*Read before the Saratoga County Medical Society May 3, 1916.

It is well to lay particular stress upon the fact that patients often have a high index which is a normal one for the existing condition; that it is essential to their well-being and must not be interfered with. On the other hand, when we do meet high blood pressure which is a true hypertension, the welfare of the patient will be enhanced when it is controlled. In other words, no patient should be judged by comparison with any other patient, but only after a study of his individual case. In this way only will a safe working conclusion be reached.

So I urge that we explain to our patients that their increased blood pressure is an indication of a more or less complex condition, which may have been developing over a period of years; that it may be functional and involve the toxins of the alimentary tract; or it may be organic, involving the kidneys, heart, and blood-vessels. Explain that such a condition frequently occurs in a hard-working person who has an exacting business, which has been carried on under constant nervous strain, without periods of rest. Such an individual has, perhaps, been in the habit of eating quickly and irregularly, often being over-fed with rich, highly-seasoned, nitrogenous food. When to this are added tea, coffee, tobacco, and alcoholic stimulants, the individual, while still young in years, is old in fact. Thus, as Bishop states, "that which in early life was a case of indigestion, after many years of such living, has developed into a nephritis with a high blood pressure." Perhaps the condition may not have progressed so far as this; or it may have gone still farther, and degenerative changes may have occurred in the heart, kidneys, and blood-vessels. In the latter case, if compensation gives out, we will probably have a secondary low blood pressure which is of serious omen.

I shall not attempt to describe the early, progressive, or late symptoms of arteriosclerosis, as I simply wish to call attention, at this time, to the baneful effect upon the patient's mental condition, of symptomatic blood pressure, when the reason for the presence of this symptom is not fully understood. The successful management of such a case is possible, I believe, only when the patient thoroughly understands its significance.

I have been treating patients with symptomatic blood pressure for years with our mineral waters, particularly those who have come to Saratoga for their health, and with uniformly good results. It has, of course, been necessary to correct the exciting cause, so far as possible, by a carefully regulated régime and not by the use of drugs. I have learned to value the Saratoga mineral waters as a therapeutic agent very highly. I am not unmindful of the benefit of a regulated life, such as is followed when one is taking a cure. I fully appreciate the "few-protein" diet of Bishop and the vegetable protein diet of Kellogg; and I recognize the importance of clearing the intestinal tract and increasing elimination by the use of salines and the alkalies, as well as the advantages of the omission of tea, coffee, alcohol, and tobacco, and the benefit to be derived from the use of mineral-water baths. Yet I imagine I see an effect beyond all these when one uses our Saratoga mineral waters therapeutically. I have also noted that they had a remote effect, *i.e.* a general betterment which was noticeable months after taking a course of treatment at the Springs. It has always seemed to me that the improvement I noted in my patients when using these waters could not be entirely accounted for by their chemical

analyses, and that their action was unusual; and I have for many years expressed myself to that effect. I now believe this remarkable action to be due to their radium content.

It has been my experience that the blood pressure of a patient taking the cure will drop from 20 to 60 mm. of Hg. in a period of from four to six weeks, almost without fail. Of course, I exclude in this statement those in whom advanced cardiovascular or renal degeneration exists. All etiological conclusions concerning symptomatic blood pressure point to perverted metabolism as the primary cause, regardless of the terminal pathological symptom. Physiologically we are taught that radium stimulates the individual normal cell to increased action,

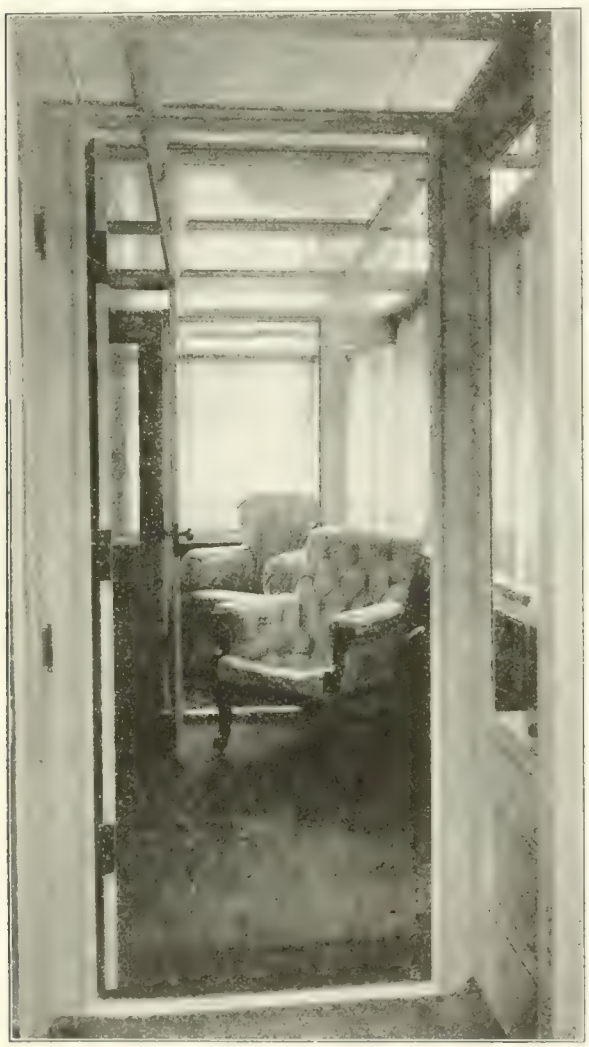

Fig. 1.—View of emanatorium.

or corrects a perverted cell action by its influence on the enzymes. It also affects the nervous system and produces dilation of the blood-vessels.

Clinically we know, beyond possibility of contradiction, that it increases very promptly the red blood cells, increases elimination from the kidney, in the quantity of both the water and the solid content of the urine; it also acts as a stimulant to peristalsis, thus being a mild cathartic and increasing in this way elimination from the alimentary tract; and it invariably produces a sensation of general well-being. Possibly small quantities of radium act as synergists, or perhaps the reverse is the case. In any event, mineral waters containing radium salts, or those that are radioactive, have their therapeutic possibilities materially increased.

The objection has been made that a few Mache units of radium contained in a liter of our water could not act as I believe it does. It is, however, a recognized fact that radium possesses an almost incomprehensible catalytic power, even in infinitesimal doses; larger doses do undoubtedly possess added therapeutic possibilities.

After studying the reports of the physicians of the European spas and those from the London Radium Institute, I learned that they generally believed larger doses of radium emanation to be essential to the best therapeutic results; and that while their waters contain radium in larger quantities than our Saratoga mineral waters, yet they had found it helpful to fortify the action of the waters by the further use of radium element. I was impressed with their results, and decided to adopt their methods—this plan of treatment, therefore, I put into effect early in the spring of 1915.

I experienced quite some difficulty in adjusting my equipment for activating water and for inhalation purposes. I have, however, finally succeeded in arranging a very satisfactory outfit which answers my purpose admirably. I have for your consideration some photographs of the apparatus which I trust will prove of interest. The features of more particular importance to which I desire to draw your attention are to following:

1. The subceiling effect, which reduces the cubic air space without the sensation of stuffiness.
2. The electric fans, which keep the air in motion, thereby making the treatment more agreeable.
3. The separate compartments within the emanatorium, together with an improved arrangement for distributing the emanation, make it possible to vary the quantity administered.
4. The provision which makes it possible to freshen the air in the emanatorium by the introduction of oxygen.
5. The arrangement for the removal of CO_2 from the atmosphere.
6. The apparatus for activating water is arranged so that there is very little lost space—therefore we have a high percentage of efficiency.

The entire outfit, although composed of several units, is so constructed that all or any part of the emanation can be thrown into either of the treatment rooms; this also applies to the apparatus which activates the waters.

During the past year I have treated fifty-six cases in which there was an increased blood pressure with radium emanation in addition to our mineral waters plus a regulated régime. These cases may be said to be too few to warrant the formation of an opinion concerning the possibilities of radium, particularly as over half of these patients were under observation only from four to eight weeks; nevertheless I do believe that my experience has taught me that radium possesses valuable therapeutic properties. It will be interesting for you to know that in varying degrees there was in every one of the cases a lowering of blood pressure index and an increased red blood count. I desire to bring to your attention a few brief case histories that may serve to illustrate the above conclusions. My findings as a whole show that radium emanation lowers symptomatic high blood pressure, and I might add that even in cases showing advanced structural changes in the kidney, heart, and blood-vessels I have found it helpful.

Case I.—Mrs. F.; extremely nervous temperament;

has always lived well; has a cocktail before dinner, and often a highball or wine with dinner. Has suffered with colonic stasis and its concomitant toxemia for several years; is anemic, sallow, and has a red blood count of 4,000,000, the blood pressure varying from 150 to 160 mm. She was ordered to drink radioactive water daily

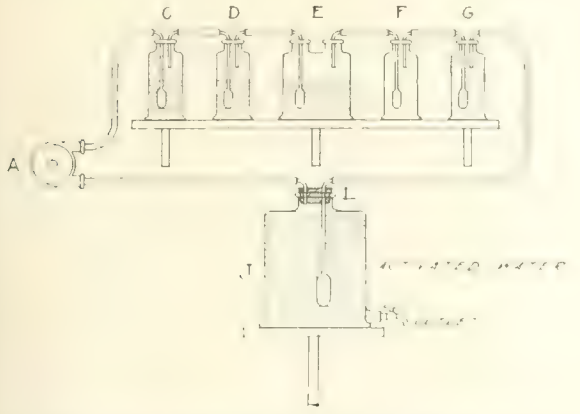

FIG. 2.—Apparatus for activating water: *A*, motor-driven air pump; *C*, *D*, wash bottles; *E*, radium solution; *F*, *G*, protective bottles; *J*, activated water jar; *L*, cork for filling.

containing 15,000 m.u. in divided doses. At the end of a month her complexion cleared up; red blood count increased to 4,600,000, with a reduction of the blood pressure to 140 m. and a general sense of well-being.

CASE II.—Miss M., housewife, complained of severe neuralgic pains, malaise, loss of appetite, disturbed sleep, and torpid bowel; distressed breathing on going upstairs. Blood pressure 230; urine negative on repeated examinations, except that the specific gravity varied from 1004 to 1010. Red blood count 3,400,000. She was given 50 micrograms radium element intravenously, followed by a second injection three weeks later of 25 micrograms, with 1 liter (100,000 m.u.) of activated water daily. At the end of four weeks her blood pressure was 180, with a red blood count of 5,400,000, and there was a feeling of general betterment. At the end of eight months her blood pressure is 165; she has had no remedies other than periods of taking the activated water.

CASE III.—Mr. B., age 76, merchant in active life. Complained of shortness of breath and precordial pain on slight exertion; no other symptoms. Blood pressure 230. Urine showed fine granular casts, no albumin; specific gravity 1004-1006. This patient was given 25,000 m.u. of activated water daily in four divided doses. After a distressing reaction it was discontinued, and tried again after forty-eight hours with 15,000 m.u. daily. This was also found to be too large a quantity, and finally 6000 m.u. per day were tolerated, which were later increased gradually until 30,000 were given in twenty-four hours. This resulted in a lowering of the blood pressure to 185, with a decided relief from the symptoms that had appeared on exertion.

CASE IV.—Mr. S., age 74, master carpenter, was seen in consultation. Patient had intense dyspnea on the slightest exertion, was unable to lie prone, had constant cough, with mild edema of the lungs. Both legs were edematous nearly to the trunk; he had a ruptured compensation and a secondary low blood pressure of 105. The urine was loaded with albumin; small and large granular casts were present. He was given 50 micrograms of radium element intravenously, with 25 micrograms one week later; also 1 liter (100,000 m.u.) of activated water daily. In forty-eight hours his dyspnea was relieved and he was able to lie prone; edema of the legs entirely cleared up and he was decidedly more comfortable for a period of two weeks, when he suddenly died.

CASE V.—Mr. D., age 56, in active life; has suffered from glycosuria for three years past. This condition is absolutely controlled by a regulated diet and life, except that he has a constant blood pressure of 158 to 165. This patient was given 40,000 m.u. of radium emanation in activated water daily, which caused a distressing reaction. Eventually he could tolerate activated water containing 20,000 m.u. daily, and continued to take that amount for two months, with the result that his blood pressure was reduced to 120 mm. and remained under 130 for a year.

CASE VI.—Mrs. K., housewife, 60 years old, an active, high-strung, nervous woman. Complained of continuously painful muscles, and that she was not up to her regular duties—headache, malaise, loss of appetite, and disturbed sleep. Bowels regular. Blood pressure 190. Urine negative. I gave her ½ liter of radioactive water (50,000 m.u.) daily. After a period of four weeks blood pressure was 175 and she stated she had not felt so well in years.

CASE VII.—Mr. S., janitor, age 60; hard-working, closely confined man. Is anemic and sallow, has digestive disturbance, and is not able to continue his duties Blood pressure 185; hemoglobin 65; red blood count 4,800,000. Was given daily a liter of radioactive water.

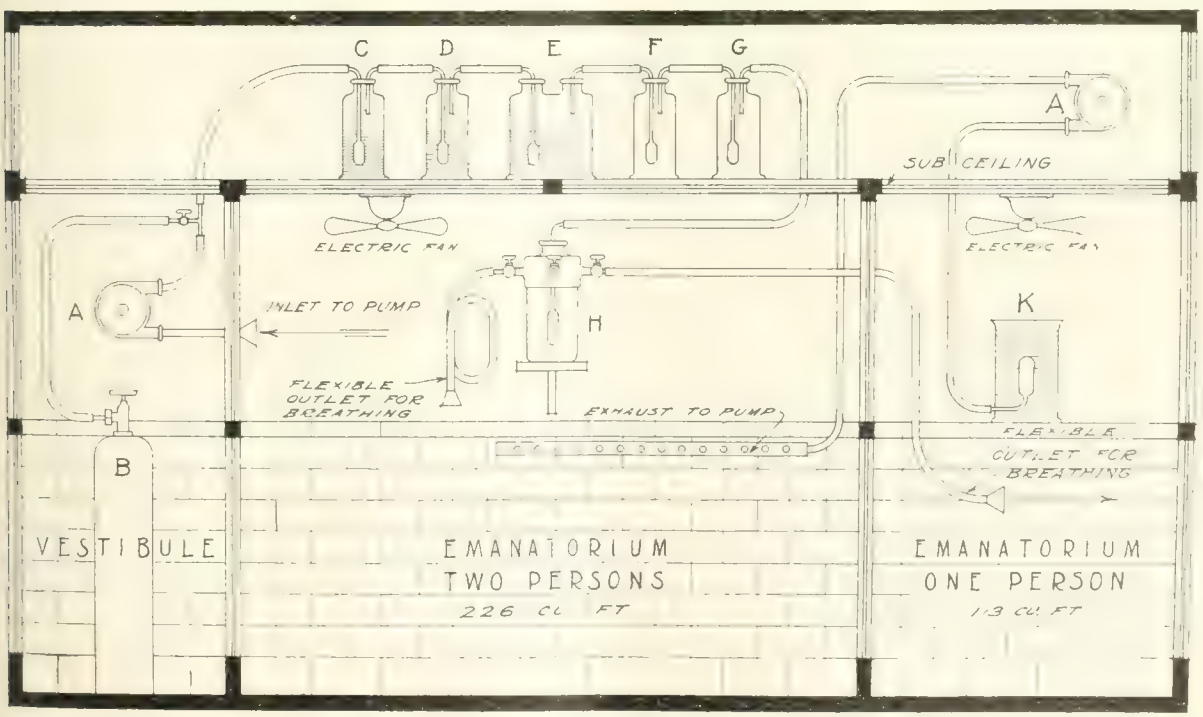

FIG. 3.—Section through emanatorium, showing scheme for forcing radium emanations into the emanatorium and apparatus for removing CO_2 from the atmosphere. *A*, motor-driven air pump; *B*, oxygen tank; *C*, *D*, wash bottles; *E*, radium solution; *F*, *G*, protective bottles; *H*, receptacle for emanations; *K*, lime-water for removal of CO_2 from the air in the emanatorium.

containing 100,000 m.u., for six weeks with a complete restoration of his well-being. Blood pressure 170; hemoglobin 80; red blood count 5,600,000.

I am aware that the indications for the use of radium emanation could not be determined from these few cases. This is so for two reasons: first, the small number of cases, and second, there is such a paucity of knowledge concerning the proper dosage.

I inaugurate a course of treatment with either radioactive waters, radium emanation by inhalation, or an intravenous injection of radium in the form of a soluble salt. The radioactive waters are given in doses ranging from 25,000 to 100,000 Mache units of emanation per day, in divided doses after meals and at bedtime.

Radium emanation by inhalation is given daily in the emanatorium for a period of two hours—this daily treatment is further fortified by prescribing a varying amount of radiactive water taken at the beginning of the sitting and at the end of the treatment. The ordinary emanation content of my emanatorium shows 250 Mache units of emanation per liter of air.

Radium element in the form of the soluble salts is given intravenously in selected cases either at the commencement of the treatment or after the response to the radioactive waters or the radium emanation by inhalation has not been sufficiently effective. As a rule, I follow the first injection with a second in two weeks, and vary the quantity from 10 to 15 micrograms of radium chloride. Administration of radium intravenously is always followed up with a course of waters and inhalation.

I would sound a note of warning, or at least urge precaution, in the use of large doses of radium emanation at the commencement of the treatment of any patient, as I have many times observed a special reaction from radioactive waters, such as severe headache, malaise, digestive disturbances, and a rise in temperature. When this supervenes the treatment should be discontinued for a day or two, after which the course can be resumed with about one-fourth of the original dosage and gradually increased until the desired result is secured. In this manner of procedure almost any amount of radium emanation can be administered.

There are other clinical points of importance which should be considered, but the time at my disposal will not permit their discussion.

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511 BROADWAY

The Vacuum Cleaner as an Insect Catcher.—A writer in the *Scientific American Supplement* suggests that a house can be rid of night-flying insects by lighting an electric lamp in a room, and then as the insects gather they are trapped by holding the nozzle of a vacuum cleaner over them.

THE DIVIDING LINE BETWEEN MEDICAL CHARITY AND MEDICAL BUSINESS.*

BY E. A. CODMAN, M.D.,
BOSTON, MASS.

THESE are days in which we hear much of the inherent "rights" of the individual. I suppose that "charity" and "business" are individual "rights," but I doubt if there is any individual right to confuse them as we do in medical practice—in fact, as the public forces us to confuse them. The public demands "humbug" from the doctor and from the politician. Success in either profession is almost unattainable without some of it. Must it be so eternally or can we hope to gradually eliminate it at least from our profession? One of our pet humbugs is to confuse charity and business.

It is difficult to define "charity"—particularly in its semi-medical usages. The work which we do at the charitable hospitals without direct financial recompense—is that charity?

From six definitions of Webster's as to the meaning of the word "charity" I have selected two: First, "Whatever is bestowed gratuitously on the poor for their relief." Second, "That disposition of heart which inclines men to think favorably of their fellow-men and to do them good."

Now, which of these definitions best fits our hospital work? The first is a clear enough definition—"whatever is bestowed gratuitously, etc." It may be a worn-out and worthless shoe that does not fit and gives no relief. It may be a useless operation which we do with good intent, but which results in lifelong suffering. Nevertheless, these are things "bestowed gratuitously on the poor for their relief." Business would bluntly say, "Relief given to the poor, as a part of the business." It would not ask any credit without delivering the goods—*i. e.* the relief. But this cold business statement lacks the sentiment of sacred intention which accompanies the worthless shoe or the maiming operation!

Now what of the other definition? "That disposition of heart which inclines men to think favorably of their fellowmen and to do them good." There is nothing here which speaks of the poor; in fact, this definition applies alike to rich and poor and it insists that good be done as well. Not an *old* shoe but a *good* one. Not a useless operation but one which does good! And there is nothing incompatible in this with good honest business, which Webster says is: "any particular occupation or employment for a livelihood." Good business merely assumes that you do so well that your fellowmen will think favorably of you and do you good also.

The burden of the argument which follows is against the kind of medical charity which combines business and Webster's first definition, and in favor of the kind of business which uses the kind of charity implied in the second definition. The public has had enough of the "whatever is bestowed gratuitously" kind of charity and needs the "do them good" kind, even if it comes hand in hand with honest business. Inefficiency and dishonesty in either charity or business should be equally abhorrent to our profession, and honest business will give efficient charity its full play and help us to have "that disposition of heart which inclines men to think favorably of their fellowmen and to do them good." This is difficult under present hospital con-

*Read before the Harvard Medical Society of New York on January 22, 1916.

ditions. Pretence and humbug perhaps even more than "commercialism" tend to make us think unfavorably of our fellowmen. Our present system of conducting "charitable" hospitals is full of pretence and humbug. If we frankly acknowledge the business part of it, there is still plenty of chance for honest "charity." The ideals of the medical profession can be better maintained by conducting business with "charity" than by pretending that our "charity" is not business.

A GEOMETRICAL DEMONSTRATION OF THE PROPOSITION THAT CHARITY SHOULD BE ELIMINATED FROM MEDICAL BUSINESS WHICH SHOULD, NEVERTHELESS, BE CONDUCTED WITH CHARITY.

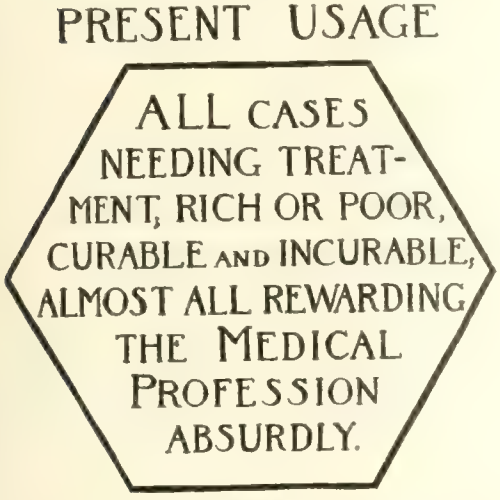


FIG. 1

Fig. 1. Let the hexagon include all cases which are under the care of the medical profession whether these cases are rich or poor, curable or incurable, efficiently or inefficiently treated by quacks or scientists, regular or irregular practitioners. You know the absurdities under present usage. The rich and fashionable are paying ridiculous fees. Sometimes to osteopaths or other irregulars for great relief or serious damage; and sometimes to our best surgeons, gynecologists, and practitioners for simple and occasionally useless or inadequate operations or courses of treatment. We see simple cases which any well-trained young doctor could care for, taking the time and energy of some great teacher; we see the most difficult cases being operated on by the young and inexperienced interne who will never be a good surgeon; we see many an ambitious young surgeon relatively idle during his best years between the interne and the staff appointment. We see well-to-do cases in the charitable hospitals and the most pitiable cases of respectable poverty paying their last dollar for inefficient treatment from some too busy man with a"reputation." Perhaps worst of all we see the nonproductive "practical" surgeon who uses the hospitals for what they are worth to *him* without paying back to medical science by teaching and research the debt which he owes her for his opportunities. Contrast his golden harvest with that of the truth-seeking pathologist whose services are so invaluable and yet so grossly underpaid.

Fig. 2. This hexagon represents the ideal which we all seek and the community would be glad to grant us. Even when all cases become curable it will require educated labor to cure them. The community has always been willing to pay enough money; the trouble has been to distribute it evenly. The money now spent by the State, by the municipalities, by endowed institutions, etc., taken with that now *earned* by the medical profession or squandered on quacks or on the "successful" members of our profession, would be ample to take care of the

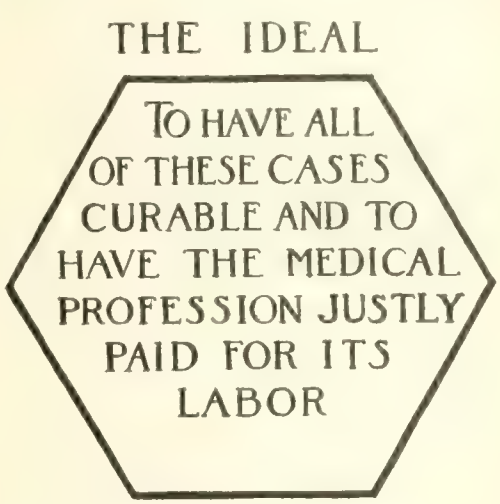


FIG. 2

health of the community if the organization of our work was thorough. But we have not yet begun to subdivide our work on any rational basis. Let us do it now as far as we can into charity and business, curable and incurable, rich and poor.

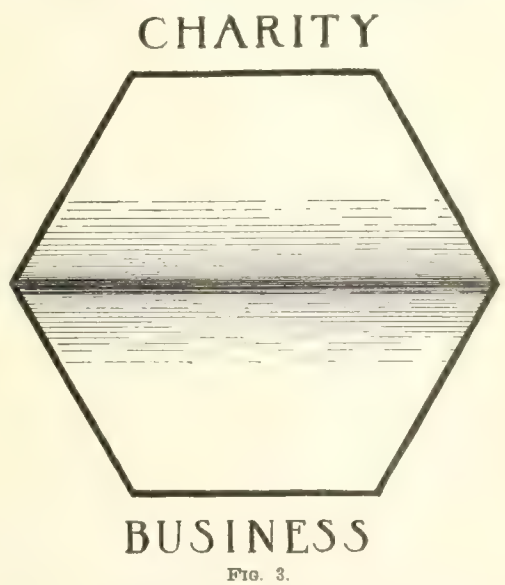


FIG. 3.

Fig. 3. Let the hexagon still include all cases and let us divide them into those appropriate for medical charity and those appropriate for medical business. Obviously the dividing line cannot be a sharp one. A case which would be an expense to a busy surgeon would mean a few dollars more to some recent graduate. It is the relative wealth of the patient and the doctor which determines the question in most cases. Nevertheless, some cases are surely subjects for good business and others are surely objects of charity. We can, therefore, draw a dividing line if we do not make that dividing line definite. The important question is as to which side of the middle to draw it. Depending on this decision it will, though indefinite, become a variable increasing toward its limit. Everything in the world can be subdivided and each subdivision can in turn be subdivided. The question is then, does the line progress toward the business side or toward

the charity side? Is it desirable to have medical business or medical charity take care of the mass of the people?

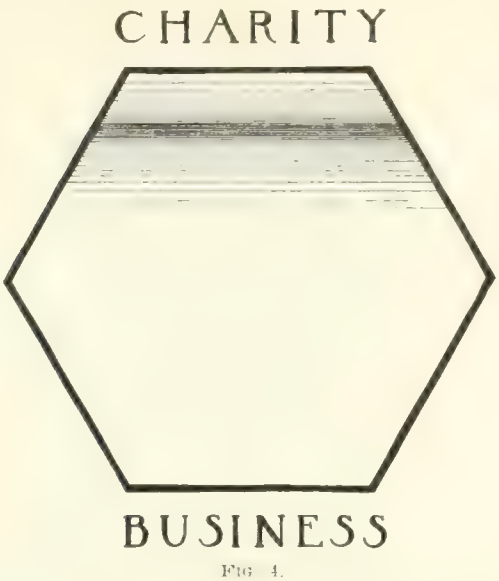


FIG. 4.

Fig. 4. I think you will all agree that our American democratic ideals would answer that any decent self-respecting body of people would want to pay justly for goods delivered. We should all be glad to see charity in its usual meaning approach its minimum limit. We should be glad to see justly paid medical business take care of so many cases *successfully*, that the endowed institutions could use part of their funds for salaries for the men who are able and willing to study how to relieve the few remaining incurables. The more that abstract medical science (= endowed teaching and research institutions) turns over to applied clinical science (= the practitioner and self-supporting private institutions) the more educated, honest laborers (= careful practitioners and salaried specialists in institutions) will be needed.

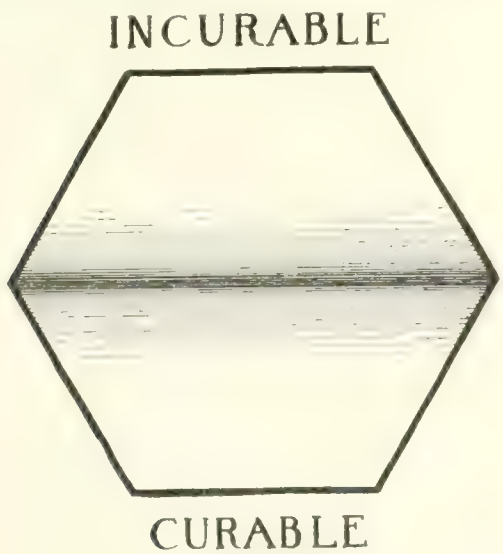


FIG. 5.

Fig. 5. Again the hexagon includes all cases. All cases can be divided into curable and incurable if the dividing line be indefinite. Some pathological conditions are always curable; some always (hitherto) incurable, but the majority are now one and now the other with the infinite variations of circumstance and personality. But surely we can say that the object of our highest professional ideals is to conquer the hitherto incurable diseases and to teach the rising generation of students how to efficiently apply our knowledge. Perhaps this dividing line may still be on the *curable* side, but its direction of progression is toward the *incurable*, as in Fig. 6.

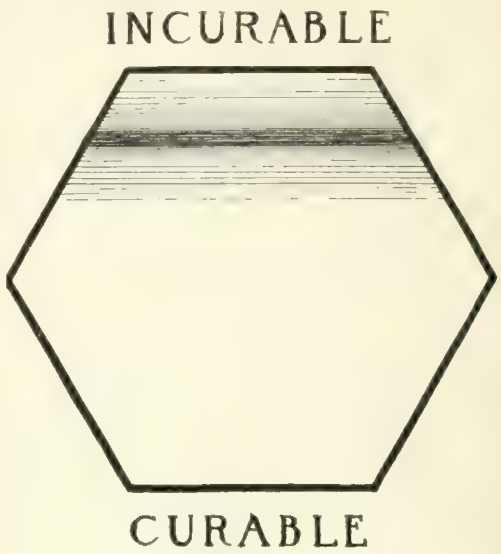


FIG. 6.

Fig. 6. This illustrates the variable "curable cases" increasing toward its limit and the variable "incurable cases" diminishing toward its limit.

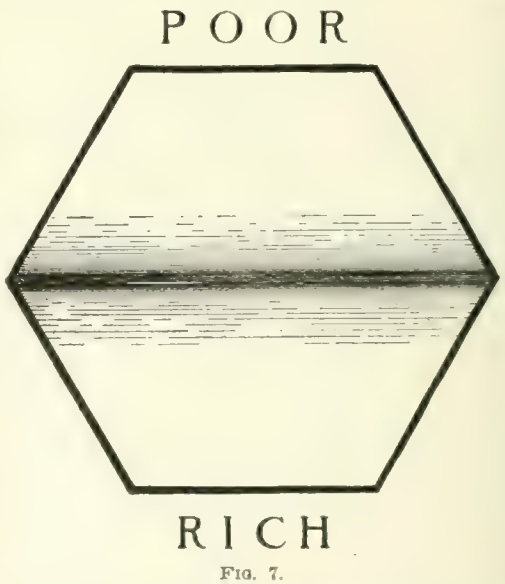


FIG. 7.

Fig. 7. Again the hexagon represents all cases, but this time there is the same indefinite line to separate the rich and the poor. The equitable distribution of wealth is the aim of political and economic science. Whether this is to be brought about by monarchy or democracy, socialism or feminism, war or the single tax is not less one of the problems of our profession than of the rest of mankind. At least, we may agree that this variable should approach the limit of the total exclusion of poverty from our hexagon.

Fig. 8. If it were not for envy and jealousy there would be no logical objections to the rich becoming richer, provided the poor did also. This diagram merely argues that the proper direction for progress is to make the poor richer not the rich poorer. Everything which we know is a variable approaching a limit. The polygon itself by the addition of

an infinite number of sides tends to become a circle. The outer circle is our "ideal"—the mathematical conception of a circle; the inner circle is the "practical" and contains what little we do know. When we work in unison with the expansion of the inner

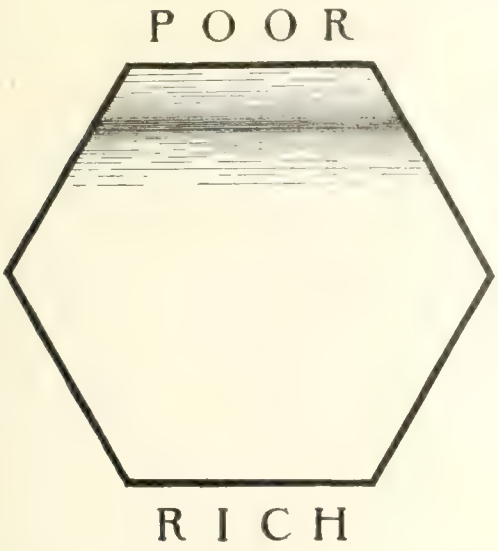


Fig. 8.

circle toward the outer circle, we stand for truth and are happy. When we distort truth for our own end, for our institution or for our country, we sing out of tune with the universe and sooner or later are unhappy.

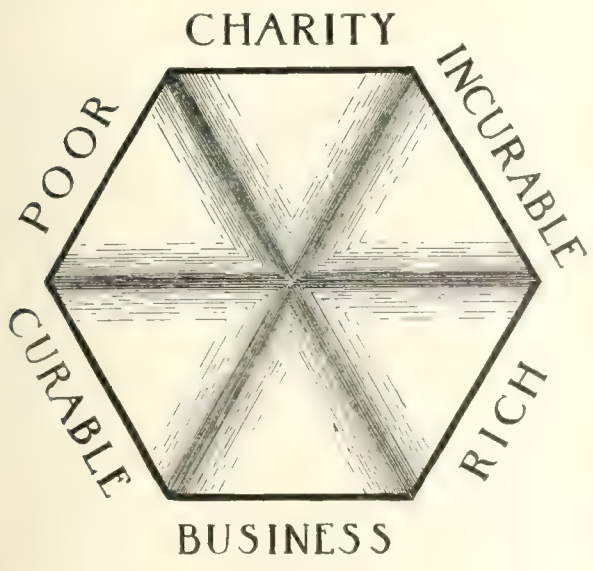


Fig. 9.

Fig. 9. In this figure all our original hexagons (Figs. 3, 5, and 7) are superimposed. Which triangle thus formed is the most desirable? Starting with business and going to the right. (1) Those in the business half that are both rich and curable. (2) Those in the business half that are rich and tending toward the incurable. (3) Those that are in the charity half but are rich and incurable. (4) Those that are in the charity half that are both poor and incurable. (5) Those that are in the charity half but are poor and curable. (6) The curable poor cases in the business half. Obviously the two most appropriate triangles are the first, in which are those cases that are both rich and curable and are, therefore, rightly cared for by medical business, and the fourth in which are those that are both poor and incurable and hence objects of charity. Therefore it is desirable to increase the province of the business triangle by cutting off areas from the other triangles. We want to keep business from inefficient meddling with the incurable rich so that the money which the rich are glad to pay to individuals or to bequeath to institutions will be used for the incurable poor and the salaries of those invaluable men who are conquering the incurable diseases. We want to oblige business to relieve charity of the *curable* poor so that charitable funds can be concentrated on the study and care of the *incurable* poor.

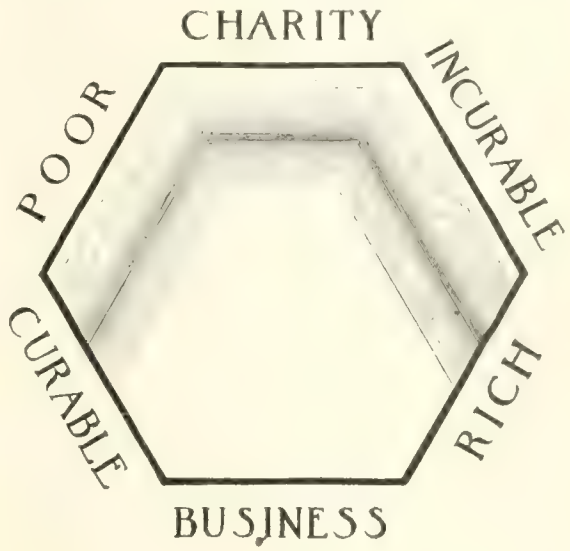


Fig. 10.

Fig. 10. If, in Fig. 9 we were correct in thinking that the business triangle should expand by absorption of the others, and in Figs. 3-8 we were correct in estimating the direction in which the variables were increasing, then by superimposing the second set of diagrams (Figs. 4, 6, and 8) we should find the two in unison and the business triangle become a smaller hexagon increasing toward its limit inside of a larger one. This we do actually find to be the case and from it we see that the smaller hexagon—honest medical business or applied clinical science—treating only curable cases—constantly taking on more poor for the sake of treating more rich—relieving charity of the curable, etc., etc., is the ideal we were seeking in Fig. 2. *Quod erat demonstrandum.*

Like other geometrical propositions this problem has its corollary. For the future development of medical science we must acknowledge applied clinical science or medical business as a legitimate child and educate it to be honest as well as learned. My philosophy would add other sides to the hexagon, justice versus injustice, truth versus falsehood, and so on until a many sided polygon is formed and show you that a circle growing within a circle is the symbol of human progress.

Practically, what can the modern physician do toward the realization of these ideals? Such radical changes do not come suddenly; it is by helping a little in one direction and then in another that we push good things along.

You know my answer—help on the End Result System. It is the part of our medical science to determine which are curable cases suitable for business (= applied clinical science) and which are relatively incurable cases suitable for special study

and record by experts in scientific institutions.

Let each hospital and each individual in each hospital put off on the "man higher up" every case in which he seriously doubts his own ability to effect a cure. And *vice versa* let each of us who are the "men higher up" refuse to care for the simple curable cases which our juniors can treat as well as we can. Most of our best men do this now, but let us make it the fashion, so that those who do not do it will be unpopular.

When this applies to individuals it will begin to apply to hospitals. Why should the small poorly equipped, poorly financed non-teaching hospitals be allowed to experiment with unusual and difficult cases? Let us encourage the small hospitals to send their bad cases to the great teaching hospitals—let us even put some penalty on such small hospitals unless they show good results—and honor them if they do. And let us encourage private hospitals which advertise to treat only those cases which they are qualified to treat and thus render themselves subject to litigation if negligent or unscrupulous. Even if appendices, like teeth, can be pulled for a dollar, there will be plenty of expert work left for the medical profession.

The more that any science can turn over to "applied science" or business, the greater service it is to the world and the more does the world value it. Let us make for the truth-seeking, scientific clinician a place comparable to that of the great electrical and engineering experts to whom even "big business" has to turn. Let the "charitable" people of the world through the endowed institutions pay such men salaries large enough so that they in turn can be "charitable" if they want to, without pretending that their business is "charity."

Let us encourage those of our colleagues who use charity for business to get out of charity into honest business—provided they use *applied science* and deliver the goods as the bridge builders, electricians, and chemists do now.

In other words, let us legitimatize the "no cure; no pay" idea which for centuries has been the bugbear of "the men higher up" in the profession. The "leaders" of the medical profession even to-day, perhaps fear that if they once admit that which is logically obvious, *i.e.* the end result system and its corollaries—that their own incomes might materially decrease. This is a ridiculous fear for the best men will still be the best men, and all will be better men if we discard an ignominious old bugbear which shielded medical science in its infancy like a protective tariff.

Nowadays the medical profession is safe in acknowledging the obvious right which any man has to treat patients *successfully only*, because in order to do this a team of trained and honest men backed by a responsible financial support is necessary to set up a successful "No Cure No Pay Institute." Such an institute will have to pay for mistakes and accidents as the railways do.

The real question is: Have we yet attained a sufficient fund of applied clinical science to be able to allow such an institution to pay a profit?

227 Beacon Street

Pain at Root of Neck and Cardiac Irregularity.—Dr. D. Owen Williams has noted this condition in a woman aged 59. There was marked local pulsation with coupled beats corresponding to the heart sounds. Under appropriate cardiac treatment the pain passed away within four days, the heart sounds becoming normal.—*British Medical Journal.*

THE PRACTICABILITY OF RATINGS IN APPOINTMENT AND PROMOTION OF MEMBERS OF THE VISITING STAFF.*

By ROBERT L. DICKINSON, M.D., F.A.C.S.

BROOKLYN, N. Y.

CAN the municipality select surgeons for its hospitals without some clear and full schedule of the qualifications that make for fitness?

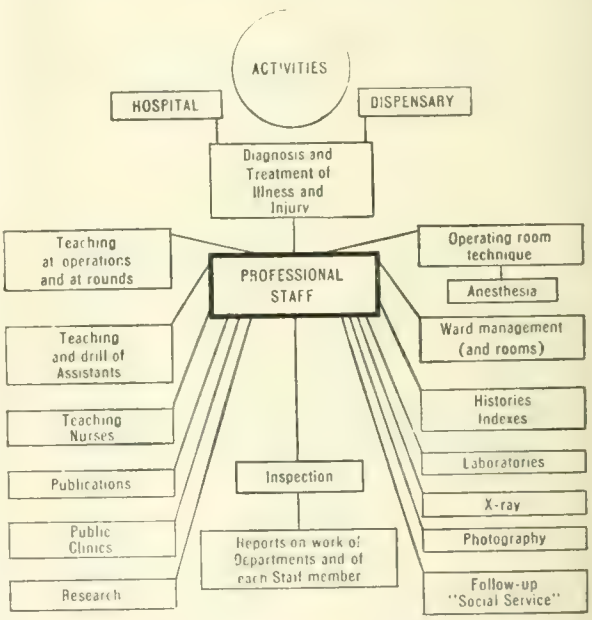
Are qualities various, and institutional needs various, and is some classification feasible?

Can boards of trustees of semi-private hospitals name staff members on mere reputation and opinion and decide between rival candidates on such a basis?

Can the American College of Surgeons grant diplomas without plotting the factors that make up the merit that can claim membership?

Shall the College, in a nation-wide study of hospitals (or even the Pennsylvania Bureau of Medical Education and Licensure, in their list) endorse institutions that, in appointment and promotion, lack any real study or detailed knowledge of the *quality* of the work of the members of their staff.

And is it not fair to say that no city, nor trustee, nor college receives reports showing how this dele-



gated power over life and death is used, while any government office makes records of the quality of the work of the personnel, and any well managed factory knows how to do it?

I dare to present a scheme for such records in hospitals. These err, of purpose, on the side of overfulness. They are submitted with two prefatory statements; first, that it is the firm belief of their compiler that while an analysis like this is desirable the general impression concerning a professional man in the minds of his colleagues is, as a rule, a correct and fair valuation. Second, that the labor and expense of obtaining and maintaining a record must not exceed its value in increasing the efficiency of the workers.

There are but two thinkable attitudes toward marking and comparing the qualifications and efficiency of professional men. Either one may contend that it is not feasible to lay a yard stick to

*Part of paper presented before Harvard Medical Society, New York, January 22, 1916.

common sense or set a gauge on judgment; or else, one may divide the hospital work to be done by the physicians and surgeons into its component parts and study results, and then seek to analyze the characters and traits needed to effect these results. The old point of view that regarded medicine as something mystic and intuitive we need not discuss here. You know, as the public does not, that there is no hospital governing board, which, when a vacancy occurs or the day for annual appointment comes round, can ask for the equivalent of a baseball fielding average or race track record, or government office rating as applied to visiting surgeon, house surgeon, or nurse. A consensus of opinion made up of general impressions and personal preference or prejudice decides. No record of effectiveness and personal characteristics exists. Seniority, friendship, and many unavowable undermotives actuate a choice or a promotion. The time has surely come for us to catch up with the Civil Service, with the army and the navy, and with many corporations.

From all available sources I have asked for counsel, and from this experience and advice plans were worked out to meet the need of more accurate measurement of men in our profession when the demand came to six of us, in this way. The Advisory Committee of the new Greenpoint Hospital was urged by the Commissioners of the Department of Public Charities of New York City to labor to make it the best possible under the circumstances, and to select its personnel for fitness only. When we began to define fitness it was found to be no simple matter.

Then when the Deputy Commissioner asked us to present a detailed annual report concerning the character of the work done by each member of the Professional Staff the committee did not know where to turn for a plan of rating such work and a method of charting it. Yet we saw that his claim was reasonable in asking for nominations based on demonstrable performances and characteristics, and that work must certainly permit of analysis. "The report," said Mr. Wright, "if possible, should contain more than statistics as to the number of appendectomies or pneumonias, *i.e.* it should show by collateral information the general result of these operations. We should know not only whether or not we are doing needed work, but also whether or not our work is producing as speedy and good results as possible."

I believe we would all welcome some not too complex scheme of record of performance, "provided that the trouble and expense of obtaining and maintaining such efficiency ratings did not exceed the value of the record in increasing the effectiveness of the service." Happily, most happily, our best authority on the subject, Griefenhagen, assures us that the Civil Service experience and departmental work has shown that of the several methods of marking employees a "system which is 50 *per cent. accurate will probably have about* 90 *per cent. of the practical value of a system that is absolutely accurate.*"

"The processes involved in the preparation and *keeping of efficiency records* have many desirable effects in indirectly *increasing the efficiency* of the service. The process of standardization, and the determination of the superior officer who shall furnish the data upon which markings are to be based, invariably bring the internal organization of each department to light, make it necessary to define clearly the responsibility of each superior officer, establish definitely the lines of authority, eliminate conflicts, indicate defects in the scheme of organization and often make the remedy obvious. *A record of conduct and attitude of employees must indicate conformity with regulations and this naturally necessitates the preparation of such regulations, which in itself is a desirable thing.*"

The speaker showed slides covering the charts of the organization of the personnel of a newly rebuilt semi-private hospital of 280 beds, with its seventy professional appointments (including out-door services), and also of the new municipal hospital of 250 beds, together with the charts clearly defining power and functions and activities of the different boards and groups and individuals. The lines of authority and responsibility in all of these were the result of the study of the particular institutions. Only one sample of the eight charts is here given.

REPORT ON CANDIDATE FOR HOSPITAL (OR DISPENSARY) POSITION

Name Age Address Date

Education; school, college year and degree (specializing at college in any matters bearing on this appointment); medical college, year and degree (any special work bearing on this appointment). Post-graduate courses, American or foreign; time in each; name of teachers; degrees or certificates. Training for special work.

A—*Experience; hospital, residence;* duration, service covered (medicine, surgery, obstetrics, specialties); special hospital, if any, and names of heads of services under whom duty was actually performed.

Training in technical or manual dexterity.
Training in laboratory methods.
Training in teaching—didactic, clinical.
Training in writing, publications, editorial work (stenography, typewriting, charting, drawing).
Training in research.
Training in executive work.

Dispensary Service—Name of institution.
Duration of service.
Name of chief of service.
Size of service.
Variety in service.

Hospital Visiting Service—Name of institution.
Duration of service.
Name of chief of service.
Size of service.
Variety in service.
How many months on duty each year as assistant or in charge of service?

Medical Societies; past and present memberships, with years of membership, together with average attendance and average frequency of taking part in program and discussion; in committee work; in official positions. American and foreign conventions and congresses attended.

Visits to Clinics; habit of seeing other men at work. Dates of visits to clinics other than in New York City.

Belated Interests; social service and municipal work, such as Health Department, Red Cross, health propaganda, etc.

Other Interests.

B—*Quality of Previous Professional Work* (thoroughness, rate of work, effectiveness).

1—Preliminary examinations, habit of consultations.
2—After-care, examinations for discharge, instructions to follow on.
3—Histories, personal inspection, personal notes, reviews.
4—Laboratory work, supervision, personal work.
5—Training of subordinates; hospital staff, dispensary staff, nurses.
6—Record of end-results and habits of following up cases.

Diagnostic Skill.

Technical Skill in treatment and operation.
Judgment.

C—*Personality;* integrity; disinterestedness; obedience to rules, team-play; kindness, cheerfulness; enthusiasm, and ability to inspire these.

D—*Progressiveness* (see medical societies and clinical travel, ante). Original work; new methods, operations, instruments, and plans of organization devised or participated in.

E—*Executive Ability;* initiative; organizing power control; continued attention to and interest in administrative detail after organizing; follow-up.

F—*Teaching;* staff, dispensary, students; nurses; in public clinics.

Summary:
Signature of examiner making special detailed report.
Signatures of Board endorsing this report in case of nomination.

Note—Examiner will initial statements which he can verify of his own personal knowledge or from personal inspection (*e.g.*, histories, operative skill).

A FORM OF ANNUAL REPORT ON THE EFFICIENCY OF EACH MEMBER OF THE PROFESSIONAL STAFF.

Name Position held Date

Average number of beds in his charge
(Salary Residence in hospital, yes, no
Year of appointment).

A—*Quantity of Work;* months on duty; total visits required; total visits made; total hours given to hospital (or dispensary); vacation; illness, absences, excused, unexcused.
Estimated committee service (work done for institution other than strictly professional).

B—*Quality of Work* (thoroughness, rate of work, effectiveness in each of the following factors):
1—Preliminary examinations; habit of holding consultations.
2—After-care, examinations for discharge, instructions to follow on.
3—Histories, personal inspection, personal notes, reviews, studies on end-results.
4—Laboratory work, supervision, personal work.
5—Training of hospital staff, dispensary staff, nurses.
6—End-results (Codman method): The end-result cards easily grouped for each individual, record successes and errors, the errors scored as
(a)—Lack of technical skill.
(b)—Lack of judgment.
(c)—Lack of care or equipment.
(d)—Lack of diagnostic skill.
Failures grouped also by
(a)—Patient's enfeebled condition.
(b)—Patient's unconquerable disease.
(c)—Patient's refusal of treatment.
(d)—Surgical or medical calamities.
Methods; comments on full histories by Chief· review by Consultant or Efficiency Committee; choice by Staff of certain operations as tests (e.g., suppuration in clean laparotomies).

C—*Personality;* integrity; disinterestedness. obedience to rules; team-play; kindness, cheerfulness, and ability to inspire these.

D—*Progressiveness;* study of literature; travel to other clinics; membership and attendance at medical societies; originality; researches; publications.

E—*Executive Ability;* initiative; originality; organizing power; control; continued attention and interest in administrative detail after organizing.

F—*Teaching;* staff, dispensary, students, nurses; at public clinics.

G—*Inspections;* number by Trustees, Consultants, Hospital Inspector.
Certain defects to be heavily scored—such as lack of judgment. Percentage to be given under each heading to be determined. Positions differ. Some positions will have a score for executive work, and some for teaching, and others will not. This will involve grouping and reporting such positions separately, but any man's abilities in any of the above matters should be noted even if not marked on a score.

168 Clinton Street

WHAT IS MEANT BY HOSPITAL EFFICIENCY AND SOME OF THE FACTORS WHICH ARE OFTEN RESPONSIBLE FOR LACK OF EFFICIENCY.*

By WINFORD H. SMITH, M.D.,
BALTIMORE, MD.

THERE was a period when I was thoroughly tired of the word sanitary, and to have a method or an article urged upon me on the ground that it was sanitary was almost more than I could stand. I have reached somewhat the same state of mind with regard to the use of the term efficiency.

We have heard so much about hospital efficiency and the views expressed have been so different that I venture, with due apologies, to comment briefly upon the question, What is meant by hospital efficiency? and to mention a few factors which are commonly responsible for lack of efficiency. Those who are prone to discuss this subject have measured efficiency in many ways—by the per capita cost, by the number of patients treated, by the number of operations performed, by the average length of stay in the hospital, by the mortality rate, by the amount of research done, by the use of follow-up systems, by the surplus or deficit and so on. Now any one of these may be a factor in, or the result of, but not the measure of efficiency.

The number of patients treated and the number of operations performed may indicate to some extent the volume of work done, but they tell you nothing as to the character of the work done or of the results obtained.

The mortality rate may be an interesting item, but it is meaningless unless you know something as to the character of the service—whether acute or chronic, or what percentage of the patients was medical, what surgical, and how many were moribund on admission.

A follow-up system may or may not be an important factor. If it gives you information that enables you to finish a job which was not finished, although you thought it was; if it enables you to draw conclusions helpful to the development of a better technique, or a better treatment, then it is a factor of efficiency. If, however, it simply collects a mass of statistics, some useful but for the most part of no value, and with the latter concealing the former, which is often the case, then it is anything but efficient.

The average length of stay in the hospital may indicate a slow or rapid movement of population, but what is its significance? It means nothing unless we know all of the facts. Was the service acute or chronic, or both? Were the patients possibly discharged too soon, and what were the final results of treatment?

The surplus or deficit is a valuable index in judging the efficiency of a commercial enterprise, but it tells you nothing about the efficiency of the hospital, except as the result of a careful investigation. It simply indicates that the hospital does or does not need more money with which to meet the demands made upon it. If only those hospitals were efficient which show a surplus, then few could qualify.

Then there are those who would measure efficiency by the amount of research done. While re-

*Read before the Harvard Medical Society, New York, January 22, 1916.

search is a legitimate and important factor and should always play a part in the development of the larger sphere of usefulness of the hospital, the fact remains that the patient is the first consideration, and research may be over-emphasized at the expense of the patient. Only when research is carried on in a manner consistent with the best interests and the best possible care of the patient can it be said to occupy a legitimate place in hospital procedure.

Then there is that all-important factor in the minds of many—the per capita cost. While used generally as a basis of comparison, the per capita cost really tells you nothing, except as applied to the particular institution under consideration. Comparisons on this basis are footless, unless one is familiar with the methods of computation and with the character and scope of the work done in the institutions under comparison. The methods of determining the per capita cost may be and usually are radically different. Two institutions may be very different in character and scope of work; one acute, the other chronic; one largely medical, the other chiefly surgical; one maintaining a large and expensive private service, the other having no private service; one spending much on such features as laboratories, *x*-ray, social service, adequate nursing service, salaries to staff, and in upkeep of the plant, while the other may spend little or nothing on such features, merely skimping along with an incomplete equipment and an inadequate staff in a rapidly deteriorating plant. Therefore, the per capita cost, while it may indicate efficiency or the reverse, can only be properly interpreted by one thoroughly familiar with all details.

I recall some statements on this subject by a prominent surgical authority. Among other things he cited a hospital with a per capita cost of $1 per day as a standard and proceeded to condemn all hospitals with a higher cost as wasteful and extravagant. It would be about as sensible to state that because one surgeon can perform an amputation in ten minutes, any surgeon taking longer than that is incompetent.

And so we might continue discussing single factors or results without answering the question, What is meant by hospital efficiency? The term efficiency used in any sense implies a power capable of producing a result, implies somewhere a productive energy. Following that thought for a moment, the primary purpose of the hospital is the treatment and care of the patient, and the end result should be all that modern knowledge and skill, supplemented by the necessary facilities, can accomplish at the hands of the carefully selected individuals composing the organization. The organization then, given the facilities, is the power which produces the result. The thoroughness and completeness with which the work is done should be the gauge of hospital efficiency rather than, or as well as, the ratio of production to energy expended.

I have said that the patient is the prime consideration. It has sometimes seemed to me that institutions in their efficiency programmes have eliminated too much of the human element, and that the danger of efficiency systems as applied to hospitals is to consider them too much as cold, mathematical problems. Hospital efficiency, as I choose to interpret it, means thoroughness, with sympathetic consideration and uniform kindness. It means the courteous reception of the patient when he presents himself, with due consideration of his claims to charity; prompt, skillful medical and surgical attention; careful and skillful nursing; thorough study not only of the symptoms and findings, but of the bearing which these have or may have on the problems of the disease under consideration—all of which means accurate and complete records; the discharge of the patient at the proper time, with a full knowledge as to his ability to carry out instructions and of the suitability of his home surroundings for continued convalescence, and the machinery with which to make proper arrangements when necessary; and throughout the whole course of hospital procedure a careful attention to business detail, economy of time, effort, and materials, at the same time avoiding any tendency to look upon individuals as mere cases or numbers, but rather to maintain an atmosphere of sympathetic, human interest, encouragement, and harmony throughout.

I wish to refer to a few factors which are commonly responsible for lack of efficiency. The part which lack of funds plays needs no comment. Poor planning is too often responsible for waste of funds both in construction and management, for waste of effort on the part of all workers, for lack of comfort, if not actual discomfort to the patient. Indeed, poor planning often renders it actually difficult to adapt the buildings to the purpose for which they were built.

In large cities, hospitals are located with too little consideration of the needs of the section selected, with the result that some sections have more hospitals than are required, while other large sections are absolutely without hospital provision, necessitating long trips in order to get to a hospital, with consequent loss of time and of energy often at low ebb.

Organization, first and last, is one of the most important factors. Consider for a moment boards of trustees. The board of trustees is the governing body and the final authority, and should, therefore, be formed with the greatest care. Yet how frequently this board is composed of men who have no qualifications for the office other than social standing, money, or political influence! Boards so constituted either take no interest whatever, or what is equally bad or worse feel it a duty to take an active part in the detailed management of affairs foreign to their experience, with the result of confusion and lack of harmony. For detailed management, some boards divide into committees on every possible phase of the work. My only comment on this custom is to quote from a speech by President Butler: "A committee is an American invention for evading responsibility and postponing action." The board of trustees should be the final authority, and should supervise and control and conserve the financial resources of the institution, but should leave the detail of management to the officers and staff and hold them responsible.

The staff organization is no mean factor in hospital efficiency, and much can be said on the subject. First, I wish to say that no member of the staff should be eligible to the office of trustee. With regard to appointments to the staff, it cannot be too strongly emphasized that such appointments should be made on merit alone—the merit of achievement, of recognized ability, the best man for the place. Appointment should not de-

pend on local residence, political influence, social standing, or length of service, which may have been and often is a service of questionable merit. One thing more—the staff member who fails to recognize the necessity of co-operation, of team work, who has an eye only to self-advancement, is a stumbling block, no matter what his ability as an individual performer.

The superintendent! He, too, is sometimes a stumbling block, sometimes difficult. He is an important factor and should be selected with the utmost care. A trained medical administrator is preferable, because of his broader point of view. He should be the executive officer of the board of trustees and the medium of communication between that body and all other departments. He should have the authority as well as the responsibility, and should at all times receive the support and backing of the trustees and of the staff. I am sorry to say, however, that this support is frequently conspicuous by its absence. 'Tis sad but true that the superintendent usually enjoys about the same degree of popularity as the umpire at a ball game. That he is often difficult, lacking in tact, and overbearing, I must admit. He should be a director who harmonizes and coordinates, but not a dictator.

Now let me emphasize, by way of example, a few individual sins. There is the sugeon who persistently orders for operation more cases than he can possibly do, with the result that some who have been through the pleasant experience of starvation, preparation, and nervous prostration have forced upon them the pleasure of further anticipation. This is neither efficiency nor even fair play.

Then there is the surgeon who is never on time and who, not infrequently, fails to come at all, without sending any message to that effect. This results in tying up a whole force of assistants and nurses, and oftentimes keeps a patient under anesthesia for an indefinite period to no purpose, which is inexcusable.

I would not seem to be partial to the surgeons, therefore I wish to mention the medical men who drop in casually for formal rounds at any time, usually during the serving of the patients' meals. Some medical men are subject not infrequently to acute exacerbations of energy, or are stung by the research bee and order all sorts of specimens saved and measured, only that they may be thrown out later unexamined. It is difficult to understand their efficiency ideas. These are merely examples, the list of which could be made much longer, but these will serve to recall others I am sure, if you care to think about it.

Hospital internes, fresh from medical school, find it difficult to bring their superior minds down to the consideration of the (to them unimportant) practical routine of institutional life, and are often intolerant of the lamentable lack of knowledge on the part of their seniors and are impatient at the inability of the responsible authorities properly to manage affairs. They need to learn to suffer patiently, as their seniors have done, and, therefore, they need a good example, the lack of which is my point.

I recall, too late I fear, a maxim that "A man may say too much even on the best of subjects." The whole purpose of these remarks has been to emphasize that many factors enter into the creation of hospital efficiency, and that all of us who form a part of the organization must do our part, with due regard to the interest of our fellow workers, being ready to receive as well as to give advice and criticism, and always to bear in mind that the keynote is harmony.

JOHNS HOPKINS HOSPITAL.

NOTES ON THE ETIOLOGY OF THE RECENT EPIDEMIC OF PSEUDO-INFLUENZA.*

BY WM. WHITRIDGE WILLIAMS, M.D.
AND
WARD BURDICK, M.D.,
DENVER.

IN the early part of November, 1915, an epidemic made its appearance in various parts of this country which closely simulated the epidemic of influenza occurring in 1900. During the latter part of this month it began to invade Denver, following, we were informed by the local weather bureau, a prolonged dry spell which was suddenly terminated by severe windstorms. During the height of the epidemic it was estimated by physicians competent to judge that there were about 50,000 cases in Denver. It was accompanied by serious complications, such as nephritis, myocarditis, arthritis, bronchopneumonia, otitis media, etc., and was responsible for markedly increasing the death rate.

Simultaneous with the beginning of the epidemic there began to appear in the sputa and other discharges which were placed in our hands for bacteriological diagnosis a peculiar streptococcus. These notes are based on the examination of eighty-seven specimens. In ordinary smears of the specimens the germ appeared as a lanceolate diplococcus, Gram-positive, surrounded by an indefinite halo, suggestive of a capsule, and not to be differentiated from the pneumococcus in appearance. But chain formation took place when grown in neutral broth. It was pathogenic for both white and brown mice and no capsules were demonstrable surrounding the germs recovered from the heart-blood. Inulin-serum-water was not fermented, but some of the strains of this germ produced acid. They were insoluble in bile and bile salts. Growth in many of the anaerobic tubes was more profuse than in the aerobic. Twenty-four-hour growths on human-blood-agar plates showed pin-point colonies surrounded by a very slender zone of hemolysis. Rabbits inoculated intravenously with this germ developed definite symptoms characterized by a sudden rise of temperature to 102°-103° F., drowsiness, loss of appetite, etc. Post-mortem examinations on these rabbits killed forty-eight hours after inoculation revealed in most instances a tracheal and bronchial inflammation, thus suggesting a selective action. No such selective action was manifested after four or five generations of subculture. After repeated cultivation the colonies on blood-agar became larger and more hemolytic, and anaerobicity disappeared as well as the acidulation of inulin-serum-water. Complement fixation tests made with the blood serum of pseudoinfluenza patients, using as antigen a suspension in salt solution of the streptococcus isolated from the sputa, gave positive results in all cases.

Thus we have another example of the streptococcus possessing temporary labile, cultural, and pathogenic properties. The almost innumerable strains of this microorganism evidently owe their tempo-

*From the laboratory of the National Jewish Hospital for Consumptives, Denver, Col.

rary pathogenic and cultural characteristics to environment and rapidly revert to ordinary forms when grown under the conditions of artificial culture media. Rosenow (*Jour. Am. Med. Assoc.*, 1915, LXV, 1687), in a recent article making a preliminary report of some research being done by him on the streptococcus, gives other splendid examples of this by the demonstration of specific selective action manifested by various strains of this germ which had been isolated from divers pathological conditions.

Medicolegal Notes.

Expert Testimony Need Not Be Based on Personal Observation Alone. — The Circuit Court of Appeals, Fourth Circuit, holds that the knowledge of medical experts or of experts in any science or art would be extremely limited if it extended no further than to inferences from phenomena falling within their own experience. Their testimony is admitted as valuable because based on their special knowledge, derived not only from experience, but from the experiments and reasoning of others, communicated by personal association or through books or other sources. It is more or less valuable according to the source from which it comes, but the general proposition that it is of no value unless based on personal experience is not sound. The principle is well stated in 1 Wigmore on Evidence, 782, in the discussion of the reasons for the admission of physicians as experts: "To deny the competency of a physician who does not know his facts from personal observation alone is to reject medical testimony almost in its entirety. To allow any physician to testify who claims to know solely by personal experience is to appropriate the witness stand to impostors. Medical science is a mass of transmitted data; the generalizations are rare which are the result of one man's personal observation exclusively; and the law cannot expect its petitioners to obtain these rare persons. The law must recognize the methods of medical science. It cannot stultify itself by establishing, for legal remedies, a rule never considered necessary by the medical profession itself. It is enough for a physician, testifying to a medical fact, that he is by training and occupation a physician; whether his source of information for that particular fact is in part or entirely the hearsay of his fellow practitioners and investigators is immaterial."—Perkins v. United States, C. C. A., 228 Fed. 408.

Expert Testimony in Murder Case.—In a prosecution for murder it was held to be error to allow a physician to testify as an expert to the relative positions of the deceased and the person who shot him, deduced from the nature and direction of the wound, since the jury was equally capable with the physician of drawing proper inferences from the facts proved.—Noble v. State, Alabama Court of Appeals, 70 So. 187.

X-Rays as Demonstrative Evidence.—In an action for malpractice, where there was positive testimony that the plaintiff's arm was in the same condition when *x*-ray photographs were taken as it was when treated by the physician, it was held that such photographs were admissible in evidence notwithstanding there was other testimony as to an intervening injury to the plaintiff's arm.—Ligon v. Allen, Kentucky Court of Appeals, 181 S. W. 656.

Practising without Authority—Compensation. — In a prosecution of a physician for practicing without authority, evidence of a witness that the defendant treated his wife and received his board and lodging as compensation therefor is admissible.—Young v. State, Texas Civil Appeals, 181 S. W. 472.

Expert Testimony—As to Whether Shot Was Self-Inflicted.—In a prosecution for assualt with intent to commit murder in the first degree, it appeared that the accused's wife was shot in the left side of the head and also in her left arm above the elbow. She herself said she remembered nothing of the occurrence. On appeal from a conviction, it was held to be error to allow a medical witness to testify that it would not have been possible for the injured woman, who was found with a revolver in her hand, to have shot herself in the manner in which she was shot. He might have testified as to his opinion as to the range of the bullet. But the question whether a delicate woman can reach around with the right hand and shoot herself in the left side of the head, or whether she can do so, at the same time shooting herself through the left arm, is not peculiarly a matter of expert learning on the part of a physician, and was for the determination of the jury. The conclusion was one which the ordinary practical mind might reach, as well as the trained physician, and could be more readily reached by one trained in the use of firearms. It was not a question of anatomy, but of the physical use of the hand and arm with a Colt's 25 automatic revolver. The doctor might have known very little about the use of such firearms.—State v. McCravy, Tennessee Supreme Court, 181 S. W. 165.

Expert Testimony as to Effects of Blows on Live and Dead Bodies.—In an action for wrongful death of a man who was run over and killed by a train on the defendant's railroad, the plaintiff placed on the stand a physician of standing and experience. He had no knowledge of the facts in issue, and had not seen the deceased's body. He was put on as an expert, and testified that if the body of the deceased was bloody, with bruised places on it, or discolored or blue places, and the skin red in other places, then, in his opinion, the man was alive when struck, because, owing to the circulation of the blood in a live body, blood will flow from a wound and will settle and discolor a bruised place, and will make the skin red in places; whereas, in a dead body, the blood is not in circulation, and hence these manifestations will not appear. It was held that this testimony was properly admitted. There was evidence that blood was found when the deceased was struck. The undertaker testified that the body was much bruised; that he had to wash the blood off, and after doing so the skin was red and discolored. The doctor's testimony was merely to the effect that this redness of the skin and discoloration showed that there was circulation of the blood through the body at the time the man was struck, and this circulation showed that he was then alive. This did not invade the province of the jury. It was upon a scientific subject, and dealt with the difference in the effects produced by a blow on a dead body and on a live one, arising out of the different states of the blood under these conditions. —Friemouth v. Kansas City, St. L. & C. R. Co. (Mo.), 180 S. W. 1063.

Hearsay Evidence.—In an action for personal injuries in alighting from a moving train a doctor was allowed to testify that the plaintiff told him a day or two before the trial and some months after the injury that he was still spitting blood. It was held this was erroneous. It was, of course, competent for the plaintiff so to testify, but that did not make it permissible for the doctor to repeat this self-serving statement.—St. Louis, I. M. & S. Ry. Co. v. Bostic. Arkansas Supreme Court, 180 S. W. 988.

Prisoner's Consent to Physical Examination.—In an action for assault with intent to rape a child of nine, the State established that about one or two weeks after the assault was alleged to have been committed the prosecutrix was found to be suffering from gonorrhea, and it introduced the evidence of two physicians, which tended to show that at the instance of the prosecuting attorney they went to the county jail, where the defendant was confined, and there made a physical examination of his privates. They testified that this examination disclosed that the defendant was also afflicted with gonorrhea, a circumstance tending to strengthen the chain of evidence against him. It appeared that the prisoner had not been apprised of his rights to resist his examination and was merely silent when he was informed the physicians were there to make it, instead of positively consenting thereto. It also appeared that he had been expecting a physician sent by his own attorney to examine him before the attorney would agree to represent him and that this physician arrived immediately after the examination began and took part therein. It was held that the evidence of the two physicians was inadmissible.—State v. Matsinger, Missouri Supreme Court, 180 S. W. 856.

Privileged Communications. — Under the Missouri statute declaring that a physician shall be incompetent to testify as to any information which he may have acquired from any patient while attending him professionally, which information was necessary to enable him to prescribe as a physician, it is held that a physician's testimony, in a prosecution for abortion, that the prosecutrix had made statements to him as to the cause of her condition, was competent.—State v. Carryer, Missouri Supreme Court, 180 S. W. 850.

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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New York, May 13, 1916.

BREAD AS A FOOD.

BREAD has always been known as the "staff of life," and among those who live in temperate climes is the synonym of food. It is the staple diet of the poor in that part of the globe inhabited by the members of the white race. Consequently, it is obviously of the greatest importance that food of such universal use should possess the highest nutritive value possible. Of recent years, investigations in various countries have demonstrated the fact that a certain content of a diet is essential to the maintenance of good health. This content is known as vitamine content, and when it is absent from a diet, it may bring about one of the so-called deficiency diseases. For instance, rice is the staple diet of the majority of Asian people. When the rice is highly polished (that is, deprived of its outer husk) it is also deprived of its vitamine content, the superpericarpial or aleurone layer containing this necessary constituent. The continued consumption of such rice will result in beriberi unless articles of food in which vitamines are present, although only in minute quantities, are added to the diet. When undermilled rice is substituted for the highly milled variety, the disease is not nearly so apt to break out.

In Public Health Reports for April 14, 1916, Drs. Carl Voegtlin, M. Sullivan, and C. N. Myers, United States Public Health Service, have a paper dealing with the changes in the vitamine content and nutritive value of bread with reference to the occurrence of pellagra. There have been several theories with respect to the etiology of pellagra, and the results of the investigations reported by the above trio of workers refer particularly to conditions prevailing in the United States, and are the outcome of studies on the cause of pellagra in this country. Up to the year 1880, or thereabouts, bread was made from flour or corn meal, from which the coarser particles of bran were only partly sifted out, and which therefore contained practically all of the nutritive elements of the whole grain. With the introduction of the roller-mill system into the United States, the highly milled flour products came into vogue. The germ and bran were largely discarded as human foods. While the highly milled products keep better, they are often deficient in the accessory food substances, designated as vitamines. Myers and Voegtlin have amply demonstrated the point that, whereas the corn meal and wheat flour made by the old-fashioned process, which is still in use to some extent in the South, contains to all intents and purposes, all of the vitamines of the whole grain, the highly milled products are markedly deficient in these substances.

Experiments on fowls have proved that if these animals are fed exclusively on highly milled products, they will die within a month of polyneuritis, a disease very similar to beriberi. Thus, there seems to exist a perfect analogy between the well-known relation of the polishing of rice to its nutritive value, and that of the milling of wheat and corn to the nutritive value of wheat flour and corn meal. The destructive action of baking soda on the vitamine content of corn meal is also referred to at some length by the authors.

However, the conclusions reached by them with respect to the bearing of their findings on the occurrence of pellagra in the South are of special interest. It has been suggested by several investigators that pellagra belongs to the group of the so-called deficiency diseases, meaning that the diet which gives rise to pellagra is deficient in vitamines, having no direct relation to the protein, fat, and carbohydrate content of the diet. This hypothesis is based on the observation that the diet of people who develop pellagra seems to be made up of foods which are not rich in vitamines, and in a general way the dietary studies in Southern families made by the Experimental Station of the Department of Agriculture and recounted in Bulletins No. 38, No. 71 and No. 221 of that department and some unpublished more detailed investigations by Voegtlin and Miss Nesbit appear to corroborate this observation. At any rate, it is plainly obvious that a satisfactory solution of the cause of the increase in pellagra which has been endemic in Spartanburg County, South Carolina, for the past seven or eight years is intimately connected with the etiology of this disease. It is important in a high degree that a satisfactory answer should be found as to how the dietary conditions of the population of the South changed previously to the great increase there in pellagra. The authors in conclusion point out that several factors seem to have played a rôle in the reduction of the vitamine content of the diet of the people of Spartanburg County during the past twenty years. Most prominent among these influences are: First, the reduction in the diet of vitamine-rich foods—fresh milk, eggs, and meats; second, the introduction of highly milled cereals, and third, the use of baking soda, which has been shown to exert a destructive action on the vitamine content of bread. The staple of diet among these people is wheat biscuits made from highly milled wheat flour, and corn bread made with baking soda without the addition of buttermilk which would counteract the injurious effect of the alkali on the vitamines.

It certainly appears to be something more than a coincidence that the above mentioned influences, which have undoubtedly reduced the vitamine content of the diet, made themselves felt a relatively short time before the rapid increase in the pellagra incidence in this section of the country, and fur-

nishes evidence of considerable weight in favor of the vitamine-deficiency theory of pellagra. Of course, further and more exhaustive investigations will have to be prosecuted ere any intimate connection can be traced between the increase of pellagra in the South and the consumption of highly milled corn and wheat, and, indeed, of other food substances lacking in vitamines.

THE HEALTHFULNESS OF HARD WORK.

Do we work too hard and play too hard? Are nervous breakdown and increase in mental disease due to the high tension at which we live? This has so long been the accepted slogan that we wonder when we began this increase of speed and this unnatural output of energy. G. F. W. Patrick has set the matter before us recently[1] in a plea for the proper forms of relaxation, reminding us that the earlier physiological forms of reaction demand attention and, denied it, will sooner or later assert themselves in such violent reversionary tendencies as are now ablaze in Europe. We are concentrating too intently, he says, upon the higher nervous centers and overdeveloping them in the modern straining for efficiency and success in achievement. Even when we do allow relaxation we do not know how to attain it but carry the same ill-balanced intensity into our seeking there and run with a certain madness to one form of amusement or another.

Patrick's book brings timely warning. The ideal must be that nice adjustment between work and play, between serious effort and sufficient indulgence in relaxation which enables one to be the best that one can be in oneself and toward society. The question, however, is one of larger adjustment than this. It is not too great an amount of work nor too great concentration upon the higher centers involved in it that conditions nervous and mental collapse. What if this complex striving after efficiency is in reality the strain and disturbance of conflicting infantile tendencies? Then there is failure of adaptation to social cultural demands. Too much of effort utilized in all directions in the serious business of the world is founded or at least lost in jealousy, envy, greed, opportunity for self indulgence, toil to-day for more ease and luxury to-morrow. These tendencies are disguised and concealed, and pass recognition.

But there is a different form of work which makes for psychic health. It does not deny self-interest, but it unifies the whole nature in one dynamic aim, which is creative in desire and purpose. It finds its relaxation without effort, for all forms of this, too, it draws within its circle and animates with the controlling vital motive. It does not bend all toward a goal of acquisition nor even of some great and glorious future of perfected inactivity. That also is infantile phantasy. This kind of work is nothing less than the outflow of the immortality implanted in the depths of human nature. This is a force which cannot be checked, but it can be frustrated by misdirection into channels of self-seeking. Flowing free, however, in its proper productive course, it makes for perfect health. This is that interest which harmonizes work and play into one purpose with successful adjustment. Nor is it unattainable.

[1] The Psychology of Relaxation, Houghton Mifflin Company, 1916.

THE ROLE OF THE DENTIST IN THE MAINTENANCE OF HEALTH.

It is in the nature of things more or less of a necessity to have good teeth. Without sound teeth, either mastication is ineffective and the food is ingested in such a condition that it gives rise to disorders of digestion, or soft foods are eaten which require little or no mastication and throw little or no work on the organs of digestion, so that the latter in course of time from lack of use lose their efficiency.

With regard to mastication it is interesting to note that it is essentially the vegetable portion of our food which demands thorough chewing. As Dr. Harry Campbell points out in an article in the *Lancet*, April 8, 1916, the carnivora do not masticate their food, while, on the other hand, all the vegetable-feeding mammals are laborious masticators. This is because vegetable food consists of a cellulose framework more or less dense, which it is necessary to break up, so as to liberate the contained nutrient particles and allow them to come under the action of the digestive juices.

Man, as is shown by a study of the teeth of primitive man and of our ape relatives, is a masticating animal, but the work of the miller and cook in civilized life has to a great extent relieved us of the laborious work. The vegetable food we eat nowadays is for the most part served in pulpy, pappy, pultaceous, and spongy forms; it is not properly mixed with the saliva, a most necessary process of good digestion, and the teeth and salivary glands are cheated of their normal work. Mastication, then, is all important if health is to be preserved and maintained at a high standard. The best way to secure adequate mastication is to choose foods which invite or even compel mastication, and this advice or warning applies, in particular, to the cereal foods. As said before, however, proper mastication is difficult or impossible if the teeth are defective. If they are not capable of doing their work effectively, a dentist's aid must be called to remedy the defects. False teeth, well put in, are better by far than a lack of teeth or defective teeth, but undoubtedly a good deal of the trouble with teeth could be avoided by insisting that children should eat foods which exercise the teeth and salivary glands adequately. Finally, it may be said that the health of a people depends largely upon the condition of teeth and mouth. The teeth should be not only sound but they and the mouth should be kept in a thoroughly sanitary condition. Therefore, the rôle of the dentist is most important.

Disappearance of Dextrose from the Blood after Intravenous Injection.

In the study of carbohydrate metabolism it has been shown that when dextrose is injected intravenously, even in large amounts, it disappears rapidly from the blood. This disappearance takes

place even if the ureters are tied so that the excess is not eliminated by the kidneys. It is not accompanied by a sufficient increase in the glycogen of the liver to account for it. Kleiner has therefore attempted (*Jour. Exper. Med.*, 1916, xxiii, 507) to discover what becomes of this excess of sugar. He found that this disappearance of dextrose from the blood took place in nephrectomized animals, in those in whom the aorta and the vena cava were ligated immediately below the diaphragm, and even in dead animals whose only circulation was produced by massage of the heart. He was able to show that there was a notable increase in the carbohydrate content of the muscles and obtained some evidence of the existence of higher carbohydrates, as if the glucose were in part polymerized in this tissue. In all his calculations, however, there was a certain percentage of dextrose which remained unaccounted for. In the experiments with whole dead animals he was able most nearly to solve this problem. In these he found about sixty per cent. of the injected glucose in the muscle tissue and only six per cent. unaccounted for. The phenomenon is, therefore, apparently independent of vital processes and of important abdominal organs. It is possible that analysis of other soft tissues would reveal the storage place of the remaining sugar, but the experiments certainly emphasize the importance of the muscles in carbohydrate storage. Certainly a large amount of glucose is burned by this tissue. It would be interesting to apply Woodyatt's results in the continuous injection of dextrose into animals to this problem as carried out by Kleiner, to see whether the accumulation of dextrose or the substance into which it is changed would be sufficiently marked to make its recognition easier.

News of the Week.

City Death Rate.—During the week ending April 29, the death rate in New York City was 0.8 of a point lower than the rate for the corresponding week of last year, the respective rates being 14.83 and 15.63 per 1,000 of population. This decrease was equivalent to a saving of 86 lives. The total number of deaths during the week was 1,588. Noteworthy decreases occurred in the number of deaths due to measles, scarlet fever, diarrheal diseases, pneumonia, pulmonary tuberculosis, and heart disease. For the first eighteen weeks of 1916 the death rate was 15.44 per 1,000, as compared with 15.65 for the corresponding period of last year.

Deaths of Oldest Graduates.—By a curious coincidence three physicians whose deaths are noted in the obituary columns this week had attained the distinction of being among the oldest living graduates of their respective colleges. Dr. David Fisher Atwater of Springfield, Mass., was born in 1817, and was graduated from Yale University in 1839 and from the Yale Medical School three years later; Dr. Samuel F. Coues of Cambridge, Mass., was born in 1825, and was graduated from Harvard College in 1845; and Dr. George A. Quinby of New York was born in 1831 and was graduated from the New York University Medical College in 1856.

College Raises Entrance Requirements.—The Long Island College Hospital, Brooklyn, announces that after January 1, 1918, the completion of two years of study in a college of liberal arts or science will be required for admission to the four-year medical course leading to the degree of M.D. At present the requirement is one year only of college work. Beginning in the fall of 1916 Columbia University, New York, will conduct a pre-medical college year at the Long Island College Hospital.

Street Accidents.—The report of the National Highways Protective Society for April states that during the month forty-two persons were killed on New York City streets, twenty-three of whom were children. Thirty-two were killed by automobiles, five by trolleys, and five by wagons, as compared with twenty-one by automobiles, seven by wagons, and ten by trolleys during the corresponding month of last year.

Class Dinner.—More than forty physicians, members of the class of 1896 of the Medical Department of New York University, celebrated on May 6 the twentieth anniversary of their graduation by a dinner at the Biltmore Hotel. Dr. Hiram Williams of Passaic, N. J., presided as toastmaster, and addresses were made by Dr. Frederick L. Brush, superintendent of the Burke Relief Foundation, Dr. Sinclair K. Royle, and Dr. Lester M. Hubby.

Jacobi Dinner.—The directors of the Dispensary and Hospital for Deformities and Joint Diseases, New York, on May 3 gave a dinner at the Ritz-Carlton Hotel to Dr. Abraham Jacobi in celebration of the eighty-sixth birthday of the "dean of the medical profession" in New York. At the same time announcement was made of the receipt of gifts amounting to $112,000 to be used for the new buildings of the hospital, for which it is estimated one million dollars will be needed. The work of raising this sum will be begun at once.

Red Cross Hospitals.—The New York County branch of the American Red Cross, having received gifts amounting to the $50,000 necessary, has placed orders for the equipment of two military base hospitals in this city. Each hospital will be equipped with 500 beds. Three full staffs of surgeons, nurses, and orderlies have already been organized for base hospitals, under the direction of Dr. George E. Brewer, Presbyterian Hospital, Dr. George D. Stewart, Bellevue Hospital, and Dr. Charles L. Gibson, New York Hospital, and efforts are being made to obtain sufficient money to cover the equipment of the third hospital.

United Hospital Fund.—The sum of $110,000 was distributed on May 1 by the United Hospital Fund, formerly the Hospital Saturday and Sunday Association, among forty-five hospitals in New York. This is the largest sum ever distributed by the organization, and is a proof that the demands of the war sufferers have not been met to the detriment of local charities. To the eighteen general hospitals in the city, $57,737.77 was given, those receiving large grants being:

Mt. Sinai	$8,745.16
New York	8,113.75
St. Luke's	7,931.45
Post-Graduate	5,843.25
German	5,227.87
Roosevelt	4,738.55
Lincoln	3,745.88

Eleven special hospitals received $19,689.36, distributed as follows:

Orthopedic	$1,449.02
Ruptured and Crippled	3,032.60
Deformities and Joint Diseases	1,006.10
Manhattan Eye, Ear, and Throat	1,975.29
Eye and Ear Infirmary	1,810.04
Ophthalmic	788.06
Knapp Memorial	442.75
Skin and Cancer	2,056.74
General Memorial	1,374.24
House of Rest	2,147.04
Neurological	607.48

The hospitals for women and children received

$19,223.23, of which $5,129.12 went to the Lying-In; $2,867.67 to St. Mary's Hospital; $2,295.64 to the Woman's Hospital; $2,079.21 to the Infirmary for Women and Children; $1,638.15 to the Babies' Hospital, $1,542.53 to the Sloane Hospital, and $1,196.31 to the Nursery and Child's. Grants were made to five hospitals for incurables and convalescents amounting to $13,344.64. The Montefiore Home received $8,949.67, the largest grant made to any institution; the Home for Incurables $2,257.31, and the Isabella Heimath $1,064.61.

Gifts to Charities.—By the will of the late Miss Martha H. Andrew of New York, the New York Skin and Cancer Hospital receives a bequest of $50,000, the Home for Incurables and the Hahnemann Hospital receive $25,000 each, and St. Luke's Hospital receives one-fifth of the residuary estate.

By the will of the late Miss Caroline Willard of Auburn, N. Y., the Auburn City Hospital receives a bequest of $15,000.

Trinity Hospital, New York, receives a bequest of 100 shares of stock in the Alexander Realty Company, the value of which is not stated, by the will of the late Alexander Campbell of Brooklyn.

St. Luke's Hospital, New York, receives a bequest of $100,000 by the will of the late Mrs. D. Willis James of this city.

Connecticut State Medical Society.—The 124th annual meeting of this society will be held in Bridgeport on May 17 and 18, under the presidency of Dr. Max Mailhouse of New Haven. Three scientific sessions will be held and an interesting program has been prepared, including the presidential address on "Some Defects and Inconsistencies in Connecticut Statutes and Medico-Legal Procedures." All the meetings, as well as the annual banquet on May 18, will be held at the Hotel Stratfield.

Medical Society Elections.—WORCESTER NORTH DISTRICT (MASS.) MEDICAL SOCIETY: Fifty-eighth annual meeting at Fitchburg on April 25. The election of officers resulted as follows: *President,* Dr. Alfred A. Wheeler, Leominster; *Vice-President,* Dr. Elmer G. Fosgate, Ashburnham; *Secretary,* Dr. Curtis H. Jennings, Fitchburg; *Treasurer,* Dr. Frederick H. Thompson, Jr., Fitchburg.

CALIFORNIA STATE MEDICAL SOCIETY: Annual meeting at Fresno on April 19 and 20. Officers elected: *President,* Dr. George H. Kress, Los Angeles; *First Vice-President,* Dr. Lamont R. Willson, Fresno; *Second Vice-President,* Dr. John C. Yates, San Diego; *Secretary,* Dr. Philip Mills Jones, San Francisco. The convention of 1917 will be held in San Diego.

LITCHFIELD COUNTY (CONN.) MEDICAL SOCIETY: 152d annual meeting at the Litchfield County Hospital, Winsted, on April 25. Officers elected: *President,* Dr. David D. Reidy, Winsted; *Vice-President,* Dr. Charles H. Turkington, Litchfield; *Secretary,* Dr. Thacher S. Hanchett, Torrington.

MEDICAL ASSOCIATION OF GEORGIA: Annual convention at Columbus on April 20 and 21. Officers elected: *President,* Dr. Jarvis G. Dean, Dawson; *Vice-Presidents,* Dr. J. M. Anderson, Columbus, and Dr. C. K. Sharp, Arlington; *Secretary,* Dr. W. C. Lyle, Augusta.

Obituary Notes.—Dr. WILLIAM ALEXANDER CHRISTIE, formerly of St. John, N. B., a graduate of the Bellevue Hospital Medical College, New York, in 1893, died in Montclair, N. J., on April 29, aged 55 years.

Dr. JOHN J. BRINCKERHOFF of Minooka, Ill., a graduate of the College of Medicine of the University of Illinois in 1897, and a member of the Illinois State Medical Society and the Grundy County Medical Society, died at St. Joseph's Hospital on April 4, following an operation on his throat, aged 47 years.

Dr. JOHN FERDINAND BATES of Setauket, N. Y., a graduate of the Berkshire Medical College, Pittsfield, Mass., in 1860, died at his home, on April 19, aged 82 years. Dr. Bates was a member of the Associated Physicians of Long Island.

Dr. DAVID F. ATWATER of Springfield, Mass., a graduate of Yale University Medical Department, New Haven, in 1839, and the oldest graduate of the University, died at his home on May 2, aged 99 years.

Dr. SAMUEL F. COUES of Cambridge, Mass., a graduate of Jefferson Medical College, Philadelphia, in 1849, and formerly a medical director in the United States Navy, died at his home on May 1, aged 91 years. Dr. Coues entered the naval service as assistant surgeon in 1851, was made medical director in 1876, and was retired with the rank of rear admiral in 1887. At the time of his death he was the second oldest graduate of Harvard University.

Obituary.

SAMUEL MAX BRICKNER, A.M., M.D.,

SARANAC LAKE, N. Y.

DR. SAMUEL M. BRICKNER, formerly of New York, died in Saranac Lake, after a long illness, from tuberculosis, on May 4, aged 49 years. Dr. Brickner was born in Rochester, N. Y., and was graduated from the University of Rochester in 1888, and from the College of Physicians and Surgeons, New York, in 1891. He served on the house staffs of the Sloane Maternity Hospital and of Mt. Sinai Hospital, and was connected with the latter institution continuously until ill-health compelled his retirement in 1913, at which time he was associate gynecologist to the hospital. He was a member of the American Medical Association, the Medical Society of the State of New York, the New York Obstetrical Society, and the American Association of Anatomists, and had written many articles on medical subjects. At the time of his death he was the editor of the *Medical Pickwick.*

GEORGE A. QUINBY, M.D.,

NEW YORK.

ON May 3 there died at his residence, in this city, Dr. George A. Quinby, a practitioner of medicine whose sterling ability was well known to the elder members of the profession. Born at Parsippany, N. J., March 4, 1832, Dr. Quinby attained the ripe age of eighty-four years. He was the oldest alumnus of New York University, and had been intimately associated during his active years with the work of various hospitals in this city, and more especially with surgical undertakings. In 1856 he was appointed surgeon on the staff of New York Hospital, and eight years later became a member of the medical staff of St. Luke's Hospital. For some years he had practised in Morristown, N. J., with much success, and this success was continued after he had taken up his residence in New York. Dr. Quinby was a man of impressive personality, a linguist, and a traveler. He was a brilliant conversationalist who cast a delightful spell upon all his hearers.

Correspondence.

IS THE PROFESSION PREPARED?

To the Editor of the Medical Record:

Sir:—This seems a pertinent and timely question to ask of the profession at large and of the younger members especially in these dark hours when the question of military preparedness is asked of everyone. From the purely civic standpoint fundamentally each one of us is a citizen, and as such is constitutionally liable to military service in time of war, and unless chaos reigned we would be called to serve in the Medical Corps, owing to the special equipment we possess by reason of the advantage of our medical education. From the humanitarian standpoint we have already enlisted in the battle against disease, pain, and suffering, and nowhere is this to be found more poignant and urgent than in actual battle; so that we have here a double responsibility to arouse us to answer any call to arms. The cause of the medical man in war is *always* just.

The next point is: Is his service to be efficient? Certainly not, as the profession now stands. Efficiency in military service is to be obtained only through system and cooperation, and what two matters are further from the daily practice and habit of the doctor? This is only natural, considering the fact that his life is made up of the individual contact of the doctor with the patient and the irregular calls that are made upon him. It is only in the last few years in the larger hospitals and centers that any real system and cooperation have been built up, and at best they are only partial and comprehended by only a small part of the profession. This is the crux of the matter. Efficiency in military medicine as elsewhere equals cooperation plus system.

A medical volunteer may be able to give the best possible treatment to an individual case, but when that volunteer becomes a medical officer he becomes a part or cog of a huge machine, and it depends on his success or failure as a cog as to whether the huge salvage mechanism runs smoothly or is crippled or breaks down, and not on his professional accomplishments. He is primarily an officer with unaccustomed duties of administration, command of hospital attendants, orderlies, stretcher corps, ambulances, hospital equipment, and a thousand and one other matters which must be promptly and properly attended to before the accustomed medical problems have even to be faced. A man may be able to meet splendidly one emergency at a time in his practice, but how about the hundreds, yes thousands of emergencies which in war time will fall upon his untrained hands all in one moment? Here is where system and efficiency count. The problem of the line officer is to maneuver, provision, and use the healthy, able-bodied men in his command. The problem of the medical officer is to collect, transport, maintain, protect, and treat disabled and crippled soldiers. Which is the more difficult problem? And the line officer has the right of way and transport for what he wants, while the medical officer has to yield the road to men and munitions if necessary and make use of what he can lay his hands on to help out his ambulances in the task that is always too big. And yet it takes a man four years in West Point to get his lieutenancy, while in time of war the volunteer doctor gets his lieutenancy practically for the asking. In the Spanish War, look at the records of death and disability from wounds and disease—camp sanitation and care of sick as against leadership and tactics. The dysentery of Gallipoli as against the charge of the Light Brigade. Which cost more? Which, therefore, should demand more training?

Now what can be done to meet the crying need for training of medical men along military lines, to give them a smattering at least of the fundamentals and essentials, and to inculcate the esprit de corps and the great primary essential understanding—the conception of cooperation and system and their absolute necessity? Aside from the regular Federal medical services we have: (1) The Medical Corps of the organized militia. (2) The Medical Reserve Corps and the training camps and courses connected therewith. (3) The development of this branch of medical education in the medical schools and the extension of the Plattsburg idea to medical students in their line of special training.

It is to the last two that we can turn most hopefully for the widespread education of the profession, especially the younger men. It is to this group of younger men that the need of training applies most, for it is this group upon whom it will fall to do the active field work, the harder physical and rougher medical work that is to be done near the front, where the conditions to be met will be most radically different from their previous practical experience. The older men who serve at the base hospitals will not find the conditions so rudely different from their accustomed work. These young doctors can easily affiliate with the Medical Reserve Corps, and in many cases take advantage of the active training given in the summer camps or by correspondence courses. For the third and fourth-year students let me recommend a profitable use of a small part of the long summer vacation in going to the training camp for medical students, at Tobyhanna, Pa., which is now assured. This is a new opportunity for students this summer, being a direct extension of the Plattsburg idea to the medical sphere, and the course to be given will correspond practically to that given the regular Medical Reserve officers.

Finally, let us all, the younger men in particular, take to heart the matter of equipping ourselves for the joint service of our country and our fellowmen, and see to it that we do our best in that direction while there is yet time, for, if through our neglect or laziness the profession is caught by a crisis unprepared for this vital function, others—many others—will have to pay the heavy price of unnecessary suffering and unrewarded sacrifice and death.

Robert W. Johnson, Jr.

101 West Franklin Street
Baltimore, Maryland.

EXTRACTION OF THROMBUS FROM THE PULMONARY ARTERY.

To the Editor of the Medical Record:

Sir:—In the "Fifty Years' Progress of Medicine and Surgery" contributed by me to the anniversary number of the Medical Record, appears a reference to the Trendelenburg operation for extraction of a thrombus from the pulmonary artery as "a most intrepid and often successful emergency procedure." This statement, although cautiously worded, has been criticized on the part of competent judges, such as Drs. Matas and Vincent, as mislead-

ing and not in conformity with facts. Owing to the technical difficulties of the operation the survivals so far have been restricted to hours rather than days after this interference. Undoubtedly a vastly greater amount of benefit has accrued through the progress in vascular surgery represented by the intrasaccular aneurysm operation, not only in the preservation of life, but also of a useful existence, through the prevention of gangrene, and the rescue of otherwise doomed extremities.

F. Robbins, M.D.

41 W. Forty-fifth Street,
New York

THE METHOD OF TRANSFUSION OF BLOOD TREATED WITH SODIUM CITRATE.

To the Editor of the Medical Record:

Sir:—In regard to Dr. Richard Lewisohn's letter in the Medical Record of April 15, 1916, I have the following to say:

I claim to be the originator of the "Method of Transfusion of Blood Treated with Sodium Citrate" as my experiments on rabbits were done successfully during the first week of January, 1914, and were related to members of the staff of St. Francis Hospital before any publication concerning the safe use of sodium citrate in blood transfusion was made.

Through my animal experiments I have proved conclusively that sodium citrate is not toxic as it was formerly believed to be to animals and naturally also not to man when injected in proper quantities. If Dr. Lewisohn will examine the solutions used by me for transfusion in animals and man he will find that his and my claims for the determination of the proper dose of sodium citrate to be used for blood transfusions are practically identical the only difference being that I was nine or ten months ahead of him. These facts and my opinion in regard to them cannot be changed.

Gustav Adolph Rueck, M.D.

633 E. 241st Street, New York.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

PSYCHOLOGY OF RUMOR—INFANT MORTALITY—RUSSIAN MEDICAL MISSION—BELFAST HOSPITAL—BIRMINGHAM MATERNITY—DEATH ATTRIBUTED TO AIR RAID ALARM—OBITUARY.

London, April 15, 1916.

We have been talking at the Royal Society of Medicine on a subject somewhat out of the usual run—the psychology of rumor. It was started by Dr. Bernard Hart in the section of psychiatry, which he opened by the provisional definition of the transmission of a report through a succession of individuals, the product of the narratives of a series of witnesses. The reliability of any rumor depended on the accuracy with which such statements were transmitted; ultimately on the accuracy of the first reporter, who was assumed to have seen or heard for himself the occurrence. This is evidence, and its investigation logically precedes that of rumor. Formerly the moral character of the witness was regarded as a criterion of reliability; now each individual statement is separately estimated, including unconscious action or bias. Experimental investigations upset the popular notion that evidence given with the best knowledge and interest is certainly correct, or that if incorrect it is proof of culpable carelessness or of falsehood. Completely correct reports are exceptional. One investigator found only 2 per cent. to be errorless. Even attestation is not a perfect guarantee of accuracy, for in sworn testimony one investigator discovered 10 per cent. of errors. Increase of the time interval from the event to the report showed range and accuracy were both lessened, but the confidence of the reporter showed surprising constancy. Hence, readiness to swear to the truth of his assertions depends rather on the character of the person than on the quality of his memory. Children's evidence is to be received with great caution; their assurance is high but their capacity for reproducing what they have seen is very low. The psychological factors leading to the perversion of evidence were next considered by Dr. Hart under the divisions of perception, conservation, and reproduction, and then the "complexes" as to each. Afterward he referred to the social phenomenon of rumor and its relation to the psychology of the crowd. Its susceptibility to the action of a "herd instinct" explained the readiness to embrace non-rational opinions and beliefs. During a great war this instinct was stimulated to the maximum degree and the prevalence and vitality of rumor were accordingly also enhanced.

In the House of Commons the latest figures for last year on infant mortality were officially stated on the 5th inst. Under one year of age the rate was 110 per 1000 births; in the previous 10 years it amounted to 115. In 1914 it was 105; in 1913 it was 108. Local expenditure has been generally carefully supervised with a view of restriction, but there is equal activity in the direction of lessening infant mortality and promoting generally their welfare. Some local authorities have appointed health visitors, who advise mothers, and in the larger towns maternity and child welfare centers have been established at which nursing or expectant mothers can obtain medical aid; in others accoucheurs and further assistance is provided for necessitous mothers and children. A Parliamentary grant of over £40,000 was distributed among such cases in the last financial year.

At an inquest on the 5th inst. a medical man attributed the death of a child two months of age to shock from air raids. He had seen several others. The coroner professed respect for the doctor's opinion, but could hardly think that a child of two months would be so susceptible, though he could understand the effect on the unborn.

A Russian medical mission is now in England investigating our military hospital régime and the care of the wounded. The inquiries will be subsequently continued in France.

The Belfast Royal Victoria Hospital had its annual meeting on the 31st ult., when it was stated that 3,189 new cases were admitted and 258 remained from the previous year, making a total of 3,447 in-patients treated in the year. The average daily number was 266.8, an increase from the previous year, which was 238.1. There were many sailors and soldiers from active service, who did remarkably well. Many others were admitted for operation found necessary before enlistment.

The medical officer of health for Birmingham reports between 4,000 and 5,000 fewer births last year than in 1914. The governors of the Maternity Hospital report 544 admissions, compared with 640 in 1914 and 532 in 1913. Members of the Infant Health Committee visited 249 infants, paying 1,908 visits.

The Central Medical War Committee has determined not to call up practitioners under the enrollment scheme unless and until 75 per cent. of those of military age on January 5 and not holding a commission have since that date been accepted for His Majesty's forces.

Sir A. R. Simpson died on the 6th inst. He succeeded his uncle, the late Sir James Y. Simpson, in the chair of midwifery at the Edinburgh University, retiring in 1905. At the general elections in 1910 he contested unsuccessfully the seat for Edinburgh and St. Andrews universities.

Dr. David Hooper, who was formerly curator of the Economic and Art Sections of the Indian Museum at Calcutta, has been elected president of the Pharmaceutical Conference.

Sir Geoffry Cornewall and Mr. Almeric Paget, M. P., have been elected governors of Guy's Hospital.

Dr. W. B. Richardson died suddenly on the 30th ult. at Blackpool, where he was in practice about 40 years. He was 69 years of age and honorary surgeon to the local hospital for about 20 years.

Sir T. B. Crosby, M.D., died on the 7th inst. He was the first doctor to be Lord Mayor of London. He graduated at St. Andrews, was at one time on the Senate of the London University, president of the Hunterian Society, and held other honors. He gathered a conference of the mayors of the chief cities to consult on the great coal strike during his mayoralty, and on the loss of the *Titanic* he raised a Mansion House Fund, which reached £300,000, for the relief of the sufferers.

Dr. H. W. Fitzgerald-Powell, member of council of the Gynecological Society, and formerly surgeon to the Throat Hospital, died on the 5th inst.

Progress of Medical Science.

Boston Medical and Surgical Journal.

April 27, 1916.

1. Chronic Backache. Herman W. Marshall.
2. Fracture of the Lumbar Vertebræ and Transverse Processes. James Warren Sever.
3. Occupation as a Remedial Factor in Hospitals for the Mentally Sick. Emily L. Haines.
4. Alcohol in Relation to Mental Disease. A. J. Rosanoff.
5. Cerebral Syphilis. James B. Ayer.

1. Chronic Backache.—Herman W. Marshall reviews the different types of back trouble, citing cases illustrative of static back strain, low back strain associated with injury, back strain in adolescents due to anemia and relaxed muscles, backache due to flexed scapula, postural shoulder strain, sacro-iliac strain with permanent lateral and forward list of the body, hypertrophic arthritis of the spine and infectious arthritis of the spine. The writer then discusses the significance of anatomic variations in lumbar spines and sacra, relaxed sacro-iliac joints and physiological variations of strengths of back muscles. He thinks that many lumbosacral symptoms may be due to minute relaxations representing more than mild strains which are without any ligamentous stretchings, but on the other hand, less than obvious relaxations that can be made out on superficial, hasty examinations; and that corresponding with these microscopic laxities, presumably there are minute displacements which cannot be distinguished on examination, but which patients appreciate and speak of frequently as sensations of something giving away in their backs. The strength of muscles and ligaments are dependent upon the variable qualities of the blood and theoretically, any deleterious influence of the blood may be a remote cause of muscle strain and postural back weakness. It seems probable on physiological grounds that vascular causes are fairly numerous. Therapeutic procedures at least should be directed always toward restoring the blood to its usual standard in addition to prescribing physiological exercises and mechanical orthopedic supports for weakened or irritated muscles. Rarer causes of backaches are local pressures produced by metastatic cancerous growths in vertebræ and by fibromata of the coverings of the spinal cord. Neuritis of the peripheral nerves is caused by toxic influences of the blood sometimes, and must be considered especially in the group of sciaticas. Diseases of the nerve cells must also be included in the complete list and herpes zoster and intercostal neuralgia as well as the psychomyalgias and the hysterical manifestations must also be mentioned. In considering the treatment of these various kinds of backaches the variable efficiencies of orthopedic treatment and surgical measures are discussed more particularly. The writer says he thinks it is safe to manipulate sacro-iliac joints gently when muscles are relaxed by ether. Success sometimes attends these efforts, and if perfect replacements are not secured no harm is done if care is used, because new strains produced in unsuccessful gentle handling will subside during the period of recumbency at the time plaster supports are worn. Severe chronic cases are the ones to be subjected to this form of treatment.

3. Occupation as a Remedial Factor in Hospitals for the Mentally Sick.—Emily L. Haines describes the various kinds of occupational work in which the patients in the hospitals for the insane in Massachusetts engage and shows what ends may be attained by occupation as a means of treatment. By the varied modes of this treatment the patients may become gradually vitalized with interest, the dull monotony of their days alleviated and they are sent on their path toward recovery. In some instances they have left the institutions prepared to practice as a profession or trade the work in which they have become interested, and more or less expert during the course of their treatment. To further the work of therapeutic occupation eight hospitals in Massachusetts last year gave a course of instruction in occupation to nurses as a part of their regular training school course. It has been found that this is not only a benefit to the patient and the institution but is of value to the nurse herself. In closing the writer says that occupation, as a remedial measure, is a field of wide and far-reaching possibilities. In its exercise it draws upon all the arts, and presents a fair horizon by which many may wander, and by various paths, to the desired goal of peace and restoration.

4. Alcohol in Relation to Mental Disease.—A. J. Rosanoff sums up an address on this subject by saying that even moderate drinking, especially when it becomes a daily habit, though not likely to make one insane, is sure to reduce physical and mental efficiency, thus killing the best that is in one as long as it is indulged in. Many persons who have an inborn predisposition to mental disease, but who, had they abstained from alcohol, might have avoided an actual breakdown, have been brought to hospitals for the insane by habits of intemperance. Much larger numbers have been brought to hospitals by the same cause who, we know for certain, would never have developed their insanity were it not for their intemperance. This is only the mental side; on the physical side is the part played by alcohol in the production of diseases such as chronic gastritis, cirrhosis of the liver, inflammation of the nerves, etc. Nor is this all, we have in addition the relationship which exists between vice, crime, pauperism and other social evils.

New York Medical Journal.

April 29, 1916.

1. Constitutional Conditions Caused by Oral Sepsis. Judson Daland.
2. Syphilis in Epilepsy. William T. Shanahan, J. F. Munson, and A. L. Shaw.
3. The War of the Metric System. A. L. Benedict.
4. Paralytic Feet. Percey Willard Roberts.
5. The Advantages of Pyelotomy in Renal Calculus. Henri Moyrand.
6. Anorectal Fistula. Arthur A. Landsman.
7. Urological Diagnosis. Joseph Wittenberg.
8. Teachers' Vitality as Indicated by the Blood Ptosis Test. I. H. Goldberger.
9. Medical Questions in the Pennsylvania Compensation Act. Harry A. Mackey.

1. Constitutional Conditions Caused by Oral Sepsis.—Judson Daland reviews the numerous constitutional diseases and secondary infections that may be produced by mouth sepsis and calls attention to the shortcomings of dental restorations. He says that some dentists are of the opinion that 90 per cent. of their work is mechanical, and that too little attention has been given to the septic relationship of the mouth to the body in general. Physicians view every capped, dead or loose tooth as suspicious; a dead tooth is always a candidate for infection. The object of this communication is not only to point out these well-known facts but to stimulate interest in the far reaching and sometimes vital importance of dental sepsis; to encourage the prevention or prompt detection and removal of septic foci; to emphasize the necessity of making dentistry a specialty in surgery, and to urge a closer friendship between the physician and the dentist. In the writer's opinion it is the duty of the dentist promptly to communicate with the physician should a patient show evidence of oral sepsis. The physician upon discovering evidence of the infection, which he believes may be dental in origin, must depend upon the skill of the dentist to determine the existence or absence of such lesion. The dentist should not be oversensitive when requested to reexamine his own work, or feel that such a request reflects upon his professional skill. Steps should be taken to make dentistry a specialty in surgery, on the same basis as other specialties in medicine, by so arranging the course of study for future students in dentistry that he shall receive the degree of Doctor of Medicine, thereby bringing about that close relationship between medicine and dentistry which is so urgently necessary.

2. Syphilis in Epilepsy.—William T. Shanahan, J. F. Munson, and A. L. Shaw quote figures on the occurrence of syphilis in the general population and among the feebleminded and insane, and then report the results of their observations on 1,473 epileptics in the Craig Colony for Epileptics. They find that syphilis was demonstrated by the Wassermann reaction in less than 2 per cent.; by clinical data in 3.4 per cent., and by the luetin test in about 12 per cent. This proportion is not very different from that in the general population. In 600 brains examined at autopsy there were syphilitic lesions in only two, both of which were gummas. Thus far they have not been able to find any characteristic mental picture for the syphilitic cases. The variations in this group are exactly those found in the entire group of epilepsies. It should be remembered that an epileptic with syphilis is not necessarily a patient with syphilitic epilepsy. The treatment of an epileptic with syphilis is unsatisfactory, owing probably to the lateness of its beginning. In many cases the diagnosis is exceedingly doubtful and should be supplemented by examination of the patient's parents, brothers, and sisters, not forgetting the use of the Wassermann and luetin tests. There is no type of syphilitic epilepsy, but syphilis is one of the many agencies which produce the disorder we call epilepsy.

8. Teacher's Vitality as Indicated by the Blood Ptosis Tests.—I. H. Goldberger believes that toxic fatigue products act upon the vasoconstrictor nerves of the sympathetic nervous system, which supply the circular muscles of the splanchnic system and that a general fall in vasotone results, depending upon the degree of poisoning. Vasotone is a function essential to life and is an important indication of the condition and vitality of the whole body. Employing the blood ptosis test devised by Crampton the writer conducted a series of vitality tests on teachers in the elementary schools of the city of New York, to show the beneficial or depressive effect of various conditions supposed to affect health. He finds that the school day is fatiguing to teachers to the extent of 9.3 per cent., and the work of the school year is equally so. Long vacations are more beneficial to teachers (12.1 per cent.) than short vacation like week ends (1.7 per cent.), Easter holidays (3.6 per cent.), etc. Teachers who went away for their vacations gained in efficiency 12.1 per cent. Teachers who worked in summer schools or vacation centers showed a loss of efficiency of 20.8 per cent.

Journal of the American Medical Association.

April 29, 1916.

1. Prostatectomy Under Local Anesthesia. Arthur E. Hertzler.
2. Case of Coccidioidal Granuloma. Samuel T. Lipsitz, G. W. Lawson, and E. M. Fessenden.
3. Cancer of the Lip. W. W. Grant.
4. Hemoglobin Estimation. Theodore Kuttner.
5. The Spinal Fluid in Mongolian Idiocy. H. C. Stevens.
6. The Value of Health Examinations. Herbert J. Cronin.
7. Ether: Simplicity in Its Administration. Isabella C. Herb.
8. The Treatment of Genito-Urinary Tuberculosis with Rosenbach's Tuberculin. A. Hyman.
9. Bruit Over the Eyeball in Exophthalmic Goiter. David Reisman.
10. Experimental Studies in the Production of Chronic Gastric Ulcer. Abraham Wilenshy and Samuel H. Geist.
11. The Detection of Pulsus Alternans. Paul D. White and Lawrence K. Lunt.
12. The Laboratory Examination of Material in a Case of Suspected Smallpox. John Mivison Force.
13. Slate Pencil in Cecum. F. R. Williams.

2. Coccidioidal Granuloma.—Samuel T. Lipsitz, G. W. Lawson, and E. M. Fessenden report this case which they believe is only the third instance in which this disease has been found in a patient who has not been in California. This patient was a negro, 28 years of age, who when first seen was believed to be suffering with an early tuberculosis. The disease progressed much more rapidly than usual, the patient succumbing in fifty-two days from the onset of his illness. As the disease progressed nodules appeared situated both subcutaneously and intramuscularly. They were distributed over the front of the chest, abdomen, forearms, thighs, and legs. The case was similar in most respects to those already reported, except that in this instance there was a high, sustained fever and a marked leucocytosis, whereas most of the other cases were characterized by an irregular fever and a very moderate leucocytosis. As the disease advanced the nodules grew smaller and a walling off process seemed to take place. The writers believe that this would tend to show that some healthy reaction was going on in the region of these focal lesions. The pulmonary involvement progressed rapidly, taking on the characteristics of an active bronchopneumonia, which was most probably an active factor in the fatal termination. In this case the treatment recommended for blastomycosis was of no avail. The writers find that coccidioidal granuloma is more rapidly fatal than systemic blastomycosis, and that, except for one or two cases reported to have been treated successfully by surgical measures, this disease does not appear to be amenable to any form of treatment.

4. Hemoglobin Estimation.—Theodore Kuttner has endeavored to remedy some of the errors in the Sahli-Gower method for hemoglobin estimation, due to the fading of the color standard tube, as well as to lack of uniformity of the diameter and graduation of the cali-

brated tubes. He makes use of a pocket microcolorimeter, comprising uniformly calibrated tubes, and employs various stable standard color tubes of solutions of inorganic salts, one of these tubes being identical with the acid hematin color. This tube is equally adapted to artificial light and to daylight. Dr. Kuttner has also added a prism arrangement producing the optical effect of bringing the two observation fields in close proximity, thus facilitating the color comparison. The standard contains the equivalent to 15 gm. of hemoglobin per 100 c.c. of blood, this being the average amount found in normal individuals. This standard also reads directly instead of 80 being considered 100 per cent. as in the Sahli tube, and thus avoids the recalculations necessary with the latter's hemometer. The writer says that the most suitable time for the collection of the blood for hemoglobin estimation is before breakfast. The change in blood and plasma volume is of great importance. Hourly determinations of hemoglobin show fluctuations synchronous with the fluctuations of plasma volume.

7. Ether; Simplicity in Its Administration.—Isabella C. Herb advocates simplicity in the use of drugs to produce anesthesia. She uses the open method of etherization in all operations except those of the head and neck. In mouth, jaw, nose, and throat operations she employs the intrapharyngeal method. For this a very simple apparatus is employed, consisting of an electro motor which forces air through a tube extending to the bottom of a bottle containing ether. The vapor is carried through a second tube which extends just through the stopper of the bottle, and is several inches from the surface of the ether. A valve controls the density of the vapor. In other operations about the head and neck what is termed a sterile anesthesia is given. All the anesthetic appurtenances are sterilized and the anesthetist wears a sterile gown and gloves. The writer concludes as follows: As much air or oxygen as is consistent with narcosis should be allowed. That there is any distinct advantage in warming ether vapor is very doubtful. The conservation of body heat during anesthesia is of great importance. With the open method of etherization, the patient's blood is well oxygenated throughout the most difficult operation, and patients leave the operating table with normal color and normal respiration. There is less injury to the lung epithelium when an abundance of air is allowed with the ether.

11. The Detection of Pulsus Alternans.—Paul D. White and Lawrence K. Lunt state that during the year and one-half prior to February, 1916, 129 patients with pulsus alternans were seen at the Massachusetts General Hospital. Of this number 29 showed the condition constantly, and the remainder only after premature beats. Since several minutes sometimes elapsed between the appearance of these premature beats, the use of the auscultatory blood pressure method was more laborious and uncertain than the use of the sphygmograph. A constant alternation has not been found in some of the patients who showed by sphygmogram slight to moderate alternation only after premature beats. Bigeminy due to very late premature contractions, so late as to be confused with alternation of the pulse, was found in seven patients during the course of the same year and a half. The proportion of cases with premature beat pseudo-alternation to cases with true constant alternation is 1:5.3. About one in six times we would make the error of confusing pseudo-alternation with true alternation in using the auscultatory blood pressure method. In this series of cases the importance of this error has not been great because of the serious myocardial damage present in the pseudo-alternating patients, while in cases of constant alternation the auscultatory blood pressure method is a useful procedure. It affords the earliest means of detecting constant alternation in patients who exhibit it to only a slight degree.

The Lancet.

April 8, 1916.

1. Report on the Use of Stock Vaccine in Infection by the Bacillus Typhosus. With an Analysis of 230 Cases. T. H. Whittington.
2. Further Remarks on Agglutination Tests in Inoculated Persons, and the Influence of Febrile Conditions on Inoculation Agglutins. George Dreyer, Alex. G. Gibson, and T. W. Ainley Walker.
3. A New Apparatus for the Isolation and Cultivation of Anaerobic Microorganisms. James McIntosh and Paul Fildes.
4. Gunshot Wounds of the Spine; Their Surgical Aspect. Donald Armour.
5. Anesthesia for Enucleation of Tonsils. J. Blomfield.
6. Pain in Renal and Vesical Lesions. Its Characteristics, Its Anomalies, and Its Misguided Manifestations, with Twelve Illustrative Cases. David Newman.
7. On the Connection Between "Soldier's Heart" and Hyperthyroidism. Florence A. Stoney.
8. Food Economics in Relation to the War. Harry Campbell.

1. The Use of Stock Vaccine in Infection by the Bacillus Typhosus.—T. H. Whittington analyzes the effect of stock typhoid vaccine in a series of 230 cases, 115 of which were treated with the vaccine and 115 without it. He has tried to be certain of the following essentials: (1) Proof of infection by *B. typhosus* in all the cases, including the controls. (2) Accurate selection of the control cases—that is, (*a*) as far as possible the classes of cases and groups of cases compared are of the same degree of severity; (*b*) there is the same state or lack of inoculation in the cases compared; (*c*) all the cases occurred in the same season of the year, and in the same climate and locality; (*d*) all were of the same sex, and of about the same age and previous health; and (*e*) other modes of treatment, nursing, diet, etc., were similar. The total mortality in the 230 cases was 52, or 22.6 per cent.; 29 deaths occurred among the vaccinated cases, or 25 per cent.; 23 deaths occurred among the unvaccinated cases, or 20 per cent. The average length of the primary period of pyrexia (neglecting fatal cases) was 27.5 days. The average date on which the temperature settled was the 29th day in the vaccinated cases and the 26th day in the unvaccinated cases. The total number of cases having a relapse was 22, or 9.5 per cent.; of these 12 occurred among the vaccinated and 10 among the unvaccinated. The total number of cases with complications or sequelæ of some kind or other was 111, and of these 58 were among those who had vaccine and 53 among the unvaccinated. Hemorrhage from the bowel was the case of death or the deciding factor in six of the vaccinated cases and five of the controls. It was noted that in some of the cases the hemorrhage started just after a dose of vaccine or recurred after a dose. In summarizing, the writer says that good results with the use of vaccines were more often obtained where good results can be expected by ordinary methods of treatment alone. Those cases which had much bronchitis or bronchopneumonia ran the severe course which is usual and vaccine appeared to be of no avail. It appears that it is in just those cases in which the physician so much requires help that vaccine is disappointing. It seems that vaccine neither shortens the fever nor reduces the number of complications, and there is a decided suspicion that vaccine increases the incidence of hemorrhage. It seems, therefore, that the use of stock vaccine cannot be recommended as a routine measure in the treatment of typhoid fever.

3. A New Apparatus for the Isolation and Cultivation of Anaerobic Microorganisms.—James McIntosh and Paul Fildes point out the defects in the usual methods

at present in use for the isolation and cultivation of anaerobic bacteria. Many of these methods they have tried without success when they noticed that Laidlaw had suggested the use of platinized charcoal and colloidal platinum to remove the oxygen from anaerobic cultures. Their results with this technique were so successful that they determined to work out the method in greater detail, and have succeeded in producing an apparatus by which isolated colonied or anaerobes may be obtained upon the surface of ordinary laboratory media with great facility. This method consists briefly in inclosing the culture medium in an air-tight vessel which has suspended in it a piece of asbestos wool impregnated with palladium black. The vessel is then attached to a hydrogen generator and hydrogen is allowed to pass in, when it will be occluded by the palladium and combined with any oxygen present. A negative pressure thus develops inside the vessel and hydrogen will pass in until no oxygen remains. The apparatus is then detached from the generator, but the action still continues and any trace of oxygen which diffuses from the medium itself will be rapidly removed. Thus a more or less complete vacuum toward oxygen is obtained. This method is clean, rapid, and suited for use with any laboratory medium. It will grow the strictest anaerobes with great rapidity upon the surface of a solid medium.

4. Gunshot Wounds of the Spine and Their Surgical Aspect.—Donald Armour classifies spinal injuries and considers the questions which will arise in reference to the advisability of operative interference. He expresses the opinion that the patient's life will not be endangered where operation seems advisable if a proper estimate has been made of his general condition beforehand. The chief and most frequent contraindication is a general septic condition arising from the state of the kidneys and bladder, with persistent high temperature and perhaps rigors and a weak and irregular pulse. There is an added danger where the intercostals are paralyzed. As to whether any benefit will result from operation, he says that it will relieve pressure, or remove any doubt as to whether continued pressure exists. If the spinal cord be not totally destroyed, continued pressure may succeed in completing its destruction. Therefore operation is indicated: (1) To relieve pressure from depressed or displaced fragments of bone; (2) to relieve pressure from blood-clot or from extensive hemorrhage, either extradural or intradural; (3) to relieve pressure and prevent further destruction from edema by enlarging the constricted bony canal; (4) to remove the future danger of pressure from exudate and inflammatory thickening. No operation will restore a cord in which complete transverse section has taken place; nor will any operation benefit cases of concussion. Since there is no symptom-complex which establishes beyond a doubt that the injury to the cord is irremedial we should give our patients the benefit of an operation which neither materially endangers his life nor adds to his discomfort.

British Medical Journal.

April 8, 1916.

1 Penetrating Wounds of the Abdomen. John Fraser and H. T. Bates.
2. A Method of Treating General Peritonitis with Obstruction, and Its Application to Military Surgery. W. Sampson Handley.
3 Traumatic Gastric Ulcers. T. R. Elliott and Herbert Henry.

1. Penetrating Wounds of the Abdomen.—John Fraser and H. T. Bates have lately had the opportunity of observing the operative results of a number of cases of penetrating wounds of the abdomen and are convinced that in the vast majority of these cases operative measures offer the best chance of success. They qualify the statement, however, by excluding from the category uncomplicated wounds of the liver and certain wounds of the kidney. When a wound affects the hollow viscera of the abdomen, they are satisfied that it is only as the rarest exception that a spontaneous recovery occurs. When these cases arrive at the hospital they are almost universally in a state of intense shock and, therefore, they have found it advisable to wait for a period of from one to two hours, until the increased shock of the journey has subsided. To this rule they make one exception—those cases which show evidences of rapid and progressive hemorrhage; in such cases the risks attendant on immediate operation are taken. They limit the pre-operative stimulation to getting the patient thoroughly warm and administering 1 c.cm. pituitary extract. During the operation every precaution is taken to minimize the degree of shock; the theater is thoroughly heated, the table is provided with a hot-water bed; and lately they had found it advantageous to operate on these cases while they are in the Trendelenberg position. Immediately before the operation is begun, the administration of subcutaneous saline by a Lane's bag is begun, and it is continued throughout the operation; three or four pints of fluid are given in this way. They describe the operative technique which they employ. Throughout the operation speed is an important factor, coupled with every avoidance of shock. The post-operative treatment is similar to that of every other abdominal operation.

2. A Method of Treating General Peritonitis with Obstruction.—W. Sampson Handley says that if there is a condition in surgery which is stamped with the word hopeless, it is that stage of a general peritonitis when, in spite of pelvic drainage, cessation of the passage of flatus and persistent foul vomiting indicate that complete obstruction has supervened. The rigid abdominal muscles have been forced to yield by the pressure of fluid poured out into the paralyzed intestine, and the abdomen is uniformly and tightly distended like a drum. The pulse becomes running, the extremities cold, and the patient realizes the horrible certainty that he is in the inexorable grasp of death. Is it inevitable that cases of general peritonitis should reach this condition? Is the problem presented by such cases really hopeless of solution? There are certain indications that these problems may not prove insoluble: (1) General peritonitis is rarely universal. (2) General peritonitis usually begins at the lower limit of the peritoneal cavity and spreads rapidly upward. (3) The persistent vomiting indicates that the stomach and upper bowel retain their contractile power to a late stage. The writer is convinced that in the vast majority of cases of general peritonitis a cautious investigation of the upper abdomen would show it to be uninvaded. Hence certain points may be emphasized which will guide us in attempted treatment: (1) In general peritonitis which, in spite of drainage, has produced signs of intestinal obstruction, a stage now regarded as hopeless, we can rely for a time on the functional activity of the muscle of the stomach and of the upper part of the small intestine. (2) In such cases the upper part of the abdomen may be regarded as for some time longer free from peritonitis. In this district we may provisionally assume that surgical operations may be undertaken which postulate the power of repair, such operations, for instance, as intestinal anastomosis. In discussing this question of treatment the writer returns to the subject of ileus duplex—paralytic obstruction due to pelvic peritonitis. Here, in his opinion, lies the key to the treatment of general peritonitis; he has found that recovery can be secured by anasto-

mosing the suprapelvic ileum to the ascending colon, and then opening the cecum by a cecostomy. The parts of the alimentary canal which are still unparalyzed, and therefore available for constructing the suggested emergency alimentary canal, are the stomach, the jejunum, and probably the transverse colon. All the rest of the intestine, small and large, is paralyzed. His scheme of treatment is as follows: (1) For pelvic peritonitis and intestinal obstruction (ileus duplex) consequent thereon—ileocolostomy to the ascending colon with cecostomy. (2) For so-called "general peritonitis"—that is, unlocalized peritonitis with intestinal obstruction (hypogastric ileus)—jejunocolostomy to the transverse colon, with cecostomy. In all cases pelvic drainage must be provided.

3. Traumatic Gastric Ulcers.—T. R. Elliott and Herbert Henry say that the surgical work with the army in France during the last six months has proved conclusively the value of early operation in gunshot wounds of the abdomen. In their summary they state that the evidence related in the paper negatives the assumption that wounds of the stomach are less likely to be fatal than wounds of any other part of the intestinal tract. A perforation or a contusion of the stomach wall by gunshot wounds is liable to be followed by the development of a spreading gastric ulcer, which in certain anatomical positions will erode vessels and determine a fatal issue from secondary hemorrhage. Hematemesis and melana occurring in the second week after a wound are generally to be regarded as the outcome of such a traumatic ulcer. These symptoms are very rarely due to hemorrhage from a nontraumatic ulcer produced indirectly as the result of septic wounds elsewhere in the body. If a stomach wound has not been repaired by operation within the first twenty-four hours after the injury has been received, or if there is reason to suspect the possibility of such a wound being present, the diet should be rigidly controlled on such lines as will lessen the active secretion of free gastric juice.

Berliner klinische Wochenschrift.

February 7, 1916

Renal Affections in Troops.—Albu and Schlesinger state that not much has been added by war experiences to the knowledge of the internist. So-called "war heart" has proved to be nothing new—only a long known expression of a neurosis. Notable cumulative incidence of renal affections, however, may prove to possess elements of novelty, comparable in this respect with cumulation of cardiac neurosis. These renal lesions have no single cause, such as trench life, for in a large proportion of cases the victims had not been in the trenches. Certain psoriasticides used against lice are able to cause hemorrhagic nephritis under favorable circumstances (naphthalin preparations, etheral oils), but most of the victims had not been submitted to antilouse sterilization. In regard to the possibility of infections of whatever nature as causes of nephritis, many victims had gone through anginas, dysentery, diarrheas. The disease, however, never resembled a septic nephritis. The most plausible factors to invoke are dietetic—a marked change in the nutriment, along with irregular meals, and especially absence of representatives of certain classes of foods, such as fresh fruits, fresh vegetables and fatty substances. The preserved foods of the diet contain an excess of salt, and their protein content is known to have undergone notable changes which are not without effect on the metabolism. But these views cannot be pushed too far, as nephritis is not a deficiency disease, nor is it associated with food poisoning. The victims were young or middle aged, for the most part with excellent negative histories. The symptoms comprised backache, prostration, pressure in the head, very often associated with olegaria and dropsy. In some cases there were no symptoms, the diagnosis having first been made from urinary findings. Pallor and edema were the chief objective finds. The blood pressure was subnormal, heart area usually normal, no changes in fundus oculi. The chemical and microscopical examination of the urine gave a great variety of data, but red blood corpuscles seem to have been invariably present, and, with residual albuminuria, they persisted in the urine for prolonged periods, so that the prognosis became questionable. The treatment could be summed up in two terms, rest in bed and liquid diet. Aside from headache and occasional nausea there was nothing to suggest uremia, which was as good as absent throughout. After the edema and oliguria had yielded to milk diet (reinforced with cream), the patients were placed on a salt-free regimen until all blood had disappeared from the sediment. Meat was only gradually introduced into the diet, which consisted chiefly of cereals, vegetables and preserves. When mild uremia seemed present saline or grape sugar solutions were given as drip enemata. Diaphoretic procedures accomplished little, while diuretic—notably theocin—were regarded as contraindicated. Hot drinks are safe diuretics. If we attempt to fix the status of the lesions we find that these belong rather under the nephroses than the nephrites, with the notable exception that the constant presence of blood speaks for nephritis. Hence if the teachings of Volhard on this point are sound, these patients must have had a primary nephritis and secondary nephrosis, *i.e.* in this instance a secondary lipoid infiltration of the kidney epithelium. In an appendix the author describes a late cumulation of cases through which he is able to corroborate and somewhat expand his original conception of the disease. Some of the cases were severe, and there was often a notable absence of formed elements in the urine save blood corpuscles which were uniformly present, thus confirming the conception of a primary nephritis. The author seems to have lost but one patient, and he undoubtedly had had an old lesion when the disease first appeared.

Rupture of the Common Exterior Tendon of the Fingers as a Result of Gonorrheal Taendovaginitis.—Melchior relates a case of gonorrheal tenosynovitis in a woman of 47, the lesion having appeared six weeks before as one symptom of an articular rheumatism. The site of the lesion in question was the back of the hand, and a superficial incision was made to ease the severe pain. Only blood came away at first, but later pus appeared in the wound, and when first seen by the author there was a large, undermined ulcer *in loco*. Pressure about this lesion caused pus to exude. The patient was wholly unable to extend her fingers, which were in slight flexion. Examination of the pus revealed the pressure of the gonococcus, so that in the absence of bone and joint lesions, as shown in an *x*-ray, one could only conclude that an abscess had formed about the tendons. There was a history of old cystitis and gonococci were found in the cervical secretions The patient's husband confessed to an old gonorrhea. Inability to extend the fingers was regarded as the result of adhesions, and intervention was made to free the tendons. As the incisions were amplified and deepened a further pus pocket was found and granulation tissue which lined the same was curetted away. The discovery was made that the tendon sheaths and dorsal ligament of the wrist had disappeared, while the continuity of the tendons was lost in a mass of granulation tissue. They had doubtless been the seat of a

degenerative tenditis. The wrist joint was quite intact. There was no history of a trauma, although a very slight one would have sufficed to provoke a rupture of the tendons. The condition must be regarded as a destructive phlegmon, not of the subcutaneous cellular tissue but of the tendon sheaths.

Deutsche medizinische Wochenschrift.

March 2, 1916.

Tetragenous Sepsis After Typhoid Fever.—Welz and Kalle mention first the saprophytic behavior of the tetragenes under ordinary circumstances. It is found harmless in the mouths and throats of consumptives and victims of other chronic infectious diseases and only rarely has it been known to enter the blood and cause sepsis. This process may, however, often pass unrecognized, perhaps masked as a relapse of typhoid. The author reports three cases in all of which the cocci were found in the blood of convalescents from typhoid. As a result the patients developed chills with markedly remittent type of fever. But two other papers have ever been published on this subject. The absorption of a few of these cocci from the mouths or throats of convalescents may cause the one day rise of temperature sometimes met with. The fever curve is quite unlike the typhoid curve as shown in the tracings in which the last week of typhoid is followed by complete defervescence and this in turn by three or four steep rises and falls at irregular intervals. Immediately after this sudden rise the blood tests were made and repeated at the next rise. In a serious infection with the tetragenes, the ulcerated intestine may be the port of entry. A peculiar clinical feature was a bronzing of the skin and mucosæ in circumscribed areas which must be set down to the agency of the tetragenes.

Capillary Bronchitis in Nurslings.—Peiper states that this affection shares with alimentary intoxication the ill repute of being the most dreaded disease of the nursing period. The great swelling of the mucosa and the occlusion of the bronchioles with mucopurulent secretion causes such a notable damage to the lungs, pulmonary circulation and heart that life becomes quickly imperilled. If we do not find much evidence of mischief in the chest we must in no wise hold aloof from energetic treatment. The physical signs are certain to become more pronounced, as the inflammation diffuses itself and causes atelectases and bronchopneumonic foci. The face, pale at the outset, becomes dyspneic—blueish green or livid red. The child becomes drowsy, and can be roused to nurse only through hydriatric measures, as wet compresses. Naturally dyspnea must interfere greatly with nursing or feeding; and at last nourishment is refused outright. Diarrhea is a common complication, and when associated with fasting quickly leads to death. The more common termination is pulmonary edema and collapse. The mortality is 35 per cent. to 40 per cent. In a broncholitis with foci of bronchopneumonia it is impossible to state to what extent the latter affect unfavorably the prognosis. The chief indication for treatment is to drive the blood in the engorged thorax to the surface. To fill this indication mustard packs must be used. The technique of this resource must be carried out in full. Other measures may hardly be required if this is successful. Two handfuls of mustard flour are made into a paste with 1 liter of hot water in an earthen vessel, stirring well, and covering with a towel until the penetrating mustard oil is sensed above the latter. A napkin of suitable size to reach from the head to the feet of the child is dipped into the paste, wrung out, and wrapped about the child so that it ends at the chin. The face should be protected from the mustard fumes by a piece of gauze. Around the mustard cloth a piece of flannel is wound. A small pocket handkerchief wrung out in cold water is now placed on the forehead. The child remains for twenty or thirty minutes in the mustard poultice until it is as "red as a crab." The envelopes having been removed the child is now washed in warm water, wrapped in flannel and left alone for two hours. At the end of this time it will be found perspiring, and should be gently dried. During the entire period it must be possible to control the heart's action, for children have been known to collapse in the mustard pack. Should such an accident occur the wrappings must come off at once and camphor or caffein injected. One packing may suffice, but usually it must be repeated in twenty-four hours, and as often afterward as necessary. If reaction does not follow it is because of the cardiac weakness. The only resource left is to puncture or even sever a vein and allow 50—100 cc.m. of blood to escape. Leeches may, however, be tried if consent is refused. For cardiac failure natrobenzoate of caffein may be injected, or perhaps given internally, while camphorated oil is injected. Oxygen inhalations are useful. Should expectorants be indicated—as when attacks of asphyxia are due to accumulations of mucus—some form of artificial respiration should be used, such as Schultze's swings. Emetics are virtually contraindicated, for they depress the heart's action. However, they may be given early in the disease (antimony and squills) to clear the passages. The drugs should be given in emetic doses and not as expectorants.

Iodine in Tetanus.—A. T. MacConkey and S. S. Zilva, after a series of experiments on guinea pigs, are forced to the disappointing conclusion that iodine injected subcutaneously has no effect upon tetanus toxin which has been also injected subcutaneously in a different place. They find that we cannot hope to influence favorably an attack of tetanus by injections of iodine alone, nor does iodine have any effect in enhancing the power of serum, but can only be of use when applied to the infected focus, so that it can come into direct contact with the toxin before absorption. —*British Medical Journal.*

The Prognosis in Sympathetic Ophthalmia.—Percy Dunn protests against the use of the term "sympathetic ophthalmia" since every ophthalmologist is agreed that the disease is not due to sympathy, but to a process of infective origin. Still, while this fact is generally conceded, the old misleading term is retained. Though the microorganism upon which the disease depends has not been isolated, the facts that sympathetic ophthalmia is becoming rare with time, that this increasing rarity corresponds with the practice of aseptic and antiseptic principles in wound treatment, and that the virulence of the disease has been greatly modified so that it has become curable point unmistakably to its infective origin. It was formerly axiomatic that "sympathetic ophthalmia once, sympathetic ophthalmia ever, all the time that a patient lives." This tragically axiomatic conclusion of former days would cease to become a stumbling block in respect to the prognostic significance of the condition were the disease endowed with a terminology more accurately expressive of its modern conception. The writer also shows how relapses and sympathetic irritation may be explained on the basis of infective origin, the toxin being conveyed by the medium of the blood from one eye to the other and causing symptoms in accord with its virulence. He believes effective treatment lies in the discovery of a vaccine. Pus infections do not cause sympathetic inflammation, the reason being that perhaps with one exception, they do not produce a toxin.—*Lancet.*

Insurance Medicine.

Liquor and Life Insurance.—For many years opinions were greatly divided as to whether alcohol used in moderation tended to shorten human life. Up to the year 1904, figures of a reliable nature were lacking with regard to the subject. In that year, however, the sixty years' experience of the United Kingdom Temperance and General Provident Institution was made public (Lawrence M. Cathlee, *Texas Medical News*, March, 1916). When the first insurance companies were formed in Great Britain, the applicant only had to appear before the Board of Directors, and it depended upon the impression he made upon these gentlemen whether or not he was granted insurance. Little attention was paid to the applicant's habits, personal or family history. The delicate scientific tests, such as blood pressure and chemical analyses were unknown, and the more liquor the applicant was able to absorb without seemingly disastrous effects, the stronger and better life insurance risk he was supposed to be.

In the early days of insurance, if a man weighed more than the average for his height, it was considered that his food agreed with him better than with ordinary mortals, and his additional avoirdupois argued greater strength than that of the average man, with a more favorable prospect of living to a ripe old age.

Opinions on these points have undergone a change and it may be laid down as an axiom that drinking men are not good life insurance risks. Saloon keepers cannot obtain life insurance protection at standard rates from any conservatively managed life insurance company in the United States. The companies which do accept saloon keepers, bartenders, keepers of hotels in which liquor is sold, and men in close connection with the liquor business are few in number and accept such risks for assurance only upon special terms which the average man would consider extremely onerous.

Applicants for insurance are nowadays required to answer specific questions as to their habits with regard to or connection with liquor somewhat as follows: Are you now or have you ever been either directly or indirectly concerned in the manufacture or sale of any kind of alcoholic beverage? Do you ever drink wine, spirits, or malt liquors? If so, which of these and to what extent? If a total abstainer, how long have you been so? Have you ever taken any medicine or treatment of any kind for alcoholic or narcotic habit?

Briefly, the attitude of life insurance companies toward the liquor business and those who indulge in intoxicating liquors may be roughly summed up as follows: Indulgence to the extent of the physiological limit stated by Abel (three-quarters of an ounce of absolute alcohol) will not ordinarily disqualify for insurance if the applicant's other habits, personal health, family history, environment, etc., are good. Indulgence in excess of the physiological limit, say three glasses of beer a day or more, if a regular habit, disqualifies. All persons actively engaged in the sale or manufacture of intoxicating liquors are barred from insurance by the great majority of life insurance companies.

With respect to the point as to whether total abstainers are better life insurance risks than moderate drinkers, there is little difference of opinion among experienced life insurance physicians.

Mr. R. M. Moore, actuary of the United Kingdom Temperance and General Provident Institution, states in his introduction to the mortality experience of this institution published in 1904 that "excess, as compared with moderation in the use of alcohol, is prejudicial in every way, is a proposition hardly to be disputed. And many authorities who have given the matter careful consideration contend that even as moderation is superior to excess, so is total abstinence from alcohol superior to moderation." The conclusions arrived at by Mr. Moore were as follows: 1. That the non-abstainers insured by his institution proved themselves to be good average lives, generally equal to the best accepted standard. 2. That the abstainers show a marked superiority to the non-abstainers throughout the entire working years of life for every class of policy and for both sexes, however tested. 3. That this superiority was not brought about by transferring from the abstainers' section to the non-abstainers' those abstainers who, after obtaining their insurance, did not continue to abstain. Figures showed that out of the same number of abstainers and non-abstainers insured only three abstainers died to every four non-abstainers. Taking the death rate among non-abstainers as 100, the abstainers' experience at the different ages is as follows:

Ages.	Death Rate.
20-24	69.9
25-29	70.1
30-34	56.5
35-39	54.8
40-44	57.2
45-49	58.5
50-54	62.4
55-59	70.6
60-64	78.5
65-69	84.0
70-74	86.5

There are quite a number of life insurance companies in the United States which make a specialty of insuring total abstainers in the belief that they are generally better risks for life insurance than those who do not wholly abstain from the use of alcoholic liquors, but who, nevertheless, drink so little that they are considered safe risks.

So far as the writer knows, there is no volume of statistics which can compare in reliability with those of the United Kingdom Temperance and General Provident Institution. Comparative rates of mortality given by the Manufacturers' Life Insurance Company of Toronto, Canada, which maintains an abstainers' section at rates of premium approximately 5 per cent. lower than those charged to non-abstainers, are as follows:

Year.	Abstainers' Section.	General Section.
1905	36.95	74.23
1906	35.90	57.33
1907	37.81	69.15
1908	39.88	81.75
1909	33.50	48.45
1911	46.07	77.89
1912	46.51	70.90
1913	40.42	44.94

All the evidence obtainable on the subject points one way and leads to the inevitable conclusion that among a body of men who totally abstain from intoxicating liquors there will be fewer deaths during the vigorous productive years of life than among a similar body of men who are not total abstainers.

Book Reviews.

PRACTICAL CYSTOSCOPY AND THE DIAGNOSIS OF SURGICAL DISEASES OF THE KIDNEYS AND URINARY BLADDER. By PAUL M. PILCHER, A.M., M.D. Consulting Surgeon to the Eastern Long Island Hospital; Late Surgeon to the German, Seney and Samaritan Hospitals of Brooklyn, N. Y.; Associate Surgeon to St. John's Hospital of Brooklyn; Attending Cystoscopist to the Jewish Hospital of Brooklyn. Second Edition, Thoroughly Revised. Octavo of 504 pages with 299 illustrations, 29 in colors. Price, cloth, $6.00 net; half morocco, $7.50 net. Philadelphia and London: W. B. Saunders Company, 1915.

WHEN the first edition of Pilcher's Cystoscopy appeared, about four years ago, its popularity was soon assured, for it covered the ground in a thoroughly practical way and much more exhaustively than most of its contemporaries. During the past four years the cystoscope has assumed an ever increasing importance in the diagnosis of lesions of the urinary tract, and with added experience the coefficient of error in the interpretation of findings upon cystoscopic examination, ureteral catheterization and pyelography, in the hands of the expert, has been gradually diminishing; while its sphere of usefulness from a therapeutic standpoint has been much widened. Appreciating these facts, Pilcher has thoroughly revised his work, added considerable new material, and brought the book up to date in every sense of the word.

This book, based on the author's extensive experience, should be of great value to practically all those interested in cystoscopic proficiency; for it covers not only what the novice must have in the way of armamentarium, the technique of all branches of cystoscopic work, and the description of the normal findings, but also much that can be appreciated only by the man who has become reasonably expert in the use of the cystoscope and its accessories and is somewhat acquainted with the cystoscopic findings in disease. There are comparatively few cystoscopists who will not find many suggestions which, if followed, will increase their efficiency in this work, point out new therapeutic possibilities, or help clear up a diagnosis.

THE OPERATIONS OF SURGERY (Jacobson). Sixth Edition. By R. P. ROWLANDS, M.S. Lond., F.R.C.S. Eng., Surgeon to Guy's Hospital; Lecturer on Anatomy to the Medical School; and PHILIP TURNER, B.Sc., M.S. Lond., F.R.C.S. Eng., Surgeon to Guy's Hospital; Teacher of Operative Surgery to the Medical School. Two octavo volumes of 1030 and 934 pages respectively with 797 illustrations (40 in colors). Volume I, The Upper Extremity; The Head and Neck; The Thorax; The Lower Extremity; The Vertebral Column. Volume II, The Abdomen. Price per set, $13.00 net. New York: The Macmillan Company, 1915.

JACOBSON'S "Operations of Surgery" was written to supply the demand for a book on operative surgery that would be something more than a mere illustrated recital of operative technique with meager details as to the conditions under which the various operative procedures were to be employed. The subject was therefore treated upon broader lines and in far greater detail than had been customary. Originally published as a single volume edition in 1889, subsequent revisions have resulted in continual additions to the authors' text and to the quotations and other references to the literature, so that now two large octavo volumes are necessary to present the material thought to be essential in order to carry out the original design of the work. As a result we find a veritable storehouse of information concerned not only with the technique of most of the operations in the fields of general and special surgery which the general surgeon may be called upon to perform but also, often in great detail with the incidence, symptoms, diagnosis, indications for operation and reasons for the choice of particular methods under varying conditions, directions for the handling of various complications that may be encountered during the progress of the operation, and often a discussion of other complications and sequelæ.

There are, however, many omissions of material that seem important and many statements which are incorrect. For instance, we find the statement on page 35, Vol. I, that "direct transfusion of the blood is now practically never employed, its place being taken by infusion of a saline solution." Not only is no mention made of the direct introduction of the needle without preliminary incision and exposure of the vein, but the only description of transfusion is by Aveling's apparatus, and the description of blood-vessel surgery in general is wofully inadequate. We also find nothing on fascia and fat transplantation and nothing on modern methods of bone grafting; while in the discussion of operations on the brachial plexus the latest references to the literature are to articles published twelve or more years ago, no references being made to the work of A. S. Taylor and others whose results in recent years have been far better than those referred to. Again we find that the section on gunshot wounds of the abdomen is far from up to date in spite of the interest naturally attached to this subject at present. Here we find but one reference as late as 1908, some of the others going back as far as 1887. In general we are impressed with the preponderance of references to articles published ten or more years ago, when much later literature is often available which more truly reflects current opinion and results following the use of present day methods of action, is barely mentioned in a footnote. We also find sted's 1894 statistics in complete operation for cancer of the breast still be quoted when recent statistics covering much larger series of cases are available?

One is surprised, in reading the excellent section on cancer of the breast, to find that while Halsted's work is accorded due appreciation, Willy Meyer's all-important modification in the technique, resulting in what is now generally referred to as the Halsted-Meyer operation, is barely mentioned in a footnote. We also find occasional carelessness in the citation of references and many typographical errors. For example, one article is referred to in one place as having been published in the MEDICAL RECORD on March 15 and in another as on April 15 of the same year.

In spite of these criticisms these two volumes are of great value. Most of the illustrations are exceptionally good and the author's text usually seems to have been thoroughly revised and is replete with valuable suggestions and observations. The second volume, devoted to the surgery of the abdomen, is especially noteworthy, and has evidently received the lion's share of attention in the general revision for this edition.

SELBSTMORDVERDACHT UND SELBSTMORDVERHÜTUNG. Eine Anleitung zur Prophylaxe für Aerzte, Geistliche, Lehrer und Verwaltungsbeamte von Dr. PLACZEK, Nervenarzt in Berlin; pp. 272. Price, 6 Marks. Leipzig: Verlag von Georg Thieme, 1915.

THIS work, as its title denotes, is not devoted to suicide as such, but rather to the kind of man who is most likely to destroy himself. It is in fact a series of essays on the motivation of suicide. The technique of the latter receives but scant attention, and the book possesses no value as a reference work on actual self-slaughter. This could not be otherwise, for it is devoted very largely to prevention of suicide by means other than the penal code and forbidden sale of poisons. In the long run it is the tendency to suicide which dominates. We note that the problem remains the same through the ages. Suicide is either coldblooded or physiological on the one hand or due to mental weakness of some form on the other hand. The physiological form is relatively stable, while the pathological type varies with the changing viewpoints of race advance and race deterioration.

THE STARVATION TREATMENT OF DIABETES, with a Series of Graduated Diets used at the Massachusetts General Hospital. By LEWIS WEBB HILL, M.D., Children's Hospital, Boston, and RENA S. ECKMAN, Dietitian, Massachusetts General Hospital, Boston. With an Introduction by RICHARD C. CABOT, M.D. Second Edition. Price, $1.00. Boston, Mass.: W. M. Leonard, 1916.

THE second edition of this little book has been much enlarged by the addition of a number of case reports and a series of recipes for dishes suitable for diabetics. In other respects it is the same as the first edition. Whatever objections may be raised to the Allen treatment of diabetes, it is the popular one of the day. The greatest difficulty in the administration of this treatment by the average practitioner is the lack of exact knowledge of food composition and caloric value, and this lack will be removed by Hill and Eckman's book. The details and directions are all that could be desired and it should afford substantial aid to all who have not had opportunity of working out the progressive series of diets which should be used after the starvation period.

Society Reports.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, Held April 6, 1916.

THE PRESIDENT, DR. WALTER B. JAMES, IN THE CHAIR.

THE evening was devoted to the consideration of alcohol.

The Investigation of the Influence of Alcohol on Man, with Special Reference to Psychological Effects. — DR. FRANCIS G. BENEDICT, Director of the Boston Nutrition Laboratory of the Carnegie Institution, read a paper which he illustrated by lantern slides. He said that in accordance with its widely distributed "Tentative Plan," the Nutrition Laboratory of the Carnegie Institution had organized and initiated an exhaustive experimental study of the physiological consequences of the ingestion of small doses of ethyl alcohol in man. The first year's work under the psychological part of that plan was devoted to an investigation of the effects of alcohol on a selected group of interrelated processes covering the fundamental neural activities at various levels of the cerebrospinal system, from the simplest reflexes of the lumbar cord to the most complex cortical arcs that they could accurately measure by available laboratory techniques. The selection of the particular group of neuromuscular processes for measurement was determined by the following experimental demands: (1) The systematic demand for coordinate data covering as many as possible of the fundamental psychophysiological operations. (2) The interpretative demand for the least possible inclusion of unknown and uncontrolled factors. (3) The practical demand for natural reaction forms which would be comparable in a large number of individuals without special practice, and would show relatively little practice effect as a result of the experimental repetition. (4) The technical demand for dependable quantitative methods of stimulation and registration. Of the simple arcs which were available for experimentation, the patellar reflex and the protective lid-reflex were chosen, chiefly because of their similar latency and the accuracy of the modern technique for their measurement. The measurements of these reflexes included data concerning their latency, the extent of the muscle contraction, and the relative duration of the refractory phase. Of the more complex cortical arcs the following were selected: (1) Eye-reactions to sudden peripheral stimuli, a thorough practised phase of each individual's spatial adjustment; (2) speech reactions to visual word stimuli; and (3) free associations. The last two were characteristic phases of the individual's adjustment to his social environment. The fundamental preservation tendency was measured by the partial memorization of series of words. Sensory changes were indicated by Martin's faradic-threshoid measurements. Morot coordination was studied in the velocity and accuracy of eye-movements, and in the reciprocal innervation of the antagonistic muscles of the middle finger. Finally, pulse records (chiefly electrocardiograms from body leads) were taken either continuously or at homologous points in the various experimental processes. The subjects consisted of two groups: a main group of college graduates who were very moderate users of alcohol, and a smaller group of outpatients in the Psychopathic Hospital who had been under treatment for delirium tremens. Normal base lines in all cases included two normal experimental days for each subject and for each kind of experiment. One normal day came before and one after the experimental days on which alcohol was administered. In addition a "normal of the day" was recorded for each experimental process on the days on which alcohol was given. Two alcohol doses were used, one containing approximately 30 c.c. and the other 45 c.c. of absolute alcohol. All the measurements showed more or less rhythmic variations. In their statistical theory they assumed that, given a sufficiently large number of measurements, the normal rhythmic and arrhythmic variations would tend to compensate each other, leaving the average experimentally conditioned change relatively unaffected. In their data these average results showed two particularly significant marks of reliability: (1) Similar processes were similarly affected and in similar degree; (2) in general the larger the dose of alcohol the greater experimental effect. The effect of alcohol was calculated in all cases by comparing the differences between the "normals of the day" and subsequent periods on the normal and on the alcohol days. The greatest percentile effect was found in the reflexes. In the patellar reflex alcohol increased the latent time 10 per cent., while it decreased the amount of quadriceps thickening 46 per cent. In the protective lid-reflex it increased the latent time 7 per cent., while it decreased the extent of lid-movement 19 per cent. It increased the latent time of the eye-reactions 5 per cent. and that of the speech reactions 3 per cent. Memory and the free associations were only slightly affected. Sensitivity to faradic stimulation decreased 14 per cent. after alcohol. The number of finger movements decreased 9 per cent. and the velocity of the eye-movements decreased 11 per cent. as a consequence of the ingestion of alcohol. Quite in contrast to the general depression of the neuromuscular processes at all levels of the cerebrospinal system was the effect of alcohol on the pulse rate. Under all experimental conditions alcohol produced a relative acceleration of the pulse. In only a few cases with a large dose did this relative acceleration become a positive acceleration, so that the pulse rate in the periods subsequent to the ingestion of alcohol was faster than during the normal of the day; but in practically every instance alcohol prevented the regular pulse rate retardation that accompanied the successive periods of mental and physical work on normal days. This relative acceleration averaged approximately 3 per cent. While this effect was intrinsically small, its regularity, the large number of records, and its concomitant variation with the size of the dose gave the results a high degree of probability. The effort to determine which of the antagonistic heart-regulating mechanisms was responsible for the relative acceleration demanded an analysis of the pulse data. A comparison of the relative changes in the duration of systole and diastole (method of Hunt) led to a thoroughgoing consideration of the variations in the pulse cycles during the different experiments. The records showed a consistent tendency of alcohol to decrease the mean variations amounting to an average of 19 per cent. Since the rhythmic and arrhythmic pulse changes within the limits of their 12-second records could not have been conditioned by the relatively slow-acting accelerator, it seemed necessary to regard the decrease of the mean variation after alcohol as caused by a decreased responsiveness to the inhibitor. There was some evidence in the records that this paralysis of the inhibitor was not an exclusive effect, and it was probable that various natural and experimental conditions might be found which would shift the preponderance of paralysis to the accelerating mechanism. The small amount of change, its purely relative character, and the probability that both regulating mechanisms were affected doubtless gave the conditions for the confusion of the scientific traditions concerning the effect of alcohol on the pulse rate. In conjunction with the pulse acceleration, the general neuromuscular depression might be regarded as presumptive evidence of the effect of alcohol on organic efficiency. In none of their data was there any indication of a pure facilitation effect of alcohol. Contrary to the theory of Kraepelin, they not only found no facilitation of the motor processes, but the depression of the simplest forms in the finger and eye movements seemed to be one of the most characteristic effects of alcohol. Indeed, it was exactly these effects that correlated most closely with the average of all the effects for the several subjects. Practically it seemed to follow that these processes might serve as a readily accessible indicator of individual susceptibility to alcohol. Theoretically it seemed to follow that the effect on the motor coordinations indicated a central tendency of alcohol. A full presentation and discussion of the various techniques and the resulting measurements were given in Publication No. 232 of the Carnegie Institution of Washington.

Prof. C.-E. A. WINSLOW of Yale University emphasized the great difficulty of discussing this subject from a detached and scientific viewpoint. He said it was difficult to consider the evidence on its merits, since each new fact was apt to fit into and be modified by a preconceived picture, of which the center was either the Demon Rum or the genial god Dionysus. Our treatment of alcohol as a habit-forming drug was complicated by the fact that there were not only the confirmed addicts to be considered, but those who gave way only occasionally to excess, and the also steady, moderate drinkers. If there were signs of opium parlors on every street corner, or if hypodermics were passed at the close of dinner parties, our view of these drugs would be similarly complicated by a century-old atmosphere of social respectability, although of course the danger of habit-formation would be quantitatively

greater than in the case of alcohol. It must be freely granted that alcohol was technically a food, and that it might be and was oxidized in the body. It might be granted that in moderate amounts it was a source of pleasurable indulgence. The question was whether this food value and this indulgence were not too dearly bought. It was unnecessary to emphasize to physicians the relation of steady drinking to diseases of the liver and kidneys and to mental diseases, and its unfavorable influence upon the prognosis of such infections as pneumonia. Alcohol in large and continuous doses produced more or less serious pathological effects, in some instances constituting a principal contributory cause of death; and the extent of the danger varied widely with individual predispositions. There were also to be considered the many secondary effects of alcohol in connection with the causes of disease and death. Alcohol played a large part in automobile accidents and those occurring in factories. The relation of alcoholism to venereal disease was far-reaching and sinister. The taking of alcohol with meals promoted overeating and tended to overload the alimentary canal with food which would putrify and cause autointoxication. The net effect of alcohol upon health had been approximately measured in a number of statistical studies by English and Scottish life insurance companies and more recently in the admirable medico-actuarial investigation conducted by Arthur Hunter. This study showed a mortality 86 per cent. in excess of the normal among steady users of two ounces or more alcohol a day, 74 per cent. in excess of the normal among those who had committed alcoholic excesses within two years, 32-35 per cent. in excess of the normal among reformed persons of formerly intemperate habits, and 18 per cent. in excess of the normal among moderate, steady drinkers (lower limit defined as two glasses of beer, or one glass of whiskey a day). These results could not be considered extravagant when it was remembered that the same study showed an excess mortality of 13 per cent. for persons showing albumin in the urine, 20 per cent. for those who had suffered from acute articular rheumatism within two years, and 72 per cent. for those who had had an attack of gout within ten years. Passing from actual damage to the question of lowered efficiency, one must take into account the laboratory studies of Kraepelin, Vogt, Aschaffenburg and others, and the remarkably clear and convincing investigations reported by the junior speaker, Dr. Benedict. There were individuals who had lived long lives and done good work and who had consumed enormous amounts of alcohol. But if a responsible man had anything important to do he did not take alcohol before doing it. A surgeon about to perform a delicate operation did not take alcohol before entering the operating room. No man about to undertake severe, exact mental work would take a drink of whiskey beforehand. When one wanted cool, concentrated energy one laid drink aside. The same thing had been most clearly indicated by the changed attitude of European nations toward alcohol during the war. As Russia, France, and England reached the point where they needed to reach a maximum of efficiency they faced this as one of their greatest obstacles. On March 9 last David Lloyd George said of the alcohol problem: "It will be so much better to settle this question by general consent. If we do, the war, horrible as it is, will have paid for itself. There are many things which I hope we can accomplish through this war. There are many changes at home, changes in the outlook in the nation, changes in its temper, changes in its attitude of mind, changes in its industries; but this will be the greatest and most beneficent change of all if we succeed in carrying it through. If we can possibly convince the nation that success in the great task which it has undertaken depends very largely upon removing this drag on its efficiency, then I feel confident that at the end of the war, however successful we may be in a military sense, we shall regard this as the greatest triumph of all." No one method of fighting against alcohol was endorsed. There were grave criticisms of many of the methods that had been proposed. The best way to restrict the use of alcohol as a problem in itself, but from a standpoint of public health and efficiency that way should be found. Public health departments were not limiting themselves to the prevention of specific diseases and of death, but were developing their work along hygienic lines; not alone warding off epidemics, but building up health and vigor. Whether this country kept out of the war in Europe or not, the world's stage was swept for a conflict of ideals, standards, and civilizations. The old ways would no longer serve. There must be national efficiency in a sense never dreamed of before. Alcohol, though a pleasure to a few, was a serious danger to many and on the whole a drag and detriment which took off the keen edge of national effectiveness, and the best way to deal with it should be earnestly sought in the interests of public health and national well-being.

Dr. Charles R. Stockard of Cornell University gave a few of the results of experimentation on the effect of alcohol on the developing embryo and on the descendants of animals treated with alcohol which he illustrated with lantern slides. In order to study the chemical effect of alcohol on the development of human offspring of those addicted to its use, it was necessary first to study its effect on animals. It was of vast importance to know how the children of alcoholic parents were affected and whether the taking of alcohol by the pregnant woman endangered the make-up of the child. The first experiments were made on the eggs of fishes and of hens. In the former, the eggs were placed in a weak solution of alcohol and water and the eggs never developed normally, the abnormalities, being confined chiefly to the central nervous system; 90 per cent. had eye abnormalities. Magnesium chloride had much the same effect. Hens' eggs, if placed over a funnel containing alcohol fumes for a few hours before incubation, developed abnormal chicks. The question whether the embryo developing within the body of the mother could be affected by the mother being treated with alcohol was solved by experiments on guinea-pigs; this also applied to the effect on the offspring of the father being treated so as to change his cells. The effect of alcohol was watched on five generations and comparisons were made with the offspring of the same strain, which were not treated, as well as of other strains. A father treated with alcohol was mated to an untreated mother and *vice versa;* of one generation of offspring the father or the mother or both were treated; the untreated offspring of the first descendants of a treated father or mother were mated, but only the one generation was treated. There resulted an unusual number of abortions, still-births, and abnormalities, and there was also much abnormal sterility among the children, grandchildren, and even great-grandchildren from alcoholized ancestors. The worst complications resulted from the inbreeding of animals poisoned; they produced dwarfs, deformities, paralysis agitans, cyclopean monsters, and blindness. Fifteen per cent. of inbred descendants from alcoholics were defective; some had no eyeballs, others had only one eye, lacking also the optic nerve, the optic tract, and optic fibers. It was not claimed that these experiments could be transferred to man; they were made to see if it was possible to control embryonic development, whether defects due to alcohol could be transmitted by male or female or both, and it had been shown that such effect was possible whether it occurred in man or not.

Dr. Bernard Sachs said that he could not be expected to discuss the addresses previously made, as everyone must have been benefited by hearing them and he admired their originality. If anyone believed alcohol innocuous, Dr. Stockard's experiments would disprove such belief. As a clinician he was interested, as well as the laboratory workers, in the effect of alcohol and he shared the belief that unless the body was sound the individual could not prove himself efficient. A few months ago, there was a symposium at the Academy on syphilis in its relation to disease and alcohol was the subject of to-night's meeting; both these severe poisons had an effect on the nervous system. In regard to alcohol, it was unfortunate in one respect that it was not possible through laboratory experimentation to discern, as in syphilis, the early effects on the nervous system; at the present time by examining the spinal fluid of the person suspected of syphilis, a diagnosis could often be established before the poison had brought about any actual changes. That was not the case with alcohol unless the disease had reached the stage where positive symptoms appeared. In view of the interesting statements of Prof. Benedict, it was possible that some day the reaction time of alcoholic individuals might give early warning of impending changes just as did the cytological changes in the cerebrospinal fluid, and there might thus be given a clue to the early inroads alcohol made on the human system. There was one thing about alcohol which made it in a sense worse than syphilis; syphilis began as an exudative process, whereas alcohol was a destructive process; it produced degenerative disease more effectively and chronically than syphilis and the effects were as noticeable from long-continued

use of moderate doses as from the occasional use of excessive doses. Another unfavorable point was that the signs and symptoms of it were noticeable long after the habit ceased. The reason why alcohol was indulged in to such a great extent was the need of occasional stimulation. For certain duties and for the continuation of work, the ordinary fatigue of the day had to be neutralized in some way and for this purpose many resorted to alcoholic stimulants, beginning with small doses. The habit was then continued until it was difficult to break. It would be well if it were more generally known that the best substitute for alcohol was coffee, which would give the necessary immediate stimulation. On the whole, coffee was not injurious, though even that might be continued until it became a pernicious habit. It was to be regretted that coffee had been so maligned and that its value as a stimulant had been greatly underestimated.

Dr. HAVEN EMERSON, Health Commissioner of New York City, said that though impartiality had been advised in the discussion and in the analysis of the facts presented by the laboratory experts, it was difficult for any physician to be impartial if he had treated in homes, dispensaries, and hospitals, the victims of alcohol. When the title of the Bureau of Infectious Diseases was changed to the Bureau of Preventable Diseases it indicated a change in the point of view which had been going on throughout the country in the interests of public health. If one considered the possibility of the prevention of congenital defects of infants due to the use of alcohol by the parents, one must admit that it was within the sphere of public health officials to take up the propaganda against alcohol. It was admitted that the death rate from infectious diseases was higher among alcoholics; infectious diseases were more easily acquired by alcoholics, and recovery was in a smaller ratio among them. This was strikingly illustrated in pneumonia, typhoid fever, and septic conditions. The incidence of diseases due to alcohol itself and the results from its use in diseases of the central nervous system and of the assimilative organs justified an ergetic campaign against its use. The question of economic efficiency could not be considered as part of the public health, yet the attitude of large employers of labor indicated that they were in accord with all efforts to diminish the use of alcohol, whether from an altruistic point of view, or from the standpoint of profit and loss. For the present, the educational method seemed to be the one which would finally prevail; permanent results could not be accomplished by legislation or police enforcement. The country would respond to educational enlightenment and the demand for alcohol would diminish as the knowledge of its dangers increased.

Dr. FREDERIC S. LEE of the Physiological Laboratory of Columbia University said that during recent years the subject of the physiological action of alcohol had received much attention, but the experimenters had strangely neglected the action of this drug on muscle. Kobert (*Archiv für experimentelle Pathologie und Pharmakologie*, 1882, xv, p. 73), experimenting on frog's muscle, maintained that alcohol, when given in large doses, greatly diminished contraction, but that this did not occur with small or medium quantities. Later Lombard, Frey, Destrée, Kraepelin and his pupils, and Schäffer obtained with the ergograph interesting and valuable results with the drug in the human being; but such an organism was too complex to afford a solution of the problem at hand. His work had been performed on isolated muscle and had yielded positive results. He had found that the action of alcohol on muscle varied with the relative quantity of the drug employed. In small quantity ethyl alcohol did not appear to exert any action on the frog's muscle. In medium quantity it exerted a favorable action, which was characterized by a quickening of the contraction; a quickening of the relaxation; a power of making a larger number of contractions and of performing a larger amount of work in a given time; an increase in the working time or, in other words, a delay of fatigue; and the power of making a larger number of contractions and of doing a larger amount of work before exhaustion set in. This action was exerted directly on the muscle protoplasm itself, not on the intramuscular nerve tissue. In a large quantity ethyl alcohol exerted on frog's muscle an unfavorable action, which was, in general, the reverse of that caused by medium quantities of the drug and was characterized by a decrease in the extent of the contractions; a decrease in the working time or, in other words, a hastening of fatigue; and a power of making a smaller number of contractions and of doing a smaller amount of work before exhaustion set in. In conclusion he stated that ethyl alcohol when administered to frogs in moderate quantities was capable of augmenting the working power of the skeletal muscles.

Dr. JOHN H. KELLOGG expressed his appreciation of the invitation to make a few remarks on the absorbing subject of alcohol, from the depths of his experience both at the Battle Creek Sanitarium, with chronic invalids made so by the pernicious effects of alcohol, and in connection with Settlement work in Chicago. From his observations, he felt that it would eventually be proven that it was entirely possible to dispense with alcohol as a drug, as the results sought to be secured by it could be better obtained in other ways, and the great increase seen in chronic disease in this country could to a large extent be attributed to alcohol, especially the increase in diseases of the heart, blood-vessels, etc. Dr. Lee's experiments hardly seemed to have a direct bearing on the subject of the use of alcohol by human beings as they showed the effects of alcohol on muscle only, and not on the nerve centers and the nerves themselves, and might be due to increase of muscle irritability. The experiments of Parkes and others had shown that alcohol in ordinary doses diminished decidedly man's working capacity.

Dr. ABRAHAM JACOBI said that so many diverse opinions had been expressed that one or two more would not be amiss. He had felt in listening to Dr. Stockard that there could be no doubt of the affirmative answer of those guinea-pigs, could they reply to the question "To be, or not to be." His experience of over fifty years in practice gave strength to his positive assertion that there was no remedy to equal alcohol in cases of mixed infection. There were septic diseases that could not be treated or cured unless large doses of alcohol were given. Mixed infection in diphtheria could not be cured by antitoxin, but treated with large doses of alcohol the sufferers might be saved. He had seen many such living, dying, or moribund patients since 1858 who had absolutely recovered through taking whiskey; they were not guinea-pigs, but human beings.

The Treatment of Genitourinary Tuberculosis with Rosenbach's Tuberculin.—A. Hyman reports on the results obtained in a series of 13 cases of genito-urinary tuberculosis treated with Rosenbach's tuberculin and kept under observation for periods ranging from six months to a year and one-half. Two of these patients showed improvement; the other 11 were absolutely unimproved; a few developed additional tuberculous foci during the course of treatment. From this experience he concludes that Rosenbach's tuberculin is of no definite value in the treatment of tuberculosis of the genito-urinary tract.—*Journal Am. Med. Association.*

Cancer Metastasis.—Guthrie McConnell discusses the problem of metastasis formation in carcinoma, especially why secondary growths are common in some parts of the body and very unusual in others. It might be thought that all that is necessary is that several cancer cells become logded in a lymphatic or blood capillary in order that a new tumor should develop. Such is not the case. Certain tissues of the body show a more or less marked immunity to the growth of secondary cancer. On the other hand certain types of tumors show a special affinity for certain tissues. There is evidently an organ affinity and an organ immunity. It is a well known fact that a primary malignant tumor in almost any part of the body will soon give rise to an infiltration of the liver. There is evidently something either present or absent that makes this organ especially suitable for the development of malignant tumors. Yet the liver, though nearly always involved secondarily, is very rarely the site of a primary tumor. On the other hand the spleen is rarely attacked, although its blood supply is great, and there can be no doubt that many cancer cells gain entrance into its sinuses. The explanation of the definite organ immunity may be that there are protective ferments adapted to break down the complex molecule of the cancer protein. The writer thinks we must get away from the idea that metastasis is a simple transplantation of tissue, but confesses that we are about as far as ever from the solution of the problem, and believes it is permissible to conclude that when cancer does develop it is on account of the lack of some substance that normally is present in most persons.—*New York Medical Journal.*

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SOME MECHANICAL FACTORS IN COLONIC STASIS.*

BY CHARLES H. PECK, M.D.,

NEW YORK.

SURGEON TO THE ROOSEVELT HOSPITAL.

I WISH to state at the outset that I am not an advocate of removal of the colon in whole or in part, nor of ileocolostomy for constipation, and that I have never performed either operation for that condition. I also wish to say that it is not the purpose of this paper to attempt to cover completely the subject of the surgical treatment of constipation or intestinal stasis.

I simply wish to report a few cases of incomplete obstruction of the large intestine, due to mechanical causes, which have come under my personal observation during the past two years, and which may help to throw some side lights on one phase of this complex and extensive subject.

CASE I.—On March 30, 1915, I first saw in consultation a lady 55 years of age who for many years had suffered from a marked degree of chronic constipation, with its attendant symptoms of chronic intestinal toxemia. She was referred to me by a well-known gastroenterologist who had labored with the condition at intervals for several years with varying success for periods but no permanent relief. Headaches, lassitude, and depression interfered greatly with her social duties and daily routine of life, and she was more or less miserable a good part of the time. She was naturally energetic, businesslike and highly intelligent, not at all of the indolent, pampered, "sick-abed lady" type, and the fact that she so often felt below par and unequal to the daily demands upon her time distressed her greatly. Physical examination was practically negative; radiographic studies of the intestinal function showed a marked delay in the passage of bismuth through the ileum and head of the colon. Her physician felt that the probability of the presence of some mechanical obstruction of the colon or lower ileum warranted advising an exploratory operation. The patient herself had studied the situation rather exhaustively, had become impressed with the rather widespread publicity which the subject of intestinal stasis has been accorded of late, and was disposed to expect and accept the loss of a goodly portion of her colon as the only procedure likely to offer relief of her symptoms. After careful consideration of the evidence I agreed with her physician's view of the situation, though not entirely with her own, and advised an exploratory operation. This was performed on April 14, 1915. Through a right rectus incision the right side of the abdomen and pelvis were thoroughly explored and the entire interior of the abdomen was palpated. The stomach, liver and gallbladder, and pelvic organs were all normal. The appendix had undergone obliterative fibrosis and was fixed by adhesions, binding down the cecum but not in a manner to cause the obstruction. The terminal ileum was free from kinks or adhesions. The real lesion was found in the form of a firm sheet or band of adhesions binding the lower two-thirds of the ascending colon firmly to the lateral abdominal wall, rotating it to the right on its longitudinal axis about 90°, so that the anterior longitudinal band was directly external and firmly adherent to the parietal peritoneum. Contraction of the bands had also drawn its upper and lower segments together on the anterior aspect in such a manner as to cause sharp buckling or angulation about underway between the cecum and hepatic flexure, causing a marked degree of obstruction at this point. This angulation, together with the fixation and interference with normal peristaltic movements, seemed quite sufficient to interfere seriously with the normal propulsion of the fecal current. Division of the bands allowed the colon to snap forward and straighten out in a very striking manner. The appendix was removed, though it was felt to be a negligible factor in the production of symptoms. Opertaive recovery was prompt, and before the patient left the hospital the increased freedom of bowel action was quite evident and the patient said that she felt more comfortable than she had for many years. Better still, the improvement has continued and relief from the constipation and the constitutional symptoms of stasis bids fair to be permanent.

This case illustrates a type of colonic obstruction, the so-called Jackson's membrane, which has a definite pathology and is not uncommon. The fixation of the colon, in a position of sharp rotation to the right, associated with longitudinal buckling or angulation, I have seen in a number of cases. The rotation is sometimes so great that the ileocecal junction looks directly forward instead of in the normal direction. The buckling I have seen so marked as to prevent the bismuth clyster from reaching the cecum. The degree of obstruction varies, and in a considerable percentage of the cases persistent, variable pain and discomfort may be the prominent symptom rather than stasis. I have recently had a case of this type in a vigorous nonneurotic young man of 24, operated upon four years ago for appendicitis, with persistence of pain, frequent and severe enough to interfere seriously with his work, and make him a semi-invalid, without symptoms of obstruction. While this latter case is too recent to report a permanent cure, division of the band has been followed by such complete relief as to warrant the hope that the seat of the trouble has been reached.

The relatively frequent occurrence of this condition, and its importance both as an obstructive and pain-producing lesion, have led me to search for it as a matter of routine in all cases, especially those of chronic type, in which the right abdomen is operated upon, whether for supposed appendicitis, gall bladder trouble or other conditions.

CASE II.—On March 15, 1915, I saw in consultation, in a neighboring city, a gentleman 59 years of age who gave a history of chronic obstruction of the bowels of about two weeks' duration, with sharp abdominal pain located in the left upper quadrant at the onset. On the day of the consultation he had for the first time in five days passed considerable quantities of gas and some fecal matter, and the wave-like colicky pain and abdominal distention were much relieved. He had suffered for years with obstinate constipation, but had

*Read at a meeting of the Practitioners' Society of New York, April 7, 1916.

never before had an attack of actual obstruction. X-ray plates taken by a very competent radiologist seemed to show evidence of obstruction at or near the hepatic flexure, with great dilatation of the ascending colon and cecum. The picture did not seem characteristic of a neoplasm, though the presence of such a lesion was suspected on account of the patient's age and the gradual onset. On account of the temporary improvement and hope of further relief of the distention it was thought wise to defer operative interference for a time. One week later, on March 22, 1915, as no permanent relief had occurred, operation was performed. Exploration through a right rectus incision failed to show any evidence of obstruction or disease in the region of hepatic flexure. The ascending colon and cecum were so distended that the peritoneal coat had actually cracked in three places and the recent lymph of repair was demonstrable. The entire transverse colon was greatly distended and strong peritoneal bands could be felt in the region of the splenic flexure. A second incision was made through the left rectus muscle and a definite obstruction, due to strong peritoneal and omental bands, was found at the splenic flexure. The descending colon below this point and the sigmoid were collapsed. There was no evidence of neoplasm. The bands were divided, freeing the splenic flexure and allowing it to be brought forward, and gas immediately passed into the bowel below, with relief of the tension in the proximal gut. With no further operative procedure on the bowel, the wounds were closed and the patient made a prompt and uneventful recovery, with complete relief of the obstructive symptoms. He has remained perfectly well and his former constipation has been greatly relieved.

This case illustrates mechanical obstruction by bands at the splenic flexure, which after a long history of partial occlusion had become practically complete, and which was entirely relieved by a relatively simple operative procedure. The sharp angulation of the gut at this point, combined with its fixation by the bands and intereference with normal peristaltic movements was undoubtedly an important mechanical element in the production of obstructive symptoms. The acute bend which the colon normally takes at this point, favors such a condition if adhesions and fixation occur.

Another example of obstruction at the splenic flexure is illustrated by the following case.

Case III.—In October, 1915, a young woman 30 years of age consulted me for chronic constipation of a severe type. Catharsis had little effect and infrequent movements of the bowels were obtained by the use of enemas or irrigations. She suffered from headaches, general debility, and symptoms of autointoxication, which interfered greatly with her occupation as a stenographer and secretary. She stated that she would at times go as long as three weeks without a movement, and this was corroborated by her physician and nurse. Careful x-ray studies of the colon showed redundancy and dilatation of the entire colon, but especially of the sigmoid flexure and transverse colon, with evidence of incomplete obstruction in the region of the splenic flexure. She had undergone prolonged and conscientious medical treatment, including periods of several weeks' duration in a sanatorium, and had reached a point where she practically demanded that some surgical effort be made to afford relief. Her physician also felt that the degree of stasis, its resistance to medical treatment, and the marked impairment of her general health made some surgical procedure imperative. Operation was performed on Oct. 14, 1915, through a left rectus incision. Adhesions at the splenic flexure caused sharp angulation and fixation of the bowel at this point, though the degree of obstruction was not as great as that described in the preceding case. The sigmoid flexure was unusually long and redundant. The transverse colon was long, much dilated, and dropped well into the pelvis, though there was no displacement at the flexures, *i.e.* the condition was not one of general enteroptosis. While division of the bands and adhesions at the splenic flexure freed the bowel to some extent, I feared to trust this procedure alone an account of the length and redundancy of the colon above described. The left limb of the transverse colon lay in contact with the sigmoid loop, and lateral anastomosis between these two portions of the gut was decided upon and performed. A 3-inch opening was made by suture, and after exploration of the rest of the abdomen and pelvis, with negative result, the wound was closed. Prompt recovery and immediate marked improvement in the constipation followed, and recent reports state that the improvement has continued and that the constitutional symptoms are much relieved.

The long sharply angulated left half of the colon was thus short circuited, relieving to a large degree the chief mechanical obstructive factor in this case. Whether the relief will be permanent and adequate or not time will alone show.

Case IV.—A lady 49 years of age was seen in consultation with her physician, a prominent gastro-enterologist, on May 20, 1915. Her history was one of obstinate chronic constipation, dating back many years, resistant to medical treatment which had been tried by many physicians, and of late approaching a degree of actual obstruction with chronic ileus. Radiographic studies seemed to show a rather definite obstruction in the descending colon. Constitutional symptoms were marked, general depression, debility, nervous exhaustion, headaches, the typical syndrome of chronic auto-intoxication. Operation was performed on May 27, 1915. Strong omental and peritoneal bands crossing the descending colon in its upper part caused a marked degree of constriction and fixation of the bowel at this point, and on their division the gut snapped forward and the obstruction seemed quite relieved. Exploration of the rest of the abdomen was negative except for a fibroid appendix, which was removed. The abdomen was closed without further operative procedure. The colon in this case, except for the dilatation above the obstruction, was practically normal. The operation was followed by prompt improvement in the constipation, which has continued to the present time, and marked improvement in her general health.

The four cases cited form concrete examples of non-maliganat partial obstruction of the colon, amenable to surgical procedure of a comparatively simple and safe type, and of a degree quite sufficient to warrant advising an attempt at surgical relief.

Far be it from me to advise surgery for every case of constipation, nor for any case that has not had careful and intelligent medical treatment, and has been studied with all the modern diagnostic aids at our disposal. When this has been done a group of resistant cases will remain in which mechanical obstructive factors will warrant exploratory operation and in some of which operative results will be most satisfactory.

Cases in which general enteroptosis has been the dominant factor have in my hands been most unsatisfactory, and I do not mean to assume that the cases cited illustrate more than a small portion of the entire field of colonic stasis. They do, however, give a slight gleam of encouragement in the study of this most baffling and difficult condition.

30 West Fiftieth Street

GOLFER'S FOOT.

By CHARLES CROSS, M.D.,

San Francisco

In view of the widespread interest that is being manifested in golf in this country it might be well at this time to consider an ailment that may afflict any one who plays that game.

Golfer's foot is a term I have applied to a very troublesome affliction which may occur to any golfer. It is an acute condition due to distortion of the foot as a result of brken arch in the anterior metatarsal curved area. The affliction is very easily acquired, it is often neglected, and sometimes becomes very troublesome. To add to the aforementioned discomfort, golfer's foot makes the player fretful and it interferes with play. If neglected, the con-

dition is liable to lead to a chain of efficiency-reducing ailments, the cause of which may be entirely overlooked. At the beginning of the season, or when beginning to play, all golfers should give their feet special attention, and be very careful to

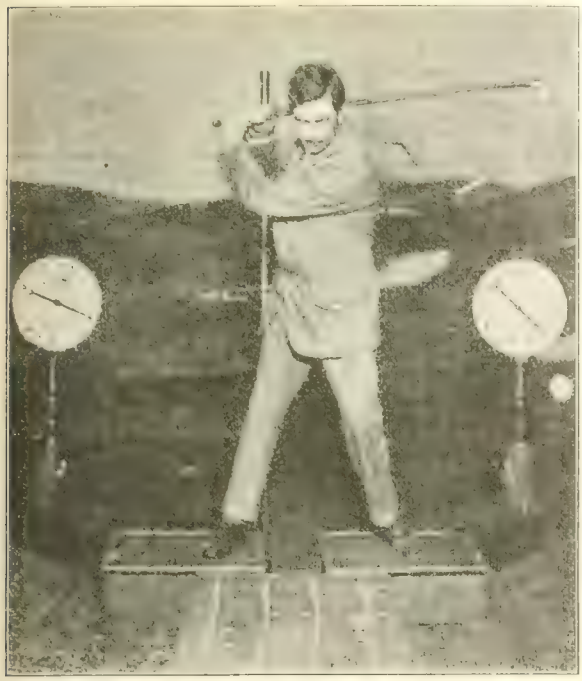


Fig. 1.—Machine showing the foot upon which excess of weight comes in making a drive.

keep them in good condition. In playing golf, and in practically every other work or play in life, foot-efficiency is essential.

When playing golf the anterior portion of the left foot, in right-handed players, and vice versa in left handed players, is brought into unusual service. This point is illustrated in the photograph (Fig. 1), which shows the machine used at a demonstration in a London golf school. The same may be demonstrated by any player taking particular notice of the manner in which the body weight comes over on the anterior portion of the left foot when making a right-handed drive.

Some players turn on the inside of the foot, resting the weight on the anterior portion, on the fulcrum of the great toe. (Fig. 2.) Players of this class are very liable to develop a large callus on the inner side of the great toe about opposite to the bed of the nail. (Fig. 3.) This is specially liable to occur if shoes are a bit short or tight. The cause of the callus appears to be irritation put on the side of the toe, and the toe over-riding the edge of the insole. Careful palpation on the inside of the shoe usually reveals the edge of the insole slightly prominent at the point of impact.

As the drive is made the weight of the body is brought back upon the foot, that has been elevated in the upswing, and it is brought back with great force. A great part of the force is distributed to the otuter half of the anterior portion of the foot, or to the portion of the ossa fulcra made up of the heads of the metatarsal bones of the third, fourth, and fifth toes. The third and fourth metatarsals are generally the least used part of a foot and consequently, like the ring finger in the hand, they usually form the weakest portion. They are the first to give way when under strain. (Fig. 4.) The same undue strain occurs when the entire ossa fulcra or anterior portion of the foot is used instead of the side. (Fig. 5.) When the whole front of the foot is used there appears less likelihood of injury because the strain is supported by the entire ossa fulcra, or the metatarsals and toes of the entire foot. Spikes in shoes are not a necessity in playing golf if the feet are properly used. At any rate wearing spiked shoes necessitates turning the foot on the side, and prevents use of the entire ossa fulcra, or front part of the foot. However, Golfer's foot is liable to occur in any foot not strong enough to bear the strain. For that reason all golfers should be very careful with their feet, especially at the beginning of the season, or at the beginning of play, or after an absence from the links. When a foot gives way in the region described it should have immediate and scientific attention.

Acquired foot distortions have not received the scientific attention to which they are entitled. Patients are more to blame for this neglect than physicians. It has been the custom for people afflicted with any sort of foot trouble to seek everywhere but the right place for treatment.

A specialty has been developed which covers the field of acquired foot ailments in a thoroughly scientific manner. It covers the neglected ground between conditions rightly treated by the chiropodist and those treated by the orthopedic surgeon. This new specialty does not encroach upon the domain of either the chiropodist or the orthopedic surgeon, but it does encroach upon the domain of the set of incompetents who have long mistreated feet.

The specialty of Practical Podology is practised by physicians, the graduates of recognized and standard medical colleges. Only such specialists should be consulted for foot ailments. To emphasize the statement I will repeat again that this work has no connection with chiropody nor orthopedics.

The condition found in golfer's foot is not of necessity confined to golf players. It is a very common distortion and may occur in any foot that is overused. The reason it is termed golfer's foot in this paper is because it is so liable to occur to golfers that their attention should be specially called

Fig. 2.—A stance which may cause golfer's foot.

to it, so the distortion can be avoided. In this instance, an ounce of prevention is worth more than a ton of cure.

There comes what I call "period of reduced efficiency" to all persons who play golf, or any other

game. Champions suffer from this condition as badly as the merest tyro. Something goes wrong, and when players suffer for a month or more I have named this disease "perversion of intention." The game is "off." Apparently no amount of practice,

FIG. 3.—Golfer's toe: also showing bad effect on ingrowing toe-nail.

no amount of coaching, and no amount of analysis of technique have any effect on the player who is afflicted with "perversion of intention." They know what to do, how to do it, and why it is done, but when it comes to execution their intention is perverted.

"Perversion of intention" is a condition wherein the subjective portion of the individual's mentality fails to permit the muscles to act in unison, or in the regular sequence, necessary to do what the individual intends to do at the time he desires to do it. If golf is a game of nerves, as some experts put it, the feet are very likely to upset the equilibrium of that system. In fact, it may be safely stated that the feet derange the adjustment of the nervous system more often than any other part of the body brought into use while playing golf.

When the above condition occurs, it might be well for the golfer to have his feet thoroughly examined by an expert. Finding no trouble there, it will be well to have investigations made as to the blood-pressure, the condition of the kidneys, and the hardness of the arterial system. In nine cases out of ten there will be found some foot trouble. By this I do not claim that "perversion of intention" and all "off-play" are due to bad feet, but I do claim that bad feet and improper use of the feet are responsible for a great amount of "off-play." The feet of a golfer should be examined with the same care and frequency with which they have their teeth examined. Patients suffering with golfer's foot are liable to get an abundance of gratuitous advice and especially is this true around the 19th hole. It is well for the afflicted always to remember that 19th hole consultations are dangerous. The proper diagnosis and treatment of golfer's foot is an ailment requiring the highest skill in scientific podology. It is not a case for the chiropodist, the shoe-clerk, or the shoemaker, nor is the 19th hole a proper place for consultation, because in this instance a consultation without the most careful examination is worse than useless.

Golfer's foot is often overlooked, entirely neglected, or ignorantly treated until much harm has been caused, not only to the foot but to the general efficiency of the individual. (See Fig. 6, and note the calloused soles and papillomas on soles.) How advantageously patients can neglect themselves for the benefit of some member of the medical profession is well illustrated in acquired foot distortions, and especially in golfer's foot. The golfer who hobbles through a season with an ailing foot is sure to suffer much-reduced efficiency. He is on the direct road to an attack of lumbago, or frequent attacks of lumbago, painful back, which may be diagnosed by the unskilled as rheumatism or sciatica, sprained ankle, sacroiliac disease, painful knee, or painful foot. (Fig. 7.)

The greatest art in the practice of medicine is to prevent disease. Therefore, it is to be hoped that what is here written may aid in some degree to prevent the efficiency-reducing and distressing ailments that often follow a case of golfer's foot. (Fig. 8.) Under appropriate headings the condition is fully described below.

Synonyms.—Broken anterior arch, distorted anterior arch, strained foot, sprained foot, gout foot.

Definition.—Distortion downward of the heads of the second, third, or fourth metatarsals, or any one of them.

Causes.—Undue strain, or unusual service imposed upon the anterior portion of the foot, is liable to produce relaxation or rupture of the ligaments supporting the anterior metatarsal arch. This is

FIG. 4.—X-ray of golfer's left foot. Showing distorted heads of 2d and 3d metatarsals.

followed by downward distortion of the heads of one or more metatarsals, or broken arch. In playing golf the anterior portion of the foot is brought into hard service, thereby causing undue strain upon the anterior metatarsal curved area or anterior arch.

(Fig. 9.) Another cause is changing to shoes with heels of different height. Persons who toe outward when they walk, thus using only part of the ossa fulcra, are very prone to injure the anterior portion of the foot.

FIG. 5.—Stance to protect the foot.

Symptoms.—The first evidence of golfer's foot is usually a slight symptom of discomfort at the base of the third or fourth toes, or between them. It is not exactly a pain, but the toes and the feet may feel fatigued, or misplaced in the sock, and the sock may appear too short or the toes appear too long. Any of these symptoms should arrest the attention of every golfer, otherwise the condition may go on and become a very severe case of metatarsalgia, Morton's painful toe, or chronic anterior broken arch. Slight swelling on the dorsal surface between the third and fourth toes may be noted. (Fig. 8.) There is sometimes severe pain on pressing the head of the third or fourth metatarsals. Placing the thumb on the plantar surface of the foot below the head of one of the metatarsals and with the finger on dorsal surface of the toe, and forcibly flexing the toe gives evidence of pain in golfer's foot. There is some degree of inflammation in every case of distorted feet. The feet being farthest from the central nervous system and the heart they present, as evidences of distress, symptoms different from distortion or inflammation in other parts of the body. The first symptom of golfer's foot or any other distortion may be a feeling of irritability, burning, or fatigue. Pain, if it ensues at all, is liable to be a late symptom, and it is wonderful what punishment feet can stand without pain.

Physical Signs.—One of the features of golfer's foot is the absence of physical signs. Comparing both feet, the afflicted with the well foot, there is, to the uneducated eye, practically nothing to be seen. An outline tracing of the foot with careful measurements with calipers may reveal that the afflicted foot is slightly wider over the ball of the foot. Few persons are able to discern any difference in the feet, yet the patient knows there is a difference. Over the heads of the metatarsals mentioned there may be slight evidence of swelling, or a little more prominence of the extensor tendons of the toes. On the normal foot there is no callus on the sole under the heads of the metatarsals. The presence of callus is evidence of a chronic distortion, or chronic broken-arch. Careful palpation denotes to the experienced hand the degree of distortion and the area of the affliction.

Diagnosis.—Golfer's foot is to be diagnosed from chronic anterior broken-arch or chronic metatarsalgia, or Morton's toe. The absence of callus on the sole, the history of the acute condition, and the absence of other foot distortions make the diagnosis very certain.

Prognosis.—The outlook in a case of golfer's foot depends upon the golfer and the treatment. In all cases a guarded prognosis should be given. The symptoms may appear slight to the patient because "it is only in one foot." Treatment is liable to be neglected until the condition has become chronic. Even then the patients seem to think any kind of treatment, shoes, supports, etc., that they can select themselves, or that are recommended by friends, will cure the condition. This is a feature about patients with golfer's foot that is beyond the specialist. So long as people with distorted feet desire to treat themselves, they generally make matters worse and have no one to blame but themselves. It is a misfortune, but it is an advantage to some physician every time a golfer's foot is neglected. It will require treatment some time, and the cure will be delayed because of the patient's neglect early in the case.

Treatment.—The treatment of golfer's foot is a matter of great importance. Even with the best treatment some feet are never as good as before they were injured. Upon recognition and treatment in the earliest stages will depend much of the future efficiency as golfers, or in any other walk in life.

There are three indications to be met: (1) Correct the positions of the distorted heads of the metatarsals in the anterior curved area, or arch. (2) Maintain the heads of the metatarsals in proper position. (3) Remove inflammation and tone up the tissues to support the bones in their normal position.

FIG. 6.—Efficiency reducing [illegible] neglected golfer's feet.

The first indication is best met by a method to relax thoroughly the muscles, which are liable to be in a state of contraction. This can be accomplished by application of dry heat by means of a Tyrnauer baker, or "L-Ray" electric heater. Heat

applied in this manner penetrates the tissues deeper than by the application of moist hot packs. It has the advantage of being cleaner and giving a heat more uniform in temperature. It should be applied for about fifteen minutes daily, or every other day, for one or two weeks or until the tissues maintain the normal curve of the arch. Some cases relax very quickly while others are very difficult to relax.

The second indication is to be met by the application of flexible support composed of cork, rubber, or leather.

The support used in my treatment of these cases is made of cork and rubber. The proper elevations can be made to support the metatarsal or metatarsals which require adjustment. The supports, when correctly adjusted, are to be worn in the shoes

Fig. 7.—X ray of golfer's foot (right) showing downward distortion of head of 4th metatarsal.

until they can be removed with safety. Removal of supports requires as much care and judgment as does the application of the support.

The third indication is to be met by the use of the same heat mentioned above.

The feet should be exercised nightly in the way of picking up small objects like a marble, a cork, or a knife.

As golfer's foot is usually an acute condition there are present more or less swelling and inflammation. These should be removed by the treatment mentioned above which is to be supplemented at night by application of the Charing Cross boot.

The Charing Cross boot is a plan of treatment devised and used in the Charing Cross Clinic, San Francisco. Its purpose is to reduce inflammation and swelling in the feet. All distorted feet are in some degree inflamed and swollen.

The boot is made up of a piece of gauze 1 yard wide by 2½ yards long, a piece of oil silk, oil muslin, or other waterproof material 24 inches by 36

Fig. 8.—Golfer's feet. Right shows slight swelling over 2nd and 4th metatarsals, just above toes. Left shows slight swelling over 2nd, 3rd, and 4th metatarsals.

inches, and a large towel for each foot. The gauze is moistened with a solution of a heaping tablespoonful of magnesium sulpahte, or other indicated medicament, to a pint of warm water. The gauze is squeezed gently so it will not drip and then wrapped around the entire foot and ankle, to about as high as the shoe top. Over the gauze the waterproof covering is applied, and over that the large towel is applied and secured with safety pins. The dressing should remain on the foot over night, and should be applied as often as ordered by the specialist.

Walking with toes outward is a habit that has been drilled into children long enough to make busi-

Fig. 9.—A well balanced position to protect the feet. Posed by Mr. Hughes, Instructor, Hotel St. Francis Golf Course, San Francisco.

ness for all the scientific podologists for a generation to come. Almost all persons who toe out when they walk are on the road to some degree of foot distortion. The proper method of walking is to toe straight, or if anything to toe slightly in. Walk-

ing in this manner brings into use the entire ossa fulcra of each foot and maintains development of the entire foot and leg. In walking with toes out, the metatarsal of the great toe is the only one used as the fulcrum; the others become weakened from slight use or non-use.

Changing from shoes with high heels to low heels is a dangerous procedure. When playing, the golfer should wear shoes with heels about the height to which he is accustomed. If low-heeled shoes are worn during play they can be built up inside and this prevents any distortion which may be brought about by changes. All shoes should be carefully examined to see if they are wide enough and long enough.

There are numerous appliances on the market which are intended to correct distorted feet and broken arches. In some cases they may appear very well, but there is no ready-made plate that will give the desired result in more than 8 per cent of the cases. In the meantime a golfer's foot may be all but ruined.

There is just as much difference in people's feet as there is in people's faces, and any support used should be constructed according to the conditions of each individual foot and should be made of a flexibly material. No plaster casts nor other mucky, messy stuff is necessary for measuring a foot if the specialist understands what is indicated.

The use of metal arches or foot plates for this condition is to be condemned. Metal appliances of all kinds splint the foot and prevent proper functioning of the muscles and ligaments. Such inactivity causes atrophy from disuse. An exactly opposite condition is required in the successful treatment of golfer's foot. It is necessary to have a good pair of feet to stand upon, to work upon, and to play upon to be a good golfer.

277 Post Street

A REVIEW OF ONE HUNDRED AND THIRTY-TWO CONSECUTIVE OPERATIONS FOR FIBROID TUMORS OF THE UTERUS.*

By EDWARD G. JONES, M.D., F.A.C.S.,

AND

DEAN F. WINN, M.D.,

ATLANTA, GEORGIA

The operations analyzed represent only our own work, and are consecutive. Every patient presenting herself was operated upon.

The list comprises: Abdominal hysterectomy, 120; abdominal myomectomy, 4; vaginal myomectomy, 5; vaginal and abdominal myomectomy, 2; celiotomy without removal of tumor (evident sarcomatous degeneration with involvement of mesenteric glands), 1; total, 132.

Ninety-one were married; eleven were single; there is no information concerning thirty, though it is probable the majority were married.

Of 118 patients, the youngest was 21; the oldest 65; the average age was 35.

I. Prior Symptoms.—First: Pelvic pain; 95 complained of such pain, 24 did not so complain, 13 no record made. Unless there were complications, such as pyosalpinx, etc., the pain was usually more of a pelvic discomfort than positive pain.

Of the 24 patients who did not complain of pain, seven had subperitoneal tumors; six had protruding polypi only; one had polypus and small interstitial tumors; three had only small interstitial tumors; two (Nos. 67 and 83) had extensive adhesions to large tumors fed by enormous, highly atheromatous vessels (Fig. 1); the remaining histories give no information as to the kind of tumor, but the presumption is in favor of subserous growths, as there was no irregular or profuse hemorrhage.

Second: Hemorrhage; no record, 13 patients; irregular and profuse, 51; neither irregular nor profuse, 41; irregular, 8; profuse, 19.

Of the forty-one women who did not so complain, twenty-five had either single subserous tumors or one or two more or less large subserous and small interstitial growths. Four of the remaining sixteen had diseased appendages, but no record was made as to the location of tumors.

Third: Leucorrhea; no record, 13 patients; marked leucorrhea, 88; slight leucorrhea, 8; no leucorrhea, 23. Of the eighty-eight women with marked leucorrhea, twenty-two are recorded as having had no hemorrhage. Of the twenty-two, twelve had diseased appendages; three had multiple or intraligamentous tumors with no other patholoy recorded; one had a large calcareous pedunculated growth; one had subacute gonorrhea; and there is no history concerning the pathology of five. The remaining sixty-six, and the eight who complained of only slight leucorrhea, had either profuse menstruation or irregular and profuse hemorrhage.

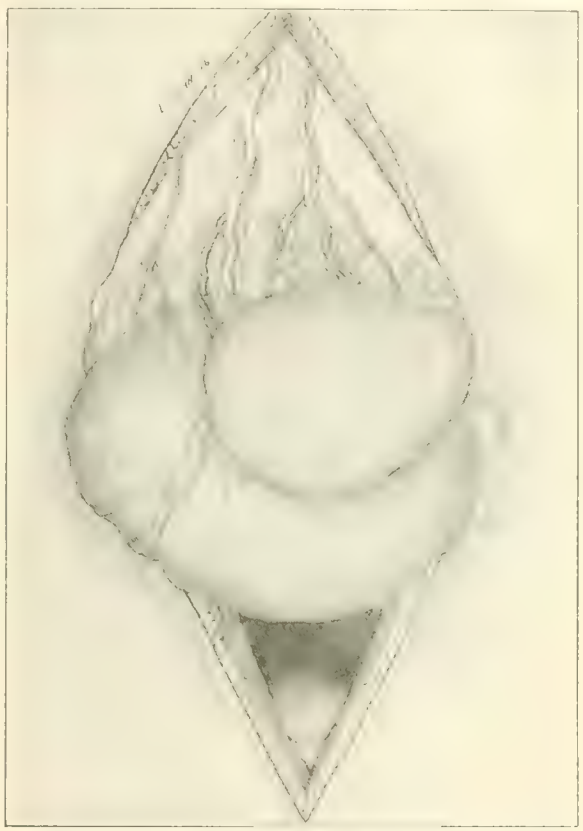


Fig. 1.—Large multiple tumors fed by enormous highly atheromatous omental vessels.

It may be noted that, with five exceptions (Nos. 4, 37, 83, 125 and 128), the twenty-three women who had not marked leucorrhea also had no profuse or irregular hemorrhage. In the case of Nos. 4 and 37, the hemorrhage is recorded as profuse but not irregular; in No. 128 as irregular—which may have been normal for these women. In the case of

*Read before the Fulton County Medical Society, February 17, 1916.

No. 83 the cavity of the uterus was enlarged with several growths projecting into it. No. 125 had small subserous fibroids, and the hemorrhage was from other causes. She bled rather profusely from the cervical stump for three days following operation.

Fourth: Vesical irritation; no record, 13 patients; troublesome irritability, 66; slight irritability, 8; no irritability, 45. Of the seventy-four patients with troublesome or slight irritability, eighteen had large or multiple fibroids; seventeen had tumors impinging directly upon the bladder or so situated as to press the cervix against the bladder; three had gonorrhea; four had only a few small fibroids and offer no explanation for the bladder symptoms; four had polypi; there is no record of the pathology bearing upon the bladder symptoms in the remaining twenty-eight women, though it is probable they had intrapelvic pathology to account for them.

Of the forty-five without bladder symptoms, twelve has subserous fibroid growths (two had in addition subserous tumors; one had small interstitial tumors and a small fibroid of right ovary);

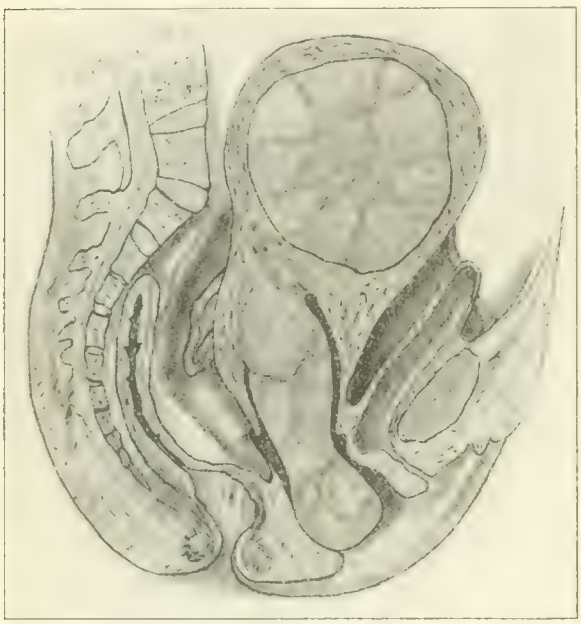


Fig. 1.—An unusual type of fibroid tumor, involving difficulties in its removal.

nine had intrapelvic pathological conditions which would lead one to expect vesical irritability, and no explanation appears for its absence; of the remaining eighteen there is no pathological condition recorded.

Fifth: Abortions and miscarriages; full term pregnancies without abortions, etc., 35; full term pregnancies with abortions, etc., 22; only abortions or miscarriages, 10; never pregnant, 40; no record, 25.

There are data as to the bearing of children by one hundred and seven of these women. Sixty-seven women have borne a total of one hundred and forty children, with a total of fifty-five miscarriages or abortions. Eleven of them were unmarried and had no children, and twenty-nine, who were married, have never been pregnant—their average age at the time of operation being 34 years. Of these twenty-nine, sixteen had irregular or profuse hemorrhage or both. There is no record of No. 35 as to hemorrhage or pathology. Of the remaining twelve, Nos. 1, 41, 43, 53, 62, 75, 89 and 106 had no hemorrhage, and there is insufficient record as to the pathology of the tumors, but all of them had diseased ovaries and tubes. No. 114 had a moderate sized subserous fibroid and complete procidentia for fifteen years. (Inquiry failed to develop adequate explanation of her prolapse; she had always been healthy, never had had hemorrhage and had never been pregnant.) Nos. 77 and 107 had subperitoneal tumors. No. 132 had a small subserous tumor and double pyosalpinx.

Eighteen had aborted or miscarried oftener than they had gone to term; twelve of these had marked metrorrhagia. Of the six exceptions, there is no record of the pathology in No. 27; No. 51 had a bilateral intraligamentous tumor and involved tubes and ovaries; No. 54 claims to have had twenty-five miscarriages in seventeen years (probably periodical hemorrhage); No. 58 had extensive adhesions and both ovaries and tubes diseased; No. 100, with left sided pus tube, had no uterine hemorrhage for five years prior to operation, her miscarriage occurring fifteen years before; No. 108, tumor intraligamentous to both pelvic walls, had two abortions and then went to term eight years prior to operation.

Twenty-nine women had borne two or more children with no miscarriages, or relatively few miscarriages. Of these, in nineteen the tumor appeared some time after the last child was born. Nos. 37, 55, and 65 are recorded as having intraligamentous tumors; the remaining women had an average of forty-two years, so that presumably they bore children before the tumor began to grow. In the case of No. 33, aged 32, no explanation appears. No. 37 had syphilis and Nos. 85 and 123 had well-advanced pellagra.

II. *Postoperative History.—First*: To the question, "Is the general health satisfactorily improved since the operation?" the answer is: Yes, for one hundred patients; two patients were operated on too recently for the information to be of value; seventeen women have not been heard from. No. 79 is no better—she had pellagra. No. 100 returned eighteen months after operation to be treated for "ovary trouble." The second operation revealed dense adhesions between bladder, sigmoid, and right ovary (the bladder having been accidentally opened at previous operation) and a large parovarian cyst. She left the hospital cured more than a year ago. No. 120 has better general health, but is very nervous and suffers with insomnia.

Second: Is there a hernia in the wound? Information is at hand concerning all but twenty-five patients. No hernia developed in any instance.

Third: At any time since the operation has there been a bloody vaginal discharge; and, if so, how many separate times has this happened? There is no information from thirty-one patients. Of the remaining eighty-five upon whom hysteromyomectomy was done (omitting myomectomy, etc.) a bloody vaginal discharge simulating menstruation is reported several times by two patients, once by four, three times by one, twice by three, four times by one. Two were operated on too recently to make information valuable. No. 87 claims to have had hemorrhage quite a number of times, but only when having sexual intercourse. Efforts to get further information relative to the cause of this hemorrhage have been fruitless. No. 93 reports eighteen months after operation: "I have all the symptoms I used to have except there is no clot or pure blood. The discharge has lasted four or five days every month until the last two or three

months, when it has been scanty and lasting only a day or two." This patient had a very large fibroid which protruded through the cervix and required supravaginal hysterectomy. It is possible and probable that a high amputation of the cervix was done, but no record was made of it, though for the last two years the discharge has not appeared. No. 98 claims she began to have hemorrhage about nine months following operation, that it occurs as a small monthly flow lasting two days and resembling the discharge during the last days of a normal period. Examination eighteen months after operation disclosed a cervix normal in appearance and freely movable. There was not an unusual amount of cervix left. No explanation apears for her symptoms. No. 125 had considerable hemorrhage from the cervical stump for three days after operation.

Fourth: Does the patient suffer from troublesome leucorrhea which was not present before operation? No information is at hand from thirty patients, and two were operated on quite recently. Seventy-seven answer in the negative. Of these, twenty-one reported no leucorrhea before operation. In six women it is still marked, and in eight women it is less troublesome than before. Two patients (Nos. 79 and 100) report leucorrhea which was not present before operation. In the case of No. 79 it is said to be due to vaginal irritation from pellagra. No. 100 is the same patient who returned for operation for abdominal adhesions and parovarian cyst.

Fifth: Does the patient suffer with bladder irritation now? There is no information concerning thirty patients, and insufficient time has elapsed in two cases. Fifteen patients complain of irritability —one of these answered "no" four months after operation and "yes" a year later. Eleven had bladder symptoms before operation. Of the three women who had no trouble before operation, but who now complain, No. 79 has pellagra; No. 89 claims to be unable to hold urine when desire comes; and No. 108 has leakage of urine on account of a cut ureter. The remaining women report no trouble. No. 114, who had complete procidentia, came to operation for relief of bladder symptoms. She reports no trouble now, though procidentia is still present, suspension of the cervix by suturing it to the round ligaments having proved inadequate.

Sixth: (1) Does this patient now, or did she for a while, suffer from natural menstrual discomforts monthly without actually menstruating? (2) Did the nervous and circulatory disturbances of the menopause follow the operation, and, if so, (*a*) How soon after the operation did they begin to appear? (*b*) How long did they last? (*c*) Were they more severe or less severe than the symptoms of the natural menopause?

We have been anxious to get just as accurate information as possible upon the question of the effect upon the general health and on the menstrual function in these operations of leaving one ovary or both ovaries.

In this series of cases the ovaries have usually been conserved if their condition seemed to warrant it, though very frequently the indications were that it was wiser to remove them, and it was done. Operators of experience almost universally note the presence of pathologic ovaries with uterine fibroids, so that their ablation is perhaps wiser in the majority of instances. The younger the woman the more care we have exercised in leaving one good ovary if possible.

Of course, usually, probably always, unless some corporeal endometrium has been left by a rather high amputation the actual flow of blood at the menstrual period will be stopped promptly, as previously noted in this review, whether the ovaries be left or not; but whether the other menstrual phenomena persist through the natural menstrual life when one or both ovaries are left is affirmed by some and denied by others—presuming the ovary or ovaries to be fairly normal. The truth appears to be that too little reliable study has been given to the subject in question. the profession taking largely for granted that the preservation of good ovaries *does* postpone the disturbances of the menopause—without actually knowing this to be so. Our efforts to get the truth with regard to these questions from the patients here discussed have been somewhat disappointing up to date. With doctors, as well as with patients, the postoperative amenorrhea is too frequently confused and made synonymous with the actual menopause.

In reviewing the answers of the seventy-six patients about whom we have information we find that thirty-one are recorded as having nervous and circulatory disturbances and that forty-five report no such trouble. Nine of the twenty women in whom *both ovaries were removed*, with an average

FIG. 3.—Large fibroid, partially delivered, showing adhesions containing troublesome vessels.

age of thirty years (none over forty), answer "yes." Of the remaining eleven who report no trouble, one patient had passed the menopause before operation and one was over 45 years. The others have an average age of 37 years.

In thirty-five patients both ovaries, one ovary, or a part of one or both ovaries was conserved. Twelve of these answer "yes." Their average age was 34 (none over 40 years). Twenty-three answer "no"; two had passed the menopause before operation, and only three were above 45. There is no information at hand concerning the removal of ovaries in twenty-one patients. Eleven (only one above 45 years) answer "no"; ten report "yes," of whom five were over 40 years of age.

All but two women report the symptoms as being *less* severe than those accompanying the natural climacteric. One (No. 79) has pellagra, which is thought to be responsible for her symptoms. One of her ovaries was resected. The other (No. 120) is extremely hysterical. Neither ovary was removed in her case. Eighteen of those claiming symptoms of an artificial menopause also report having menstrual molimina without actually menstruating; fifteen do not so complain. Seventeen who *did not* suffer with climacteric disturbances *do*

report menstrual discomfort. In nine ovarian tissue was left; in four no record was made.

Women over the age of 45 years have suffered just as severely as those of a younger age. Mandl and Buerger also note this fact in a series of one hundred cases. It would, therefore, seem that, if the leaving of ovaries does obviate or mitigate the symptoms, the ovaries should be retained at all ages and not confined to those under 45 years.

These statistics would hardly lead one to the conclusion that the conservation of apparently normal ovaries will prevent or postpone the appearance of an artificial menopause, since the majority of those in whom no trouble is reported, and in whom both ovaries were removed, and all of those who do report trouble, but in whom ovarian tissue was left, were around the age of 36. The severity of the symptoms seem also not to be affected, since it will be noted that in the two women who claim their symptoms more severe than those of the natural menopause ovarian tissue was left. These facts lead one to inquire if it is not probable that other factors, such as trauma to the pelvic sympathetic

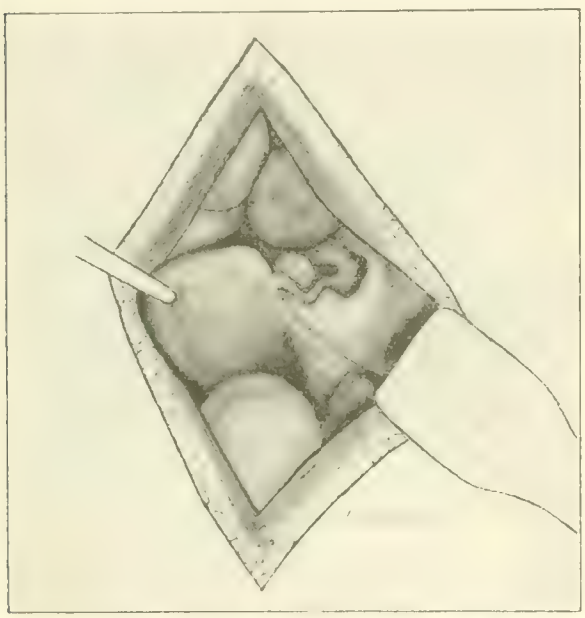


Fig. 1.—Type of intraligamentous tumor calling for special attention to the ureter.

nerves incident to the operation, are active in producing the climacteric syndrome.

Another question which claims our attention with reference to this matter is the likelihood of cystic degeneration taking place in the retained ovaries. Too often, perhaps on account of the conviction that the conservation of an ovary will ward off an artificial menopause, or for sentimental reasons, unhealthy ovaries are left by an operator. It is unfortunate that so few cases of second operations for removal of diseased adnexa following supravaginal hysterectomies have been reported. In this series only one case has returned for operation. This woman had a large parovarian cyst. No. 98 returns complaining of left side pelvic pain. She has a small mass which is probably a cystic ovary. It is possible that ten of the women (mentioned under question eight), who report having had postoperative abdominal pain, had symptoms dependent upon diseased appendages since ovarian tissue was left in all of them. We can recall operating upon three or four other patients for cystic ovaries in whom hysterectomy had been done by other surgeons.

Seventh: Has any serious mental disturbance developed? Nos. 79 and 123 have mental symptoms due to pellagra. No. 97 has cerebral syphilis. No other patients have shown such symptoms. No. 70 is cured of hysteria, which rendered her a bedridden invalid for five years prior to operation.

Eighth: Is there any pain which may be due to abdominal adhesions? No. 5, four years after operation, was thought to have chronic appendicitis. At that time she was passing the menopause. No. 10, four years ago, complained of vague left iliac pain, but now has none. Nos. 12, 26, 43, and 87 answer "yes" to the question; these were all clean cases, and no explanation is offered. No. 41 answered "no" in 1911, but now claims to have slight pain raidiating to back. This is a patient whose wound opened on account of catgut absorbing too quickly. No. 60 complained of slight pain in upper right quadrant four months after operation. No. 68, extensive adhesions and double pyosalpinx, complains of slight pain in side. Nos. 79 and 123 have symptoms which are attributed to pellagra. Nos. 106 and 110 reported "yes" a few months after operation; a year later they answered "no." It is possible that the symptoms of some of these women were due to cystic degeneration of retained ovaries and to adhesions. No. 100 is the only woman who returned for operation. She had extensive adhesions and a parovarian cyst. Her bladder had been opened at the first operation. A number of other patients whom we would expect, rather than the above, to have such pain because of adhesions, pelvic peritonitis, etc., evident and troublesome at operation, seem surprisingly clear of it. There is no information from thirty-one patients.

Ninth: Is there any unfavorable symptoms not present before operation? There is no report of thirty-two patients and two were operated on too recently for their answers to be valuable. No. 4, four years after operation, had some swelling in her left leg—a relic of postoperative phlebitis. No. 28 claims to have "poor circulation," which she attributes to a later operation for goiter. No. 79 has many nervous symptoms due to advanced pellagra. In the case of No. 97 symptoms of cerebral syphilis have become worse. No. 100, with postoperative adhesions (mentioned above) is now well. No. 108, whose ureter was cut, still suffers from dribbling urine (ureterovaginal fistula). No. 113 has articular rheumatism in hip and shoulder. No. 120 complains of nervousness and insomnia. No. 124 is said to have gallstones.

Tenth: Is the sexual appetite affected? There is information concerning only sixteen patients (all negroes). Eight report unaffected, four report diminished, one reports lost completely, three report increased. Of the eight reporting unaffected, three had both ovaries removed; four had one ovary removed (one of these, No. 113, had no appetite for seven years and has none now); and of one there is no record. All five women with diminished appetite had both ovaries removed. No. 10 lost all desire completely, and, as a consequence, her husband left her. Two women (Nos. 106 and 115), one ovary transplanted and both ovaries removed, respectively, had diminished appetite for one year following operation, but now say it is increased. No. 103, one ovary removed, reports appetite increased now because intercourse is no longer painful.

Eleventh: If this patient has died since operation do you know the cause of her death? Three

patients are known to have died since operation: No. 36, æt. 50, from pellagra, three years after operation; No. 42, æt. 41, from cancer of the breast, four years after operation; and No. 17, æt. 49, cancer of the uterus. Only an exploratory operation was done upon the latter, and it was evident at the time that malignant degeneration had taken place with involvement of the mesenteric glands.

Complications.—Extensive adhesions, 22 cases; moderate adhesions, 22; large proliferating ovarian cyst, 2; intraligamentous fibroids, 14; intraligamentous cysts (bilateral), 1; intraligamentous cyst (single), 1; ureter over tumor, 3; dermoid cyst, 1; sloughing tumor, 1; appendix adherent (removed), 20; cystic degeneration, 1; pregnancy (six weeks), 1; umbilical hernia (repaired), 6; hyperthyroidism (exophthalmic goiter), 1; extreme obesity, 2; pellagra, 3; large hematoma of ovary, 1; large ovarian cyst, 1; chronic nephritis, 1; gallstones, 1; diseased gall-bladder, 1; pelvic abscess, 1; large multiple tumors fed by enormous highly atheromatous vessels, 3; fibroid of ovary, 1; procidentia, 1; large fibroid protruding through cervix, 1; necrotic fibroid, 1; calcareous degeneration, 1; syphilis and epilepsy, 1; fistula in ano, 1; diseased ovaries and tubes, 37.

We omit purposely a discussion of technique, except to say that experience has led us to be more and more careful to suspend the cervical stump (if left) by the round ligaments or by the gathered peritoneum of the broad ligaments. Bisection has been practised in some instances when it seemed to promise better protection to the ureters, or when the tumor could not be delivered without difficulty or danger or inaccessible hemorrhage.

Supravaginal amputation has been the usual procedure, the increased mortality of complete hysterectomy more than outweighing the immunity from cervical cancer acquired by the more radical operation. It has not been our practice to hollow out the cervical stump. Instead, the outer muscular layers have been sutured together anteroposteriorly in order to close the canal and prevent oozing.

In four cases necessitating the removal of both ovaries, one or a part of one ovary was transplanted. Two of these women have not been heard from. No. 110 had symptoms of artificial menopause for about five months after operation. They were less severe than those of the normal climacteric though she was seriously sick at the time with pulmonary tuberculosis. She had gained 60 pounds since the operation. In the case of No. 106 there were no symptoms resembling the menopouse. For about one year she complained of tenderness in the middle of scar (the point of transplantation). We expect to soon report upon a more extensive series of cases in which ovarian transplantation was practised.

We believe that there is less likelihood of dangerous adhesions if care is taken to place the sigmoid in the pelvis before closing the abdomen, instead of allowing the small intestines to fill up the cavity, and to leave the omentum in its normal position.

With few exceptions the gall-bladder has been examined by palpation in all these operations. In only one case (No. 118) were gallstones discovered. In another case (130) a whitish adherent gall-bladder was found. These findings are out of keeping with the common teachings of internists, especially since cholelithiasis is a woman's disease and these one hundred and thirty-two women averaged middle age.

In two patients (Nos. 91 and 100) the bladder was opened accidentally, and in one patient (No. 108) the ureter was cut.

Thirty-nine patients required other work in addition to the removal of fibroids: appendectomy, 20; perineorrhaphy, appendectomy, 1; trachelorrhaphy, perineorrhaphy, and appendectomy, 1; perineorrhaphy and suspension, 1; perineorrhaphy and appendectomy, 1; trachelorrhaphy, suspension, and perineorrhaphy, 1; trachelorrhaphy and perineorrhaphy, 1; perineorrhaphy, 1; ventral suspension, 1; fistula-in-ano, 1; umbilical hernia repaired, 6.

The *mortality* in this series of cases is not such as, of itself, to claim favorable comment—nine patients having died—though it is, perhaps, not above that in the ordinary run of complicated and uncomplicated cases.

No. 9, æt. 44, died sixty hours after operation from paralytic ileus. This patient should not have been operated on in her then condition. Preliminary blood transfusion would have made her a better risk. She had known she had the tumor for fourteen years. During most of this time hemorrhage had been prominent, and for the last three years very profuse so that she was practically exsanguinated. Her pulse was 120 almost continuously after she came under our observation and the hemorrhage continued. The tumor was large and sloughing. It was removed quickly, but she did not rally.

No. 14, æt. 32, had a number of fibroids matted together with abdominal viscera. The operation was concluded in a comparatively short time with little evidence of shock, but with considerable trauma by reason of the adhesions. The patient died suddenly thirty hours after operation with characteristic symptoms of pulmonary embolism.

No. 20, æt. 48, was known to have albuminuria before operation. Continued hemorrhage demanded interference, and the patient died with the usual symptoms of urinary suppression.

No. 39, æt. 43, had a tedious operation on account of extensive and dangerous adhesions. Thirty-six hours after operation she was seized suddenly with tachycardia. Hemorrhage was positively excluded by a number of symptoms at the time and by the subsequent history. Her condition remained critical for three or four days. At the end of five days she seemed out of danger. On the eighth day the wound was carefully examined with the view of discovering infection. It was perfectly clean; the same afternoon she coughed, the wound opened and the intestines were somewhat soiled. No pus appeared. The tachycardia appeared again, and the patient died in thirty hours without any characteristic evidence of peritonitis. She had no gross cardiac lesion, though an undiscovered myocarditis may have explained her symptoms.

No. 61, æt. 35, supravaginal hysterectomy for multiple fibroids. The tumors occupied about equally the anterior and posterior uterine walls, pushing the bladder upward and filling Douglas' sac. The tumor was difficult to deliver on account of shape. There were no adhesions, and all raw surface was covered. Both ovaries were left. The appendix was apparently normal and was left. Five days later, with a practically normal temperature and pulse, death occurred suddenly from pulmonary embolism.

No. 83, æt. 57, had multiple intraligamentary fibroids. The cavity of the uterus was greatly enlarged and contained several submucous growths

projecting into it. There was extensive omental adhesions carrying enormous, highly atheromatous vessels (Fig. 3). The intestines were matted about the tumor. The bladder was displaced to the right. Patient died seven days after operation from post-operative pneumonia.

No. 85, æt. 44, had vaginal myomectomy. The polypoid growth protruded through the cervix and was as large as an orange. After operation she was referred for medical treatment for pellagra. Weakened from continuous severe hemorrhage before operation she died five days later. This patient cannot justly be considered in our operative mortality.

No. 91, æt. 40, had multiple fibroids for which supravaginal hysterectomy was performed. The growth was intraligamentous on both sides, and was removed by bisection. One large tumor occupied the uterine cavity and projected well into the vagina (Fig. 2). This tumor and the extensive adhesions within the abdomen prolonged the operation, and the patient died two or three hours later from shock.

No. 117 was 50 years old and had noticed the presence of the tumor for about fifteen years. There were enormous multiple fibroids which filled the abdomen and pelvis. One large tumor had dissected well behind the sigmoid; another lay beneath the liver and was connected to a pelvic tumor by a small pedicle—both of these tumors had undergone extensive calcareous degeneration. The intestines were matted about the growths. Enormous highly atheromatous vessels filled the omentum, from which they passed to the tumors. She died forty-eight hours later from suppression of urine.

Suite 714 Hurt Building

A REPORT ON TWO CASES OF SYPHILIS OF THE LUNG.

By SOLOMON BAUCH, M.D.,

NEW YORK,

SENIOR PHYSICIAN TO THE TUBERCULOSIS DEPARTMENT OF THE MONTEFIORE HOSPITAL

Case I.—L. K., age 51, grocery clerk, single.

Family History: Father died at 78 of apoplexy and mother at 56 of pneumonia. One sister alive and well.

Previous personal history is negative, except for continuous general weakness, and especially sexual weakness. The reason for his celibacy was sexual impotency.

Present illness dates back to about three years ago when patient was confined to bed with fever, cough, and pain all over his chest for about one week. He made an uneventful recovery. About one year ago he began to cough, lost weight and complained of general weakness, night sweats, and pain in the right chest. These symptoms became so severe that he was compelled to give up his work. While he remained at home patient slightly improved. He never had hemoptysis.

Status Præsens.—Patient is fairly well nourished and developed. He is slightly dyspneic and cyanotic. There is no evidence of edema in any part of his body. He walks about with ease. There are no gross anatomical deformities.

Chest is barrel-shaped, expansion fair on both sides. There is a retraction on the right upper chest anteriorly. There is marked dullness over the right lung, especially at the apex and at the base. The breathing is amphoric in quality at the upper and the lower lobes, pleuritic râles over the middle and lower lobes; cavities at upper and lower lobes. There is hypertrophy of the left ventricle of the heart. The second aortic sound is accentuated. The radials are somewhat sclerosed, and the temporal vessels are tortuous.

Extremities.—There is no evidence of edema, scars, or paralysis. Reflexes normal.

Glands.—Epitrochlear on the right side are palpable; inguinal palpable; submaxillary palpable.

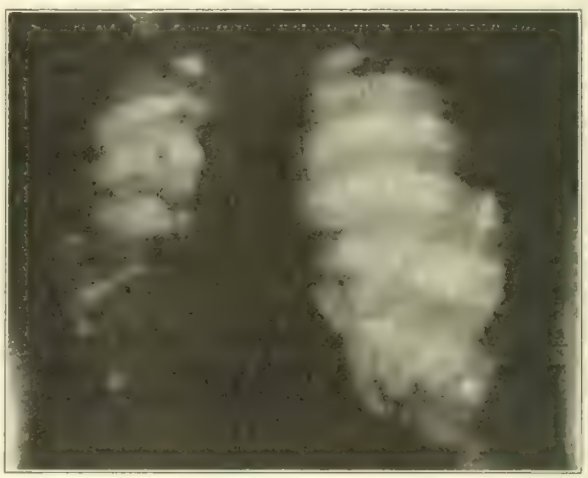
Fluoroscopy.—Marked dense bands of fibrous tissue all over the right side. Hilus glands enlarged on both sides. Left side clear all through. There are a great number of variously sized cavities and marked fibrous and pleural adhesions in the upper half. Pneumothorax in axillary portion of the upper half. Differentiation very difficult, due to the marked adhesive and fibroid process. The lower half shows a dense peribronchial infiltration, with marked density at axillary portion of the base, and with numerous enlarged bronchi. The quiet, evenly dense shadow at the lower axilla might be due to thickened pleura. Left lung is normal, except for the enlargement of the hilus gland. The mediastinum is displaced to the right. The diaphragm on the right side is high up and irregular. The ascending aorta is markedly widened. The heart is exceedingly small.

Patient is always running an afebrile course. Weight stationary.

Laboratory Notes.—Urine, negative. Sputum (twenty-four examinations for tubercle) negative, including antiformin. Four Wassermann examinations ++++ each time. Guinea-pig injection with sputum proved negative. Compliment fixation, negative.

Therapeusis.—Patient received five injections of salvarsan, mercurial injections and iodide administration for one year and a half, without any apparent improvement, neither in the general nor in the local conditions.

Summary.—(1) Patient's condition stationary. (2) The lung involvement is on the right, and mostly at the base and the roots. (3) Sputum negative. (4) Wassermann positive. (5) In spite of the excavations, the patient feels comfortably well, is mostly afebrile, and does not lose in weight. (6) *X*-ray plate, as is seen, has the typical location of luetic infection.



Patient L. K. The radiogram shows that, in the right lung, there is involvement of the base, mostly near the hilus. The left lung is clear, except for the hilus. The aorta is markedly dilated.

We therefore infer that the above is a case of syphilis of the lung, and not tuberculosis.

Case II.—I. M., age 28; married. Occupation, carpenter. Russian, in United States seven years.

Admitted to hospital September 19, 1913. Readmitted July 20, 1914. Diagnosis, incipient tuberculosis. Length of stay in hospital three months. Condition arrested. Weight on admission, 114 pounds; on discharge, 125 pounds. Cough moderate. Expectoration, one bottle daily. Sputum, frequent examinations for tubercle bacilli negative. Guinea-pig (injected several times) negative. Von Pirquet negative. Digestion fair. Hemoptysis prior to admission two or three times.

Family History.—Father died at 62, of cancer; mother at 31, cause unknown. Brothers and sisters—four brothers and four sisters—alive and well. Consort alive and well at 30. He has four children; one suffers of lues, and probably also of tuberculosis, and another one also shows symptoms of tuberculosis. All other members of the family are well. Patient is the fifth child. Married for sixteen years.

Tuberculosis in consort's family, negative for Tbc. He never lived or associated with consumptives. Was a carpenter all his life. The surroundings when at work were fair. Worked daily 10-11 hours. Mode of

life and habits poor. Present dwelling poor; previous dwelling poor. Spent his evenings at home.

Habits.—Tobacco, no. Liquor, no. No excess whatever. Appetite good. Was breast fed.

Disease of childhood, smallpox at 14. General condition in childhood good.

Present Illness.—First presumable evidence of disease, cough and expectoration. In February, 1913, pain in chest. First demonstrable evidence of disease, slight hemoptysis in February, 1913. Patient caught a cold in February, 1913, and coughed and expectorated considerably. Had transitory pains in chest and back. Appetite was poor, spat up a mouthful of blood. Was examined by Board of Health, and told he had pulmonary tuberculosis. Was advised to discontinue work and go to the country. Remained at work until the middle of April, when, on account of loss of weight (from 138 to 120 pounds) and increasing weakness, patient left work and went to Sullivan County, remaining ten weeks, and gaining twenty-seven pounds. Expectorated a mouthful of blood in May. Felt well on return to city, and returned to work, but was forced to discontinue on account of general weakness.

Status Præsens.—Nutrition poor. Skin and mucosæ normal. Complexion dark. Extremities normal. Thorax, type rachitic. Spinal column slightly hyphotic. Laryngology, negative. Angulus ludovici large. Retraction marked above and below both clavicles, more on the left side. Cervical glands palpable. Dullness both apices, anteriorly and posteriorly, strip at left base with few fine râles.

Laboratory Notes.—Temperature (first time) afebrile. Urine (twenty-four hours) clear, amber, acid 1.019 negative (4 urines). Sputum, first time nine times, and second time thirteen, including several antiformin, negative.

Weight.—Gained six pounds first time from October 13 (119) to December (125), and five pounds from August 14 (121) to December (126).

X-ray Report.—Left lung—the entire left lung shows markedly diminished aeration as compared with the opposite side. This is apparently due to diffuse peribronchial infiltration, most marked at and around the hilus, and along the left border of the heart toward the base. The right lung fails to show any changes, except for a few small calcified glands around the hilus. Almost all the costal cartilages appeared calcified. Bulging of the right diaphragm. The ascending aorta appears dilated.

The patient had two children at a sanatorium, one of whom (a girl of twelve) developed interstitial keratitis. We made a Wassermann test, and the reaction was positive; we then took the blood serum from the father, which showed a reaction of ++++ each time out of four tests. The child improved on the mixed antisyphilitic treatment, but the father did not heed our suggestions, and left the institution against our advice.

Summary.—The following facts afford sufficient proof for us to diagnose this case as syphilis of the lung rather than tuberculosis:

(1) The fact that the patient's lung condition remained the same, without the rapid destruction of lung tissue. (2) The fact that the patient's general condition was always stationary, without becoming emaciated. (3) The repeated negative sputum. (4) The repeated positive Wassermann. (5) The child's setting up interstitial keratitis, and improving on the mixed treatment. (6) The *x*-ray findings, showing that the roots are mainly involved, and that the ascending aorta is dilated.

The two cases reported above not only add material to the subject of syphilis of the lung, but they tend to stimulate the minds of those who have human interest at heart to investigate whether many more so-called cases of tuberculosis are not truly of syphilitic origin, and not to wait till gummatous ulcerations or excavations are found, when the anti-syphilitic treatment does them little good. It would be advisable, in the many cases in the sanatoria which show lung involvement and negative sputum, to take the blood for Wassermann, and, in case of doubt to begin antisyphilitic treatment.

We shall not discuss the disputes among the authorities regarding the frequency or rarity of the disease. They all agree as to the symptomatology and pathology of the condition. We only refer the reader to an exhaustive article in the *American Journal of the Medical Sciences*, April, 1905, on "Syphilis of the Lungs" by Thomas A. Clayton.

I am indebted for the material of the reported cases to Dr. S. Wachsmann and Dr. Leo Kessel.

THE DIET IN DIABETES MELLITUS AS MODIFIED BY CONSIDERATIONS OF NITROGENOUS METABOLISM.

By EDWARD E. CORNWALL, M.D.,

BROOKLYN, NEW YORK

ATTENDING PHYSICIAN TO THE WILLIAMSBURGH AND NORWEGIAN HOSPITALS; CONSULTING PHYSICIAN TO THE BETHANY DEACONESSES HOSPITAL.

It has long been known that in diabetes mellitus there exists an inability on the part of the body properly to store or utilize the normal amount of carbohydrate fuel, and the treatment generally has been to restrict carbohydrate in the diet and to substitute for it other food elements. Recently Naunyn and very lately Allen have emphasized the importance of giving periods of rest from all food in the treatment of this disease; and Allen in particular has elaborated the starvation feature of the treatment and demonstrated its value.

Besides the modifications of the diet above alluded to it has seemed to the writer that the diet in diabetes should be further modified so as to favor in every way and as much as possible the conditions of nitrogenous metabolism. To this point in the treatment of diabetes, which seemed to have been generally overlooked, he called attention in a discussion before the Medical Association of Greater New York on October 20, 1913. On that occasion he suggested that the diet in diabetes should be so arranged as to make as easy as possible the processes involved in nitrogenous metabolism, because insufficiency of nitrogenous metabolism, absolute or relative, was apt to be present in that disease along with the carbohydrate metabolic insufficiency and to react unfavorably on the latter. And he called attention to the fact that the prevailing methods of treating diabetes were devoted almost exclusively to restricting carbohydrates; that they failed very largely to regard or favor nitrogenous metabolism; and that they often imposed unnecessarily heavy burdens on nitrogenous metabolism by giving protein in excess and especially by giving it in forms whose metabolism is comparatively difficult. And he advanced the argument that the instability of the sugar factory, whose central establishment is located in the liver, is relatively increased by thus overworking the nitrogenous metabolic function; and that by giving a diet which limits and selects the articles of food containing protein so as to reduce materially the work of the liver in sifting and modifying the split protein products brought to it, and at the same time lessening the quantity of toxic protein fragments in the blood and the consequent vital depression of the tissues which their irritation might produce, a superior degree of carbohydrate tolerance could be secured. And he adduced in support of this argument the clinical observation that a large proportion of cases of diabetes occur in persons and families in which perversions or insufficiency of nitrogenous metabolism, as shown by lithemia, chronic nephritis, arthritis deformans, apoplexy, and cardiovascular disease, are prevalent.

In further support of this argument the following significant observations are cited:

Thompson and Waller found that the giving of meat extractives was followed by an increase of glycosuria.

Roper and Brown found that diabetics who had a tolerance for either oatmeal or meat separately did not have it for both together.

Von Noorden found a difference in effect on glycosuria of different proteins, that of meat being the most productive of glycosuria and that of wheat being the least. Von Noorden also found that under certain circumstances large quantities of carbohydrate in the form of oatmeal could be tolerated by diabetics if no meat was eaten at the same time.

The potato cure, like the oatmeal cure, excludes animal flesh.

Horowitz found that the ingestion of cultures of the lactic acid bacillus diminished glycosuria.

Allen found that short periods of starvation in which there was deprivation of protein as well as carbohydrate, with gradual resumption of the protein, produced good results.

All of the foregoing observations apparently support the writer's argument and none of them contradicts it. This argument, moreover, seems a priori reasonable, viewed in the light of what we know of the physiology of the liver and of metabolism in general.

Let us briefly review our knowledge of the physiology of the liver, with special reference to its relations to carbohydrate and nitrogenous metabolism.

The carbohydrate metabolic function of the liver has to do with the storage and distribution of sugar, and also, to a certain extent, with the cleavage of a carbohydrate radicle from split protein products and the changing of fat into sugar. This carbohydrate metabolic function, which von Noorden calls the sugar factory of the liver, is under control of influences which come from the outside, notably the internal secretions of the pancreas and adrenal glands. The former, there is reason to believe, facilitates the storage of glucose as glycogen and restrains its outgo, while the latter facilitates the conversion of the glycogen back to glucose and its distribution to the blood. Both of these internal secretions are themselves influenced from the outside; that of the pancreas being influenced particularly by the internal secretion of the thyroid, which is inhibitory in its action, and that of the adrenals being apparently under direct nervous control. Relative deficiency of the internal secretion of the pancreas or relative excess of the adrenal secretion naturally result in hyperglycemia. There are other factors in the case, but the ones mentioned are probably among the most important, or, at least, they appear to be so in the present imperfect state of our knowledge of this obscure and complicated subject. A factor which logically might possess significance in this connection is the condition of the liver itself.

The nitrogenous metabolic function of the liver, although perhaps not so clearly defined and exclusive as its carbohydrate metabolic function, appears to be relatively of not inferior magnitude and importance. The liver is the principal organ for the preparation for utilization of absorbed protein material just as it is the principal organ for the preparation for utilization of absorbed carbohydrate material.

The intraenteral digestion of protein results in the splitting of the protein molecule into amino acids, which are the utilizable split protein products, and into other fragments which are apparently not utilizable but useless or injurious. The digestive enzymes perform this splitting process in the best and most regular manner, but bacteria, notably the saprophytic or putrefactive bacteria, also do some of it; and the fragments of the protein molecule which the latter split off belong largely to the useless or injurious classes. The desirable amino acids and the useless and injurious protein fragments (not only those split off in the alimentary canal but also those, like the purins, which are directly introduced with the food) are carried by the portal vein to the liver. The action of the liver on these split proteins consists essentially in further splitting or modification. The amino acids are sifted out and passed on into the general circulation for constructive use by the tissues; that is, a portion of them, for if they are in excess of the body needs that excess, we have reason to believe, is immediately split up into urea, a carbohydrate radicle, and other substances. The protein chips which are useless or injurious are modified so as to become less injurious and passed on for elimination. This is a crude and superficial statement of the hepatic phase of the extremely complex and poorly understood process of protein metabolism, but it may serve for the purpose of this brief paper.

The following observations seem to have a significant bearing on the nitrogenous metabolic function of the liver.

It has been found that blood drawn directly from the portal vein contains twice as much ammonia as blood drawn directly from the inferior vena cava.

Increase in ammonia nitrogen in the urine has been found in certain diseases and functional disorders of the liver.

Dogs with an Eck's fistula (which turns most of the portal blood directly into the inferior vena cava so that it does not pass through the liver) which were fed on a meat diet, developed convulsions and died, while those which were fed on a cereal diet continued apparently well.

Starvation experiments have been made which tend to show that the nitrogen in the urine which represents actual tissue metabolism is creatinin nitrogen.

Matthews, in his recently published text-book on physiological chemistry, says that the place where the ethereal sulphates, which are products of the putrefaction of protein, are paired with sulphuric acid to form the conjugated sulphates for the purpose of rendering them less toxic, is in the liver.

The foregoing observations give definite though scanty indications of the scope of the nitrogenous metabolic function of the liver. They indicate that the liver is the principal refinery of split protein products in the body, and that the character and extent of its work, as well as the consequences of its functional insufficiency, depend largely on the quantity and kind of the split proteins which are brought to it.

This conception of the liver as a refinery of split protein products as well as a sugar factory does not in itself compel an interdependence between the two, although such an interdependence seems likely on the basis of both occupying the same plant, which means receiving the same blood supply with all that implies. Another reason for this interdependence, and one which lies more deeply, may perhaps be found in the disturbances of the controllers of metabolism, the organs of internal secretion, which result from imperfect performance of its nitrogenous metabolic function by the overworked or de-

fective liver. In addition to the disturbances due to hyperglycemia and allied conditions, these glands are also liable to be poisoned as a result of the failure of the liver to modify properly the injurious split proteins which pass through it. And in this connection abnormal sensitiveness of organs or tissues, congenital or acquired, to deleterious split proteins, is entitled to at least speculative consideration.

In arranging diabetic dietaries according to the principles suggested in the foregoing discussion, it is necessary (in addition to the indicated restriction of carbohydrate, the supplyng of proper amounts of needed salts and vitamines, and the exercise of such selection in regard to all articles of food as will favor digestion and the hygiene of the alimentary canal) to regulate consciously and definitely the protein ration both as to quantity and quality.

Reduction of the *quantity* of protein below the ordinarily accepted health ration, and even extreme reduction temporarily, has been particularly advocated by Allen, who reduces the protein along with the carbohydrate and fat in his "starvation treatment" of diabetes; but the Allen treatment does not, apparently, take into account the indications suggested in the preceding discussion for regulating the quality of the protein given.

The regulation of the *quality* of the protein has for its object the protection of the body from injurious split proteins, and is affected mainly by excluding or restricting the articles which contain free purins and other undesirable split proteins, and those whose protein is especially susceptible to the action of the saprophytic or putrefactive bacteria in the alimentary canal. This means excluding from the dietary or limiting in quantity the protein articles of animal origin, with the exception of milk and its products, and certain of the vegtables which contain purins in notable quantity.

The regulation of the diet so as to safeguard against digestive disturbances and to favor otherwise the hygiene of the alimentary tract, refers not only to selection of articles with reference to their intrinsic digestibility but also to their relationship to individual peculiarities. Cooked cabbage, for example, should not be allowed to many patients whose digestion it regularly disturbs and delays; nor some other articles of food, intrinsically acceptable but often objectionable in the individual case, which are mentioned dogmatically in most diabetic diet lists. The question of fats calls for individual study and adaptation, and also the question of salts.

In the practical application of the principles above discussed, the writer has found it convenient to rely to a considerable extent on the proteins of milk, especially in the forms of cream cheese and cottage cheese, and those of the cereals; using the proteins of eggs and animal flesh mostly in the diets with the larger protein, rations, and then only in minor proportions of the ration.

The following cases were treated according to the principles above discussed.

Case I.—Woman aged 60. Suffered from headaches and constipation when young. Three years ago underwent an operation for ventral fixation of the uterus. Since then has noticed increased frequency of urination. Lately has suffered from intense pruritus vulvæ. August 6, 1914, passed 72 grams of glucose. Was given a diet composed entirely of cereal, green vegetables, a little fruit, and milk products, which supplied daily about 120 grams of carbohydrate, 50 grams of protein, and fat to bring the fuel value of the ration to nearly 1,300 calories. August 10, 1914, passed 45 grams of glucose. Diet now given supplied daily about 80 grams of carbohydrate, 50 grams of protein, and had a fuel value of about 1,600 calories. It was composed of the same articles as the preceding with addition of one ounce of bacon daily. August 13, 1914, passed 36 grams of glucose. Diet now given supplied daily 125 grams of carbohydrate, a little more than 50 grams of protein, and had a fuel value of about 1,800 calories. August 24, 1914, passed 4 grams of glucose. Diet now given practically same as before, with addition of two ounces of animal flesh or two eggs three times a week. September 8, 1914, passed 1 gram of glucose. November 6, 1914, no glucose was found in the urine. The patient now felt perfectly well; her weight, which was 168 pounds at the beginning of treatment, was 161 pounds. She continued well, with sugar-free urine, on practically the same diet as that given on August 24, 1914, until the summer of 1915, when, after indiscretions in eating during the summer vacation, the sugar reappeared in the urine. August 5, 1915, she passed 30 grams of glucose. She was given the same treatment as before, and by November 4, 1915, the urine was sugar-free, and has stayed so to the present time, February 27, 1916.

Case II.—Woman aged 58. Has had sugar in her urine for at least five years past. Was given practically the same treatment as in Case I. December 28, 1914, passed 193 grams of glucose. January 3, 1915, passed 56 grams of glucose. January 9, 1915, passed 38 grams of glucose. January 15, 1915, passed 30 grams of glucose. January 31, 1915, passed 30 grams of glucose. February 9, 1915, passed 25 grams of glucose. March 7, 1915, passed 14 grams of glucose. During the above period the quantity of urine passed daily was reduced from 4,300 c.c to 1,400 c.c. It was not found practicable to reduce the sugar in this case below the small amount last mentioned. The patient remains comfortable on a fairly liberal diet, though restricted in regard to the articles which make for difficult nitrogenous metabolism.

Case III.—Woman aged 41. Gives a family history of arthritis deformans, and is obese. In September, 1912, she developed polyuria and pruritus vulvæ, and showed a glycosuria of 5 per cent. After a month of the easy nitrogenous diet above described, with moderate restriction of carbohydrate, the sugar disappeared from the urine. A year later, after indiscretions in eating, the glycosuria reappeared to the extent of 4 per cent., but disappeared nine days after return to the prescribed diet.

Case IV.—Man aged 41. Has been a large eater of meat. Sugar in small amounts has been discovered in his urine at different times during the past year. December 14, 1914, passed 30 grams of glucose. Was put on the easy nitrogenous diet, with moderate restriction of carbohydrate, and seven days later his urine was sugar-free. He has kept to this diet to the present time, and no sugar has been found in his urine.

Case V.—Woman aged 39. Sugar has been found in her urine off and on during the past five years. She is very obese. July 17, 1915, passed 38 grams of glucose. She was put on the easy nitrogenous diet with moderate restriction of carbohydrates. July 24, 1915, passed 7 grams of glucose. She was not seen by the writer for nearly six months following. January 20, 1916, passed 50 grams of glucose. She was treated in the same way as before. January 30, 1916, passed 30 grams of glucose. February 6, 1916, passed 16 grams of glucose. February 12, 1916, no glucose was found in the urine.

These few case reports serve to illustrate the point which the writer desires to make, viz., that advantage can be secured in the treatment of diabetes mellitus by regulating the quality as well as the quantity of protein so as to make as easy as possible the processes involved in protein metabolism.

Appended is an index table of a graduated series of dietetic prescriptions devised by the writer in accordance with the principles above discussed, in which are stated separately the amounts of protein derived from the two classes of articles (viz., from milk, cereals, fruits, and vegetables, and from animal tissues and eggs), along with the car-

bohydrate content and fuel value of each prescription. These prescriptions serve as standards which can easily be modified to meet the requirements of individualization.

INDEX TABLE OF DIABETIC DIETS

Prescription Number	Carbohydrate Grams	Protein.* Grams	Calories
1	9	4	300
2	18	9	600
3	20	33	860
3a	20	33+6	1240
4	28	17	760
4a	28	17+6	1120
5	40	18	810
5a	40	18+6	1190
6	41	30	990
6a	41	30+6	1370
7	47	34	1080
7a	47	34+6	1460
8	52	39	1380
8a	52	39+6	1760
8b	52	39+20	1900
9	62	37	1260
9a	62	37+6	1740
9b	62	37+20	1880
10	68	37	1540
10a	68	37+6	1920
10b	68	37+20	2060
11	75	42	1200
11a	75	42+6	1580
11b	75	42+20	1720
12	88	50	1360
12a	88	50+6	1740
12b	88	50+20	1880
13	100	58	1500
13a	100	58+6	1880
13b	100	58+20	2020
14	108	66	1660
14a	108	66+6	2040
14b	108	66+20	2200
15	123	69	1950
15a	123	69+6	2330
15b	123	69+20	2470
16	126	35	1405
17	133	40	1705
18	150	57	1850
18a	150	57+3	2030
18b	150	57+18	2170

*The numbers in the protein column after the plus sign tell the grams of protein derived from animal flesh and eggs; the other numbers in the same column tell the grams of protein derived from articles of the vegetable kingdom and milk and its products.

DR. JOHN HALL—SHAKESPEARE'S SON-IN-LAW.*

By WALTER LINDLEY, M.D.,

LOS ANGELES, CAL.

THE tercentenary of the death of William Shakespeare occurs April 23, 1916, the tercentenary of his birth having been on April 23, 1864. While memorial pageants on this tercentenary are being held throughout the civilized world, except where there is actual warfare, yet for many years each twenty-third of April has witnessed Shakespearean birthday celebrations in many places, and particularly in the town of his birth, Stratford on Avon.

It was my privilege to participate in this annual occasion in his natal town April 23, 1909. A procession composed of two thousand people formed in front of Shakespeare's birthplace. Our ambassador, the late Whitelaw Reid, and the Mayor of Stratford on Avon led us. Each person carried a posy of daffodils, narcissus, and other spring flowers. The walk began at 10 A. M., our objective point being the grave of Shakespeare in Holy Trinity Church, a distance of about one mile. It was in truth a journey from the cradle to the grave. We paused, when about half way, at the Latin School where the bard was a student, and here the present pupils of that school joined us. Soon we were in the sacred churchyard, marching four abreast under the archway formed by an avenue of great old elms, into the beautiful church, passing the font where Shakespeare was baptized, to our seats. After a brief service of song and prayer and an inspiring address by Ambassador Reid we all, one by one, stepped to the chancel and dropped our little floral tribute on the poet's grave.

On the stone over the grave is written:

"Good friend for Jesus sake forbeare
To digg the dust enclosed heare;
Bleste be ye man ty spares thes stones,
And curst be he ty moves my bones."

Here, also, are the graves of Shakespeare's wife, Anne Hathaway; their daughter Susanna, and her husband, Dr. John Hall.

That Shakespeare and his family were given the most prominent place of burial in this noble church; that the home of his mother, the childhood home of his wife, and the house where he was born were all good substantial attractive houses—all go to prove that Shakespeare and his family were the most prominent citizens—outside of the nobility—in Stratford on Avon.

Books have been written treating on Shakespeare's extended knowledge of medicine and allied subjects. It is in "Romeo and Juliet" that Benvolio says:

"Take thou some new infection to the eye,
And the rank poison of the old will die."

Thus forestalling Hahneman in his "Similia Similibus Curantur" and at the same time showing a vision of and faith in antitoxins.

Where can a more appealing picture of insomnia be found than in "King Henry IV?" Here the king says:

"How many thousands of my poorest subjects
Are at this hour asleep, sleep, gentle sleep,
Nature's soft nurse, how have I frighted thee.
That thou no more wilt weigh my eye-lids down
And steep my senses in forgetfulness?
Why, rather, sleep, liest thou in smoky cribs,
Upon uneasy pallets stretching thee,
And hush'd with buzzing night-flies to thy slumber,
Than in the perfumed chambers of the great,
Under the canopies of costly state,
And lulled with sounds of sweetest melody?
O thou dull god, why liest thou with the vile
In loathsome beds; and leav'st the kingly couch?
* * * * * * *
Wilt thou upon the high and giddy mast
Seal up the ship-boy's eyes and rock his brains
In cradle of the rude imperious surge?
* * * * * * *
Canst thou, O partial sleep! give thy repose
To the wet sea boy in an hour so rude;
And in the calmest and most stillest night,
With all appliances and means to boot,
Deny it to a king! Then, happy low, lie down!
Uneasy lies the head that wears a crown."
* * * * * * *

It is in "The Winter's Tale" that Antigonus says:

"I have three daughters, the eldest is eleven,
The second, and the third, nine; and some five;
If this prove true, they'll pay for't by mine honor,
I'll geld them all; fourteen they shall not see,
To bring false generations."

In this Shakespeare places fourteen as the age of beginning menstruation and indicates that oophorectomy was considered a reasonable operation over three hundred years ago.

Nowhere can the alienist find a more agonizing appeal for help than in the well-known lines from "Macbeth," and that appeal is almost as hopeless to-day as it was then:

Macbeth:
"Canst thou not minister to a mind diseased;
Pluck from the memory a rooted sorrow;
Raze out the written troubles of the brain;

*Read before the Los Angeles County Medical Association, April 6, 1916.

And, with some sweet oblivious antidote,
Cleanse the stuff'd bosom of that perilous stuff,
Which weighs upon the heart?"

It is in "Pericles," written after Dr. Hall became Shakespeare's son-in-law, that the physician Cerimon opens the chest containing the body of Thasia and says:

"Look how fresh she looks!
Make fire within:
Fetch hither all the boxes in my closet,
Death may usurp on nature many hours,
And yet the fire of life kindle again
The o'erpressed spirits. I heard of an Egyptian
That had nine hours lien dead,
Who was by good appliances recovered.
Well said, well said; the fire and the cloths,
The rough and woful music that we have,
Cause it to sound beseech you,
The vial once more: how thou stirr'st, thou block!
The music there! I pray you give her air.
Gentlemen,
This queen will live; nature awake; a warmth
Breathes out of her: She hath not been entranc'd
Above five hours: see how she 'gins to blow
Into life's flower again."

Thus we might go on reading by the hundred quotations showing Shakespeare's intelligent familiarity with every branch of medicine.

How did a man, not a physician, secure such a vast fund of knowledge in a profession to understand the elemental principles of which requires years of study?

First, his was probably the most comprehensive mind of all time; second, intimate association with physicians, among whom was his son-in-law, Dr. John Hall, an eminent member of the profession. Dr. Hall was but twelve years younger than his father-in-law, who lived either as a neighbor or in his family for the last nine years of his life.

Shakespeare was eighteen years old when he married Anne Hathaway, who was his senior by eight years. May 26, 1583—five months after their marriage—Susanna was born. On February 1, 1585, twins—Hamnet and Judith—were born.

Thus before he was twenty-one Shakespeare was the father of three children. The son Hamnet died before he was twelve years old; the daughter Judith married and bore children, but they all died during childhood. Susanna married Dr. John Hall on June 5, 1607, she being twenty-four and the doctor thirty-one.

One of the writers of that day says Dr. Hall "had a large and gainful practice." He attended the families of Lord Say, the Earl of Shrewsbury, Earl of Northampton, then President of Wales, and, in fact, all of the leading families of that part of England.

Dr. John Bird, Linacre professor in the Medical College, London, speaking of Dr. Hall, and of the book he wrote entitled "Select Observations on English Bodies of Eminent Persons in Desperate Diseases," says: "The learned author lived in our times, and in the county of Warwick, where he practised many years, and in great fame for his skill, far and near. Those who seemed highly to esteem him, and whom, by God's blessing, he wrought these cures upon, you shall find to be, among others, persons noble, rich, and learned. And this I take to be a great sign of his ability, that such who spare not for cost, and they who have more than ordinary understanding—nay, such as hated him for his religion, often made use of him."

Dr. Hall died in 1635 and eight years later (1643) his widow, still in the beautiful property known as New Place, entertained for three days Queen Henrietta Maria, wife of Charles I, and her retinue. The queen was on her progress to meet the king, and proceed with him to Oxford. Shakespeare's daughter, a physician's widow, had as her house guest the Queen of England. This again gives an idea of the eminence of Shakespeare's family.

The Halls had one child, Elizabeth, the only grandchild of Shakespeare that reached adult age. She was born in 1607 and was nine years old when Shakespeare died. One can reasonably look backward three hundred years and see the King of Poets, who was noted for his lovableness and usually spoken of by his contemporaries as "Sweet Shakespeare," strolling through the extensive gardens of his favorite daughter, hand in hand with his little grandchild. Thus was spent the evening of his life.

Elizabeth, in 1626, married Thomas Nash, who died in 1647 and was buried with the Shakespeare family in the chancel of Holy Trinity Church. After being a widow two years this doctor's daughter, then forty-two years old, married Sir John Bernard, an eminent nobleman, who had been knighted by Charles II. She never had a child and at her death in 1670 there was an utter extinction of the progeny of William Shakespeare, which thus endured only fifty-four years.

Joseph Hunter, nearly a century ago, said: "It is rather a striking fact in the history of the human race, that, when there are men preeminently great, the issue, if any, generally becomes soon extinct." Chaucer, Sidney, Shakespeare, Milton, Dryden, Pope, Bacon, Locke, and Newton have no one left to claim them as ancestors. How easy we Americans could make a similar list: Charles Sumner, Wendell Phillips, Walt Whitman, Edgar A. Poe, and George Washington, while Abraham Lincoln's only grandson died several years ago.

Returning to the book of which Dr. Hall is author: It was in 1644, nine years after the doctor's death, when Oliver Cromwell's troops occupied Stratford on Avon, that James Cooke, surgeon in the army and author of a work entitled "The Marrow of Surgery," called on the widow. Mrs. Hall received him pleasantly, and after she had allowed him to look through her late husband's library she sold Dr. Cooke some notebooks that Dr. Hall had evidently prepared for publication.

These notebooks were a selected record in Latin of several hundred notable cases that he had attended. Dr. Cooke translated, edited, and issued this work. Three editions were issued: in 1657, 1679, and 1683 respectively. The first edition is now worth $250; second, $100; third, $20. It is very interesting to look through this little work.

On page sixteen, Observation XIX, is the case of "Mrs. Hall of Stratford, my wife" (Shakespeare's daughter), "being miserably tormented with the cholic, was cured as followeth:

℞.—
Diaphen,
Diacatholic, each one ounce;
Pulv. Holland, two ounces;
Ol. Rut., one ounce.
Lactæ q.s. Ft. clyster.

This, injected, gave two stools, yet the pain continued, being but little mitigated; therefore, I appointed to inject a pint of sack [a weak wine] made hot. This presently brought forth a great deal of wind and freed her from all pain. With one of these clysters I delivered the Earl of Northampton from a grievous cholick."

Michael Drayton was a contemporary and intimate associate of Shakespeare. His poetry, particularly his sonnets, is valued to-day. Observation XXII is as follows: "Mr. Drayton, an excellent poet, labouring of a Tertian, was cured by the following:

℞.—

The Emetick Infusion, one ounce;
Syrip of Violets, a spoonful.

Mix them. This given, wrought very well both upward and downward.

"Observation XXXVI, Elizabeth Hall, my only daughter [Shakespeare's granddaughter] was vexed with tortura oris, or the convulsion of the mouth, and was happily cured as followeth (I first exhibited these pills):

℞.—Pil Coch and Aurear, each one drachm.

Ft. Pil 10. She took five the first day, which gave her seven stools; the next day with the other five she had five stools." He then goes on recounting his daughter's case, and in conclusion says: Thus was she delivered from death, and deadly diseases, and was well for many years. To God be praised."

This little book gives us quaint reading, but we must not forget that all along in the development of medicine there are records the reading of which would make us smile.

In spite of this ancient style of Dr. Hall he was a scholar and a painstaking general practitioner. He was proficient in both Latin and French, and it is inferred that he also was quite a traveler.

This time of Shakespeare, the Elizabethan period, the last half of the sixteenth century and the opening years of the seventeenth, formed the seething years of an intellectual new birth. The world had not seen such intellectual activity since the days of Æschylus, Sophocles, and Euripides, four hundred years before the Christian era.

This day of Shakespeare witnessed the circumnavigation of the globe by Sir Francis Drake, the explorations of Henry Hudson, Martin Frobisher, Sir John Franklin, and William Baffin; the colonization by Sir Walter Raleigh, whose death occurred in 1618, two years after that of the poet. It was the time of Christopher Marlowe, Ben Jonson, and Beaumont and Fletcher, while John Milton, the poet, who ranks second only to our bard, was eight years old when Shakespeare died. It was also during Shakespeare's day that the world was given that ideal model of English, the St. James translation of the Bible.

We of the medical profession should not fail to remember that the scientific students were as active as poets, dramatists, and explorers; for while this is a Shakespearean tercentenary, 1616 was the year in which, in a course of lectures delivered in St. Bartholomew's Hospital in London, William Harvey first announced his discovery of the circulation of the blood.

The tercentenary of William Harvey's discovery would fully justify a far more general celebration than it is receiving.

In conclusion Dr. John Hall, the subject of our sketch, was not a great man. He held the position in his day that the leading practitioner in Pasadena, Long Beach, or Santa Monica hold to-day a strong, busy, useful personality. The fact that his little book passed through three editions in twenty-five years, that the leading members of the profession spoke highly of him, and that Roman Catholic, High Churchman, and no-churchman employed him, although he was a staunch Puritan, give proof conclusive that he was a strong and forceful character and a credit to our profession.

1414 South Hope Street.

THE SALT WATER EAR.

By HUGH B. BLACKWELL, M.D.,
NEW YORK.

For the past ten years the writer has been impressed by the large number of acute infections of the external auditory canal, middle ear, and mastoid bone, as well as by the acute exacerbations of chronic suppurative otitis media caused by sea-bathing in the vicinity of New York, frequently necessitating operative treatment, and sometimes resulting in serious intracranial complications.

During the months of July, August, and September, a large proportion of the operations performed in the otological service of the New York Eye and Ear Infirmary and in the Manhattan Eye, Ear, and Throat Hospital can be directly attributed to this cause. In view of the annual occurrence of these seasonal ear infections, a few remarks on their prophylaxis, etiology, and treatment may be timely.

Physicians should warn all patients coming under any of the following classifications against sea-bathing without first submitting to an aural examination: (1) Those with a history of having had suppuration from one or both ears; (2) those with discharging ears; (3) the deaf; (4) individuals who complain of itching in the external auditory canals.

An intranasal examination should be made in cases of profuse discharge from the nose or throat, also if there is any difficulty in nasal breathing; the nose should be rendered as clean and as free as possible.

In this connection it is well to state that in the majority of instances the ear infection takes place by way of the Eustachian tube. The modus operandi is probably as follows: While bathing, small quantities of salt water accumulate in the pharynx and nasopharynx, producing slight strangling and involuntary swallowing. This act opens the Eustachian tube and forces water into the channel and, in some instances, into the middle ear as well. Frequently the swimmer, in attempting to clear his nose of water by means of an expiratory blast, forces the fluid into the tympanic cavity per tubam. This is especially apt to occur in cases of nasal obstruction, as the air is unable to escape freely from the nose. The necessity, therefore, for correcting a nasal discharge is obvious, as the pathogenic organisms contained therein might cause a middle-ear abscess, if introduced into that cavity. The safest way to free the nose is to hold the mouth slightly open and blow through both nostrils gently and simultaneously. Many bathers who are afflicted with some form of nasal catarrh are in the habit of snuffing sea water up the nose under the impression that they are employing nature's remedy and, therefore, a sovereign cure. It is a dangerous practice from an otitic standpoint.

In making an aural examination one should look specifically for the following conditions: (1) Acute, subacute, or chronic suppuration of the middle ear; (2) dry perforation of the membrana tympani; (3) partial or complete destruction of the drumhead caused by previous suppuration, resulting in its replacement by connective tissue; (4) eczema of the canals.

Should any of these conditions be present, the patient should be instructed to place a well-fitting plug of lamb's wool into the external auditory canal before entering the water. Absorbent cotton is useless for this purpose, and even the non-absorbent variety is unsatisfactory. A rubber bathing cap, fitted over the head and ears, will serve to hold the wool in position. The patient should be cautioned against diving and be told to keep the head out of water as much as possible. Immediately on leaving the bath the plug of wool should be removed from the canal, and the concha wiped dry. The canal can be thoroughly dried by tightly twisting a bit of absorbent cotton about the square end of a match, thereby protecting its corners and edges, and inserting it carefully within the canal for about half an inch, then rotating it gently. With a little practice this can be done without danger. The capillary attraction of the fibrils of cotton soon frees the canal of any moisture that may be present. The Frank rubber suction stopple, if well fitting and properly applied, serves the purpose of the wool plug. The same precautions should be followed when they are removed. Should examination reveal a normal drum and canal, it would, of course, be unnecessary to protect them by means of wool or stopple.

Cerumen, if found in excess, should be removed from the canals, as the absorption of water would cause it to swell and possibly produce a temporary deafness.

Crops of otitic furuncles are frequently observed in persons accustomed to taking daily surf baths. This condition is probably caused by the excessive dryness of the skin of the canal, due to frequent submersions and resulting in subsequent infection of the unprotected hair follicles. Under these circumstances, a good preventive measure consists in placing a few drops of glycerin or a small portion of vaseline in the canal. This will protect the epithelial lining.

Inflammation of the middle ear and mastoid produced by sea bathing is frequently complicated by the development of furuncles in the external auditory canal. The degree of swelling from this cause may at times be so great as to exclude a view of the drum and, in addition, produce a postauricular edema, and thus serve to still further mask the presence of a mastoid inflammation.

A detailed description of all the symptoms, points of diagnosis, and treatment of these conditions is beyond the scope of this paper. It is sufficient to say that ordinarily they call for the exercise of the best judgment and skill on the part of a specially trained physician.

The catarrhal inflammation of the middle ear, which usually produces the sensation of water in the ear, stuffiness, tinnitus, deafness, etc., frequently develops immediately after leaving the water, but while it may be a source of much discomfort to the patient it is not attended by any definite pain. The treatment consists in hot irrigations of saline to the drum and topical applications to the tube; and, in some instances, gentle inflation of the tympanum and free catharsis. Should an earache develop and the membrana tympani lose its landmarks, luster, and finally bulge, an immediate myringotomy under general anesthesia is very strongly indicated.

Furuncles in the canal are, in the writer's opinion, best treated by hot irrigations in the early stage, combined with wet dressing. When the swelling points, an incision should be made so that the pus may be evacuated.

Finally, patients with chronic discharge from the middle ear, as indicated by the foul odor of the pus and the presence of granulations in the fundus of the canal, who, as a result of sea-bathing develop a diminution, suppression, or increase of the discharge, associated with earache, headache, insomnia, or mastoid tenderness, should be carefully observed and treated, as these conditions are apt to be serious, and frequently require operative procedure upon the mastoid for their relief.

118 West Fifty-eighth Street

Medicolegal Notes.

Physician's Liability to Company's Employee.—In an action for malpractice against a firm of physicians and surgeons who operated a hospital, it appeared that the plaintiff's employer had an arrangement with the defendants by which the employer deducted a certain sum each month from the pay of each employee, and turned over the sums so deducted to the defendants, who agreed for such compensation to care for and treat all injured employees which the employer should send to them. The plaintiff was injured and was taken to the defendants' hospital and treated by them under this arrangement. It was held that the relation of patient and physician existed between the plaintiff and the defendants, and that the latter owed the plaintiff the duty to exercise ordinary care and skill in treating him.—Vrita v. Dolan, Minnesota Supreme Court, 155 N. W. 1077.

Malpractice of Homeopath—Expert Testimony of Allopath.—In an action for malpractice by a physician of the homeopathic school, alleging that he neglected to see the plaintiff's daughter with such frequency as the case demanded, to give her proper medicine and skillful treatment, and to do anything for her relief and cure when it appeared that she was dangerously ill, it was held that testimony of a physician of the allopathic school, who admitted that he knew nothing of the homeopathic method, after the recital of the conditions and symptoms of the deceased to the time of her death, including the treatment given by the defendant, as to what the deceased was probably suffering from was admissible, as such testimony, followed by inquiry of a homeopathist as to what would have been appropriate as a remedy, might prove that improper treatment was given; but as to materia medica, therapeutics, and the principles and practice of medicine he was incompetent to testify, in view of Iowa Code, sec. 2576, providing that candidates for examination in any school of medicine shall be given the same set of questions covering pathology, etc., but prescribing for a different set of questions in materia medica, etc., corresponding to the school in which the applicant desires to practice.—Van Sickle v. Doolittle, Iowa Supreme Court, 155 N. W. 1007.

Injury to Neck—Comparison of X-Ray Pictures.—In a railway mail clerk's action for injury to his neck, alleged to have fractured the transverse process of the third cervical vertebra, when the door of the car shut, on the train being more or less suddenly checked, the plaintiff's medical expert, whose experience as an *x*-ray specialist was limited, offered two *x*-ray plates of the plaintiff's neck and explained them to show a fracture. The trial court refused to allow an *x*-ray specialist for the defendant company to exhibit to the jury an *x*-ray picture taken by him, showing a man's neck in normal condition to prove that the plaintiff did not have such a fracture, with the explanation that the plaintiff's fracture did not support the interpretation of his expert, on the ground that to permit a comparison of the plaintiff's neck with other necks would lead to confusion and irrelevancy. On appeal it was held that this refusal was erroneous. The plaintiff's case and the result, the court said, depended much upon the true interpretation of the *x*-ray pictures offered by the defendant's expert. The *x*-ray process is comparatively new, and is more or less occult, certainly to the lay mind. The plaintiff was properly given a free hand in developing the proof of his alleged injuries by means of the *x*-ray pictures and an expert explanation of them; and similar freedom should have been accorded the defendant in testing before the jury the correctness of that explanation.—Virginian Ry. Co. v. Bell, Virginia Supreme Court, 87 S. E. 570.

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THE PROPHYLACTIC USE OF TETANUS ANTITOXIN.

CONFIDENCE in the efficiency of tetanus antitoxin when properly used as a prophylactic measure against the development of tetanus, is well-nigh universal among immunologists. In a certain percentage of cases, however, the prophylactic action has been slight or absent, and in a few instances unfavorable results have followed, so that there is a group of clinicians and others who are more or less opposed to the use of the serum and who claim that confidence in it is not justified. The fallacy of this claim is shown in an article by Robertson recently published (*Am. Jour. Med. Sci.*, 1916, cli, 668).

In the majority of instances unfavorable results occur in consequence of certain well understood conditions. The patient may be unduly susceptible to the toxin of the disease, or he may react abnormally to the serum which contains the antitoxin. The serum may have been administered in too small a dose or so long after the infection that cure is not possible, or the quality of the product may be such as to prevent its effective action. It is probable that little can be expected from the use of the serum in those persons who are so susceptible that the toxin is absorbed with exceeding rapidity. The occurrence of serum sickness is of relatively little importance, while serious anaphylaxis is quite rare; nevertheless, improvements in the methods of preparing the serum have reduced the number of cases in which these complications occur, and it is reasonable to believe that further improvements will reduce it still more. The ideal method, the use of human serum as a vehicle for the antitoxin, is as yet impractical as a general procedure, though it has been done in a few isolated instances. The production of an active immunity by vaccination with tetanus toxin would be a desirable method were it not so unsafe, since the administration of toxin is apt to be a dangerous procedure. One great advantage of an active immunity is that it lasts for several months or even years while the passive immunity conferred by the injection of an alien serum lasts for only about three weeks, while a second dose will extend that period by only from five to eight days. The factors which may be most readily controlled are the time and the method of administration.

The importance of early immunization is shown by some experiments upon mice. The investigator inoculated the tails of these animals with tetanus cultures, and after varying intervals cut off the infected portion, thus removing the source of toxin production. It was found that one hour after inoculation such an operation was too late to save the animal from a fatal attack. Statistical studies upon man have shown the same results—the earlier after the receipt of an injury the antitoxin is given the smaller the number of cases which develop and the lower the mortality. The mode of administration is usually the subcutaneous or intravenous injection. Under certain circumstances, notably in war, it is not possible to administer the serum in this manner very promptly after the injury. Calmette recommended dry powdered antitoxin to be applied to the wound, but practically this has proved efficacious in the prevention only of tetanus neonatorum. Robertson suggests that the antitoxin be soaked up in sterile absorbent cotton and then dried and preserved for use. The cotton can be standardized, and before use is to be moistened with some clean fluid. He found that it remained active for at least six weeks and that the results were excellent. Such a preparation would be a valuable addition to the first-aid packet carried by the soldier. It is intended, of course, not to supplant injections of antitoxin, but for use when the latter are not available, for the purpose of saving valuable time. If the wound remains unhealed, it can be used for the repetition of the dose without the danger of anaphylaxis.

A study of the use of antitoxin in the present war has shown that the subcutaneous injection of twenty units immediately after the injury will, in the great majority of cases, prevent the development of tetanus. The remedy is not perfect; indeed, there are probably no perfect remedies, and one must expect to have a certain percentage of failures. Nevertheless it is an exceedingly valuable one, and one whose value will probably be improved as a result of further researches, and all can agree with Kocher in his statement: "I should strongly resent it and call him to account if a doctor, in treating a relative of mine who had received a wound which was infected with street dirt, did not administer a prophylactic injection of tetanus antitoxin."

STEREOSCOPIC ROENTGENOGRAPHY IN THE DIAGNOSIS OF FRACTURES.

IN fractures of the shafts of the long bones, *x*-ray plates taken in the usual right-angled planes (anteroposterior and lateral) are generally all that are required for a sufficiently correct interpretation of the relative position of the fragments. Occasionally, however, in fractures of the shafts, and frequently in fractures into and near certain joints, where satisfactory lateral views are to be obtained with great difficulty or not at all, the stereoscopic method is wellnigh invaluable.

In connection with a series of articles on "War Fractures" in the March, 1916, number of the *Practitioner*, Capt. Francis Hernaman-Johnson, M.D., R.A.M.C., briefly discusses the uses and limi-

tations of this method. He says that there is a tendency in some quarters to regard the stereoscope, when adapted to radiography, as merely an ingenious toy, while in others it is looked upon as a valid substitute for the method of right-angled planes; and that stereoscopy is sometimes mentioned as a substitute for localization methods in the case of bullets or other foreign bodies. He believes that the method has a well-defined place in radiographic work and says it can neither be dispensed with nor employed to the exclusion of other well-known procedures.

He divides the uses of the stereoscope in connection with fractures into (*a*) essential and (*b*) supplementary. Under the first heading he calls attention to the fact that an exact diagnosis of certain bone injuries can be reached only by the aid of the stereoscope; and states that it is obvious that such a state of affairs must exist fairly often in injuries of the shoulder, spine, pelvis, and hip when it is remembered that lateral views of these regions are, for the most part, unobtainable. He feels that the "solid effect" produced by the fusion of stereoscopic radiographs is here the only means of checking the oftentimes misleading appearances seen in an ordinary *x*-ray projection of such parts, and concludes that the regions enumerated should, therefore, be taken in stereoscopic pairs as a matter of routine wherever time and materials permit. Sometimes, too, even in situations where plates at right-angled planes are easily obtainable, exact diagnosis radiographically is impossible without the aid of stereoscopy. This is well shown by a case which he reports where there had been a gunshot injury in the neighborhood of the elbow resulting in multiple fracture. There was a fracture of the internal condyle which was well shown in the ordinary anteroposterior plate. The lateral view, however, showing a rather large fragment of bone in front of the joint, was very confusing, and, after a number of lateral views had been taken, some experts at interpreting plates considered that there was a fracture of the radius, while others were equally positive that the fracture involved the ulna. A stereoscopic plate showed that the apparently solid fragment was in reality composed of two, one derived from the ulna and one from the radius. Such experiences as this led him to declare that while in skiagraphy of the skull and limbs anteroposterior and lateral single views are, in most cases, sufficient, when a negative opinion has been given on such views and the subsequent clinical course of the case is such as to give rise to continued suspicion of fracture or subluxation, the *x*-ray examination should be repeated on the lines indicated, namely, stereoscopically. He finds that the elbow, the ankle, the carpus and the tarsus are the parts where reexaminations are most often needed.

As to the supplementary uses, these are concerned with obtaining a general view, in relief, of the position of the fragments of a fracture which is to be operated upon, or with "seeing for oneself" the exact relationship of a bullet that is about to be extracted; but he finds such uses of stereoscopy generally more favored by surgeons than by expert radiologists "who are aware that no real idea of distances can be so obtained, and that the apparent relationships shown are highly misleading and confusing unless a very rigid method is followed in the taking and interpretation of the stereogram." While it is usually possible to say whether a bullet is at one or other side of a bone or buried within it, and to determine the relative position of fragments in a similar general way, the stereoscope must be regarded not as an instrument of precision but merely as a useful adjunct in the localization of metallic fragments in fracture due to gunshot injuries. It is nevertheless in some cases of fracture not merely an assistance but the only method by which a certain diagnosis can be arrived at.

Centennial Anniversary of the Hamburger Aerztlicher Verein.

One hundred years ago Hamburg, as well as the other German cities, was emancipated from enemy control, and then and all over what is now the German Empire the native activities were manifested in divers ways. Local medical societies sprang into existence, and on January 2, 1816, one was organized in Hamburg with a membership of 60 physicians and 14 apothecaries. In 1834 the latter profession organized an independent society. At the outset there was no program, but the meeting was given up to extemporaneous reports and discussions, followed by a supper at the tavern in which the meeting was held. Soon rooms for their use were hired, gradually increasing in number to accommodate books and museum specimens. These quarters also represented the inception of the Hamburg Vaccination Institute, and from an early period vaccination sessions were held weekly. Young members performed the inoculations and took charge of the supply of lymph. Voigt, who contributes these details to the *Deutsche medizinische Wochenschrift* for January 27, was himself vaccinated in the 60's with nine punctures in each arm. In 1872 this private foundation was replaced by a State institute. A large endowment fund for maintaining the former must have been set free by this step. From the outset a book department had been associated with other society activities; it suffered a total loss by fire in 1842, but nevertheless has grown to be one of the greatest medical libraries in Germany. The pathological museum was eventually transferred to the Hamburg-Eppendorf Hospital. Two other societies have split off from the main body—the Obstetrical Society in 1860 and much more recently the Biological Society. The permanent headquarters of the society have been and are still in the so-called Patriotic House of Hamburg.

A New War Pestilence.

The nosological status of war maladies of epidemic incidence is notably uncertain, and this applies also to affections which develop when bodies of men assemble on peaceful occasions, for example in harvesting time, when a spreading disease may run the gamut of diagnosis until finally its nature is recognized beyond doubt. At the January session of the Hamburg Medical Society (*Berliner klinische Wochenschrift*, January 31) Rumpel describes an epidemic which attacked over 420 men in a Russian prison camp. The disease began with violent gastroenteric symptoms, rapidly followed by an ulceropurulent stomatitis, in which false mem-

branes sometimes formed. In certain of the cases an exanthem appeared. But a third of those exposed escaped the disease. There were evidences here and there of grave infection but not a single death occurred. The buccal symptoms *per se* suggested a Plaut-Vincent infection, and the microorganisms of the latter were found, although possibly only as saprophytes. The principal view was that the foot and mouth disease had been contracted from infected horses, but this was disproved by inoculation experiments. In fact there was no proof that the disease had been transmitted at all. Scurvy was thought of as well as a mass mercurial intoxication but both these notions were quickly dismissed. At present the only plausible view is that of an unknown food poisoning. A similar disease has appeared in the French military hospitals and also elsewhere in Germany. Both milk and meat have been accused.

The New University of Warsaw

This institution was originally the youngest of the old Polish universities, having been founded in 1816. A medical faculty does not seem to have existed until 1857. From 1870 to 1882 the university became Russianized. Considerable good work has been done by the university under Russian domination, although Polish students have for years flocked in great numbers to German, Austrian, Swiss, French, and even to some of the purely Russian universities. Since the German conquest of Poland in 1915 the University of Warsaw and in fact educational institutions in general have been reorganized, with a Polish faculty and official recognition of the Polish language. Over 1100 students are now in attendance, of which nearly one-half are medical. Dr. von Brudzinski, the new rector of the University, describes the institution at length in the *Berliner klinische Wochenschrift* for February 28. The new administration is confronted with great difficulties, as the old buildings were rendered unfit for use by the evacuating Russians. A faculty for the teaching of the various physical sciences has been assembled, but there is no mention of chairs for medical and surgical teaching or of clinical facilities. Even histology and comparative anatomy are not taught at present, although there are professorships for physiology and physiological chemistry. Much of the difficulty of organization arises from the fact that the various buildings for clinics are too antiquated for modern requirements. For several years at least, assuming that the Germans remain in possession that length of time, only elementary studies can be pursued here, and the medical students must betake themselves elsewhere for technical training. We must therefore regard this institution as more of a political than an efficiency move, one which is intended to win the friendliness and cooperation of the Poles.

News of the Week

New York City Death Rate.—The mortality in New York City during the week ending May 6 was lower than that of the corresponding week of last year and also than that of the previous week of this year. The number of deaths was 1,580, giving a death rate of 14.71 per 1,000, while during the corresponding week of 1915 the deaths numbered 1,609 and the rate was 15.35. The death rate for the first nineteen weeks of the year was 15.40, as compared with 15.64 for the corresponding period of last year. The mortality for the week was decreased in measles, scarlet fever, typhoid fever, cancer, influenza, lobar pneumonia, diseases of the nervous system, and violence; and increased in diphtheria and croup, whooping cough, diarrheal diseases, heart disease, bronchopneumonia, pulmonary tuberculosis, and Bright's disease. The lowest rate for the week was noted in the Borough of Queens, where only 98 deaths were reported, giving a rate of 13.95 per 1,000.

Deaths in Chicago.—During the week ending May 6 there were reported in Chicago 693 deaths, giving a death rate of 14.5 per 1,000, as compared with 699 deaths and a rate of 14.6 for the preceding week, and 665 deaths and a rate of 14.2 for the corresponding week of last year. The increase occurred chiefly in the number of deaths due to pneumonia and influenza.

Baby Week in New York.—With the slogan "Better Parents, Better Babies, Better City" as its motto, New York successfully celebrated Baby Week from May 6 to 12. Saturday and Sunday were devoted to meetings in the synagogues and churches; Monday was Brothers' and Sisters' Day and appropriate exercises were held in the public schools; Tuesday was Visiting Day, and an inspection of all the child-agencies in the city was made; Wednesday was Fathers' Day, when special meetings were held; Thursday was prize day, when prizes were awarded to the best babies; and Friday was Neighborhood Day.

Civil Service Examinations.—The United States Civil Service Commission announces an open competitive examination for the position of assistant epidemiologist (male) in the Public Health Service, at a salary ranging from $2,000 to $2,500. The duties of the position will be the making of epidemiologic and sanitary surveys to determine the prevalence and causation of disease, the conducting of laboratory studies in relation thereto, and the recommendation of measures to prevent and control outbreaks of disease. It is desired to secure persons thoroughly competent in the various branches of sanitary bacteriology and especially in isolating the typhoid bacillus from infected persons and materials. Graduation from a medical school or college of recognized standing, or graduation in sanitary engineering from a college or university of recognized standing, at least three years' experience in epidemiologic work under Federal, State, or local authorities, and experience in laboratory technique, are prerequisites for consideration for the position. Further details may be obtained on application to the United States Civil Service Commission, Washington, D. C.

On June 7 the United States Civil Service Commission will hold an examination for medical interne, open to both men and women, for the purpose of filling a vacancy in this position in the Government Hospital for the Insane, Washington, D. C., at $900 per annum. The position is tenable for one year, during which time a post-graduate course in mental and neurological diagnosis is given, an examination is held, and promotions to the next grade, junior assistant physician, are made. The Government Hospital for the Insane has over 3,000 patients and about 800 employees; in addition to the general medical practice the scientific opportunities in neurology and psychia-

try are unsurpassed. Applicants must be graduates of a reputable medical college, or senior students expecting to graduate within six months from the date of the examination; they must be unmarried, and twenty years of age or over. Further details may be obtained on application to the Commission at Washington.

Physicians' Summer School.—Short courses in clinical medicine and psychology, for recently graduated physicians who desire to perfect themselves in a knowledge of physical, mental, and nervous diseases of children, will be offered this summer at the Rome State Custodial Asylum, Rome, N. Y. Each course will cover a period of ten days, during which time the students will have an opportunity to observe and study special groups of defective children, the work being made intensely practical. The course will be given twice, from June 6 to 16, and from June 19 to 29, and accommodation will be provided for from twelve to twenty men in each group. There will be no charge for the course, and board and lodging will be furnished free, as is usual in general hospitals in the case of clinical assistants and medical internes. All communications in regard to the course and applications for admission should be addressed to the Rome State Custodial Asylum, Rome, N. Y.

New Hospital Bureau.—The National Hospital Bureau, recently incorporated, has opened its quarters at 8 West Fortieth Street, New York, where it will maintain an information and advisory service for the purpose of promoting and encouraging the building, equipment, and management of efficient hospitals. A model hospital is shown on the sixteenth floor of the building, and visitors are cordially invited to inspect the exhibit.

Gifts to Hospitals.—By the will of the late Mr. Charles W. Harkness of New York, the Presbyterian Hospital of this city receives the sum of $100,000 to be added to its endowment fund and the sum of $250,000 to be added to the Harkness Fund for scientific and educational work. The Harkness Fund was established a few years ago by Mr. Harkness' brother, Edward S. Harkness, for the purpose of promoting research in the hospital in connection with medical education.

Mr. Charles A. Wimpfheimer of this city has given $150,000 to Mount Sinai Hospital for the endowment of a department of surgery of the stomach.

Dr. George W. Crile, professor of surgery at the Western Reserve University, Cleveland, Ohio, received the honorary degree of doctor of letters from Wooster College on May 12.

American Association of Anesthetists.—The fourth annual meeting of this association will be held in Detroit, Mich., on June 12, 1916, under the presidency of Dr. Willis D. Gatch of Indianapolis, Ind. An interesting program, consisting of fifteen papers and including an address by the president and reports by Dr. George W. Crile of Cleveland, Ohio, and Dr. Joseph C. Bloodgood of Baltimore, Md., has been prepared. The scientific session will be followed by a banquet at the Hotel Tuller at 7 o'clock.

Obituary Notes.—Dr. ERNEST C. MORRIS of Hephzibah, Ga., a graduate of the University of Georgia, College of Medicine, Augusta, in 1899, and a member of the Medical Association of Georgia, the Richmond County Medical Society, the Medical Society of the State of New York, and the American Medical Association, died on April 26, aged 37 years.

Dr. THOMAS J. WILLS of Washington, Ga., a graduate of the Atlanta Medical College in 1887, and a member of the American Medical Association, the Medical Association of Georgia, and the Wilkes County Medical Society, died suddenly at his home, on April 13, aged 54 years.

Dr. GEORGE W. DERRICK of Norwood, Mass., a graduate of the medical school, Tufts College, Boston, in 1903, died at the Brooks Hospital, Brookline, from blood poisoning, on April 16, aged 39 years.

Dr. WILLIAM M. BULLARD of Brooklyn, N. Y., a graduate of the University of Göttingen, Prussia, in 1867, died suddenly at his home on May 12, aged 75 years.

Dr. TRAVERSE ROCKE MAXFIELD of Brooklyn, N. Y., a graduate of the Michigan College of Medicine, Detroit, in 1884, and a member of the Medical Society of the State of New York, the Kings County Medical Society and the Brooklyn Medical Society, died at his home, on April 23, aged 54 years. Dr. Maxfield was for eighteen years a member of the Brooklyn Board of Health.

Dr. MILTON M. SMITH of Tuskegee, Ala., a graduate of the Louisville Medical College in 1890, and a member of the Medical Association of the State of Alabama, and the Colbert County Medical Society, died at his home, after a short illness, on April 24, aged 68 years.

Dr. HENRY A. MOODY of Mobile, Ala., a graduate of the Medical Department of the University of Louisville, Ky., in 1866, and a member of the American Medical Association, the Medical Association of the State of Alabama, and the Mobile County Medical Society, died at his home, after a brief illness, on April 16, aged 74 years. Dr. Moody was professor of therapeutics, materia medica, and pharmacognosy in the University of Alabama, School of Medicine, Mobile.

Dr. JOHN A. HUNTER died in Philadelphia on April 27 at the age of 78 years. He was graduated from the medical department of the University of Pennsylvania in the class of 1866. He was visiting physician to Moyamensing Prison.

Dr. WILLIAM STANFORD STEVENS of Boston, Mass., a graduate of the Harvard University Medical School in 1883, and a member of the American Medical Association, died at his home on April 29, aged 57 years.

Dr. HARRY E. MYGATT of Berlin, N. H., a graduate of Dartmouth Medical School, Hanover, in 1896, and a member of the New Hampshire Medical Society and the Coos County Medical Society, died at his home recently, aged 44 years.

Dr. WILLIAM H. MCKENZIE of Newark, N. J., a graduate of the College of Physicians and Surgeons, New York, in 1892, visiting physician to St. Barnabas' Hospital, Newark, and a member of the Medical Society of New Jersey and the Essex County Medical Society, died suddenly of apoplexy at a meeting of the medical board of St. Barnabas' Hospital, at which he had been elected president, on May 3, aged 49 years.

Dr. NATHAN R. SIMMONS of Lexington, Ky., a graduate of the Long Island College Hospital, Brooklyn, in 1864, and a member of the American Medical Association, the Kentucky State Medical Association, and the Fayette County Medical Society, died in Louisville, on April 21, aged 74 years.

Dr. CHARLES W. ENOS of Denver, Colo., a graduate of the Homeopathic Medical College of Missouri, St. Louis, in 1874, died at the Park Avenue Hospital, Denver, on April 20, aged 67 years. Dr. Enos was

the son of a physician, and one of ten children, of whom six were also physicians.

Dr. SIMEON HUNT of East Providence, R. I., a graduate of Dartmouth Medical School, Hanover, in 1865, and a member of the Rhode Island State Medical Society and the Providence District Medical Society, died at his home, after a short illness, on April 5, aged 79 years.

Dr. JAMES T. OWEN of Cloverport, Ky., a graduate of the medical department of the University of Louisville in 1867, died at his home, after a lingering illness, on April 12, aged 77 years.

Dr. SAMUEL W. STEVENSON of Mooresville, S. C., a graduate of the Washington University School of Medicine, Baltimore, in 1873, died at his home, after a long illness, on April 15, aged 72 years.

Dr. JOHN F. MOORE of Worcester, Mass., a graduate of the Baltimore Medical College in 1907, and a member of the staff of St. Vincent Hospital and the Memorial Hospital, died at his home, on April 15, aged 35 years.

Dr. ALBERT MCMICHAEL of Detroit, Mich., a graduate of the Pennsylvania Medical College, Gettysburg, in 1898, died at his home on April 29, aged 56 years.

Dr. ANTHONY PECK of Norwich, Conn., a graduate of the New York University Medical College in 1875, died at his home on April 3, after an illness of several months, aged 58 years. Dr. Peck was oculist and aurist to the William W. Backus Hospital, and was a member of the Connecticut State Medical Society and the New London County Medical Society.

Dr. DORRAN B. COXE of Chico, Cal., a graduate of Dartmouth Medical School, Hanover, in 1888, and a member of the Rhode Island Medical Society, the Medical Society of the State of California, and the San Bernardino County Medical Society, died at his home, on April 2, after a year's illness, aged 71 years.

Dr. JOHN F. HANIFIN of Holyoke, Mass., a graduate of the College of Physicians and Surgeons, Baltimore, in 1911, and a member of the Massachusetts and Hampden District Medical Societies, died recently at Saranac Lake, N. Y., aged 30 years.

Dr. CHARLES W. PECK of Brandon, Vt., a graduate of the Long Island College Hospital, Brooklyn, in 1866, and a member of the American Medical Association, the Vermont State Medical Association, and the Rutland County Medical Society, died at his home on April 21, aged 75 years.

Dr. CHARLES A. TEAGUE of Graniteville, S. C., a graduate of the New York University Medical College in 1890, died on April 25, in Columbia, after an operation, aged 52 years.

Dr. HUGH E. QUINN of Bangor, Me., a graduate of the Medical School of Maine, Portland, in 1909, and a member of the Maine Medical Association and the Penobscot County Medical Society, died at his home on April 29, aged 37 years.

Dr. WILLIAM H. HOYT of Wenham, Mass., a graduate of the New York University Medical College in 1886, died at his home on May 3, aged 54 years.

Dr. JOHN ERLE KENNEY of Chelsea, Mass., a graduate of the College of Medicine, University of Vermont, Burlington, in 1882, and a member of the Massachusetts Medical Society and the District Society, died at his home on May 3, aged 55 years.

Dr. JESSE E. HUNT of Kansas City, Mo., a graduate of the Western Reserve University, School of Medicine, Cleveland, in 1902, and a member of the Missouri State Medical Association and the Jackson County Medical Society, died at his home, of diphtheria, on April 29, aged 38 years. Dr. Hunt was assistant professor of pediatrics in the University of Kansas School of Medicine.

Dr. JOSEPH R. WEBSTER of Lexington, Mass., a graduate of Harvard University Medical School in 1859, and a member of the Massachusetts Medical Society and the District Society, died at his home on May 9.

Dr. CHARLES A. WHEATON of St. Paul, Minn., a graduate of Harvard University Medical School in 1877, and emeritus professor of surgery in the University of Minnesota, died at St. Joseph's Hospital on April 29, aged 63 years.

Dr. ISAAC C. MCCOY of Fort Worth, Tex., a graduate of the University of Georgia, College of Medicine, Augusta, in 1870, died suddenly at his home on April 29, aged 68 years.

Dr. FRANCIS W. CAMPBELL of Brooklyn, N. Y., a graduate of the College of Physicians and Surgeons, New York, in 1909, a member of the Brooklyn Medical Society, visiting anesthetist to St. Catherine's Hospital, and gynecologist to St. Catherine's Dispensary, died at his home on May 9, aged 32 years.

Obituary.

EDWARD LEAMING, M.D.,

NEW YORK.

DR. EDWARD LEAMING, attending radiologist to Roosevelt Hospital, and formerly instructor in photomicrography at the College of Physicians and Surgeons, died at his home on May 11, aged 54 years. He was the son of the late Dr. James R. Leaming, one of New York's best-known practitioners in the 70's of the last century. He was graduated from Columbia University in 1884, and from the College of Physicians and Surgeons in 1892, and also studied at the University of Edinburgh. He was a member of the American Medical Association, the New York State and County Medical Societies, the American Roentgen Ray Society, the New York Roentgen Ray Society, and the New York Gastro-Enterological Society. Dr. Leaming early won distinction as an amateur photographer, and when laboratory teaching and research in pathology and bacteriology had secured an important place in the new outlooks in medicine in this country, he realized the significance of the new field for the development of new and special phases of photography. Becoming associated with the Department of Pathology at the College of Physicians and Surgeons in New York, he organized the section of Photography and Microphotography, and for years, with uncommon skill and boundless patience, devoted himself to the preparation of illustrations of researches for special publications and numerous text-books. The continuing value of many of the latter, for example the Text-book of Pathology by Delafield and Prudden, is due in a large measure to the reproduction of Dr. Leaming's accurate and excellent photographs. At a later period he organized, and for some time directed, the Section of Photography and Illustration of the Rockefeller Institute for Medical Research. He brought to his work a wide range of interest and knowledge in many phases of science and art, and his technical skill, his great experience, his ready helpfulness, and his kindly spirit will be keenly missed by his many colleagues and friends.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

THE HARVEIAN LECTURE—GENERAL DISEASES SEEN AT AN EYE HOSPITAL—OPTIC ATROPHY—DEFECT IN OCULAR MOVEMENTS — MYASTHENIA GRAVIS — DIPLOPIA—THYROID SECRETION.

LONDON, April 20, 1916.

THE extraordinarily varied medical interests which converge at any eye hospital were discussed by Dr. James Taylor in his Harveian lecture. At the outset he confessed that he had long wished to do more than he had done to impress on his confrères the enormous importance of ocular and visual signs and symptoms as indications of general disease. His unique opportunities at Moodfields of seeing cases illustrating this certainly renders him to some extent a debtor to his brethren, for it is only working at an eye hospital that enables any one to realize how many patients apply there for relief to some eye trouble which is found to be an indication of a general condition. Going over the notes of his hospital cases for the last five years Dr. Taylor dealt with them in groups, as: optic atrophy, defect of movements, myasthenia gravis, and other forms of ocular palsy, albuminuric and glycosuric retinitis, Graves' disease, hemiopia, retinal embolism, and thrombosis and optic neuritis. The largest group was of optic atrophy, which brought him 233 cases; in over 200 of these there were definite signs of tabes or general paralysis of the insane; sometimes only the Argyll-Robertson pupil; in one case on one side only; sometimes only absence of knee-jerks and lightning pains; sometimes both these conditions; occasionally gastric crises. Ataxy occurs only rarely in tabes with optic atrophy, a fact generally well known and confirmed by these cases, for it was only complained of in two out of the 200, and in only one of them was it very marked. There were signs indicative of general paralysis in three or four, but mental symptoms pointing to general paralysis not uncommonly appear years after the patients have been quite blind.

In a few cases the optic atrophy was the result of retrobulbar neuritis and in a number of these indications of disseminated sclerosis were present. In other cases there is evidence of lesion at the optic chiasma and usually also indications of interference with the visual fields. In many patients, on applying to the hospital, there was complete blindness of one eye and well-marked blindness of the temporal field in the other. A few of the cases are toxic, brought on by tobacco, often with alcohol as well. Recovery in such may occur, if the toxic agent can be quite excluded and the blindness is not too long established, but in some the recovery is not complete and the condition remains, though not necessarily progressive. In the cases named after Leber there is a state of family optic atrophy, the impairment of vision being gradual and slow, but in some of these it is extraordinarily rapid.

Defect in ocular movements formed the next largest group of Dr. Taylor's cases. One might expect diplopia to be complained of in all these, but that was not so, for in a certain number of third nerve paralysis cases, whether complete or partial ptosis was the first sign and when there is complete ptosis, either before or simultaneously with affection of other ocular movements controlled by the third nerve, there will, of course, not be diplopia

In some of the cases there were definite signs of tabes (in many good reason to suspect syphilis), but in one or two classes of third nerve cases this plays no part, *e. g.* migraine ophthalmoplégique—a condition in which there is paralysis of an ocular nerve, usually the third, occasionally the sixth, occurring in association with unilateral headache. This is a recurring condition, but after each attack of headache with ocular paralysis recovery from the paralysis is less and less complete, till finally there is complete paralysis of the affected nerve, when not infrequently the headache ceases. Dr. Taylor had had eight such cases, in seven of which the third nerve was the one affected. In none of them had there been any visual phenomena, such as occur in ordinary migraine. Third nerve paralysis may also be present in lesions of the crux, and in such cases is usually associated with paralysis of the limbs of the opposite side. There are cases in which only the sixth nerve is affected. It is said this may result from exposure to cold, but skepticism of this is common, and Dr. Taylor was satisfied that they were really an early sign of a graver affection—in one case disseminated sclerosis, in another tabes, in another third nerve paralysis.

Diplopia may also be due to myasthenia gravis, a disease which has lately received much attention, and deserves still more. It is in connection with ocular conditions that it is most interesting. It also occurs in Graves' disease, and more frequently than is generally recognized. Occasionally it is so marked that patients apply for relief on account of it. In one of his 27 cases Dr. Taylor reports upward movement of the eyes beyond the horizontal plane was quite absent, and this was not a case in which the proptosis was at all extreme. He had only once seen optic atrophy in Graves' disease, and in that he was satisfied it was a mere coincidence. He has little doubt that the phenomena are due to excessive thyroid secretion. He has seen all the symptoms and signs (except the enlarged thyroid) develop in a patient who took large quantities of thyroid to reduce a not-excessive corpulency. He thought fright or other emotional disturbances seem to have some relationship to the onset of the symptoms, and mentions incidentally that the same may be said of chorea. In the majority of cases a cure may be anticipated, but in some the result is sad. One of the most terrible disasters is sloughing of the corneæ, which sometimes results in complete destruction of the eyes. Yet the outlook is good as a rule. Of 31 cases referred to by Dr. Taylor not one became worse, several were completely cured, and in most the disease became quiescent. He always gave belladonna, and from the manner in which patients returned for treatment and from the discomfort they reported they felt if without it, he cannot but think it a most helpful drug in these cases.

A URINARY TEST FOR SYPHILIS.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—Through some oversight in reading the proof of the article "A Urinary Test for Syphilis and Its Comparison with the Wassermann Reaction," I neglected to state the strength of Sol. I and have received several inquiries relating to the same. I have had the best result with a 1 per cent. solution of resublimed iodine in chloroform.

CARL D. GRAY, M.D.

PORTLAND, MAINE.

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 4, 1916.

1. Use of the Duodenal Tube for Diagnosis and Treatment. Franklin W. White.
2. Hallux Valgus. Charles F. Painter.
3. Climate in Bright's Disease and Nephritis. Guy Hindsdale.
4. The Pituitary Body and Renal Function. Rehl Motzfeldt.

2. Hallux Valgus.—Charles F. Painter, in discussing hallux valgus deals with the etiology of the trouble and the most serious objection to that method of operative treatment which the majority of surgeons regard as highly satisfactory. He thinks that there is little doubt the deformity is owing to ill fitting shoes, and points out that most shoes, particularly women's shoes—and it is among women that the deformity is most common—narrow from a point about opposite the first metatarso-phalangeal articulation forward to the tip of the great toe. An *x*-ray examination and other facts noted, the writer thinks, show pretty conclusively that hallux valgus is not an exostosis of the metatarsal head of its articulating phalanx. If it is not this then it is merely a lateral deviation of the great toe at the outset, accompanied by stretching of the inner capsular attachments and later on by structural alterations of the articulating surfaces no longer in use, dependent upon lack of function. If these premises are correct as to etiology, and anatomico-pathological changes are as they have been stated and their cause is properly interpreted, their treatment should divide itself into two phases: First, where the deformity can be manually overcome, an attempt should be made to correct it by mechanical means, employing night splints to adduct the toe and a toe post in the shoe for day use. Manual stretching and proper shoes are also needed. The second phase requires operative treatment. If these is no exostosis then none of the operations contemplating the shaving off of a lateral sliver of bone from the metatarsal and phalanx are logical surgical procedures. The presence of an intermetatarseum is so rare that its removal as a cause of hallux valgus is to be remembered only as an occasional necessity. The operation that makes the strongest bid for first place is the old Hüter operation. The removal of the head of the metatarsal and preservation of the phalanx satisfies the demands of the probable anatomical cause, the fact that the metatarsal may be too long. This operation shortens it and permits conformity to the ready-made last. It equalizes pressure in the metatarso-phalangeal joints by squaring up the unopposed articulating surfaces. This procedure when accompanied by resection of the bursa, when enlarged, meets all the anatomical and pathological conditions presented by the situation and has only one objection raised against it, viz., that the chief buttress of the anterior arch is weakened by the operation; occasionally this may be true, though in the majority of instances the functional results obtained after this operation are excellent. After about four weeks' convalescence a patient with the Hüter operation can generally walk with a fair degree of comfort and will be permanently relieved. The disturbance of the support of the anterior arch by a bone-operation upon the first metatarsal head, which has constituted the one serious objection to Hüter's method and has led to the suggestion of some other procedures, may be obviated by the employment of a post-operative splint. There is probably no surgical procedure practised which brings more comfort than that which relieves one who has suffered for long years from the discomforts of hallux valgus.

3. The Choice of a Climate in Cases of Bright's Disease.—Guy Hindsdale, after pointing out that in a general way the impression seems to be that damp and cold climates are unfavorable and dry climates are beneficial for Bright's disease or nephritis. While this is probably true, he goes on to describe the results of data on the subject collected by him during the past ten years, so that it may be definitely shown just what localities might be advised and why they are beneficial. A chart is shown, by the courtesy of the University of Chicago *Press*, which illustrates the relative humidity by months in fifteen cities of the United States, arranged by Professors Cox and Armington. Hindsdale also shows tables demonstrating the deaths from nephritis and acute Bright's disease in the principal cities of the country and the death rate from nephritis and Bright's disease in States. He concludes as follows: Bright's disease and nephritis are diseases clearly amenable to climatic treatment. Apparently the first requisite is that the air and soil shall be warm, sunny, reasonably dry and free from malaria and disagreeable atmospheric changes. It is a disease attended by extensive degenerative changes in the renal and circulatory organs, and hence it is highly necessary to insure an abundant and undisturbed action of the skin. The locality should be conducive to an out-of-door life the year round. This is the well-known advantage of the climate of Southern California, where the little rain that falls never does any one any harm. Our best course is to advise a warm climate first—one having moderate elevation and only a moderate rainfall, with small diurnal variations in temperature, the humidity being, perhaps, secondary in importance to temperature and wind. The fact that other localities in the extreme Northwest, such as the States of Washington and Montana, as well as Colorado, Minnesota, Wisconsin, Michigan and Utah, have such diverse climates, and, nevertheless, fall on the favored group, should not determine their choice as health resorts for renal cases, but would indicate some advantage in the character of the population and that the sum total of the elements of climate in these localities is conductive to a hardy race.

New York Medical Journal.

May 6, 1916.

1. The Treatment of Cardiac Syphilis. James M. Anders.
2. A Seven Glass Urinary Test. Victor Cox Pedersen.
3. Can Errors in Diagnosis and Indication be Minimized by a Cooperative Method? Carl Beck.
4. Pulsating Exophthalmos. F. Krause.
5. The Technic of the Secondary Nephrectomy. Edouard Gauraz.
6. Compensation and Insurance in Eye Injuries. Charles B. Meding.
7. Reflex Vesical Irritation. I. N. Upshur.
8. Diathermia in Tuberculosis. Albert C. Geyser.
9. Pains in the Head. Alfred D. Mittendorf.
10. Pains in the Head. John L. Courrier.

1. The Treatment of Cardiac Syphilis. — James M. Anders points out that the fact has long been recognized that a more systematic treatment of syphilis would lessen the incidence of cardiovascular affections. Numerous investigators have demonstrated that syphilis is responsible for a large proportion of heart affections, and perhaps one of the principal reasons why treatment should be carried out at the earliest possible period after infection lies in the hazard and danger from the administration of salvarsan in cases in which severe forms of cardiovascular syphilis develop subsequently. A sane view of the prophylaxis of cardiac involvement in syphilis demands inclusion of the treatment of its secondary manifestations. In the writer's opinion, when aortic insufficiency, myocarditis, a certain group of cases of angina pectoris, aortic aneurisms arise in the acute and secondary stages of syphilis, they are most successfully treated by the alternate use of mercury and salvarsan. The iodides should not be employed in these stages, but are valuable adjuncts quite late in the disease, or after the active syphilitic process has been checked. The most successful method is by the vigorous administration, intramuscularly, of

mercuric salicylate pushed to the limit of tolerance to be followed by salvarsan, which is also to be given intramuscularly. After the lapse of a few days the mercury must be resumed, and respecting cases that do not manifest the most active symptoms he is in agreement with Brooke and Carroll in stating that the protiodide administered per os may at times prove entirely satisfactory in its effects. The Wassermann test should invariably be made, and the only criterion of sufficiency of specific treatment is a negative Wassermann reaction. As for treatment in the tertiary stage, the majority of cases of cardiac syphilis which the writer has treated either in hospital or private practice, have been late cases, typical instances for the most part of aortic regurgitation in decompensation, and equally typical ones of myocardial degeneration independent of aortic incompetence. Assuming the Wasserman reaction to be present, how shall the syphilitic element be attacked in these late cases? There are two small classes of cases in which the use of salvarsan is, in the mind of the writer, quite justifiable. (1) In myocarditis and aortic insufficiency in which the actual condition of the myocardium is indeterminable, but obviously not degenerated to a marked extent; and (2) cases occurring in patients who urgently demand that something be done to afford relief from their sufferings. In well marked cases of syphilitic myocarditis and in aortic incompetency due to the same cause, it is his custom to give mercury a prolonged trial by inunction, and the failing by the hypodermic method. If this does not yield a favorable result, *i.e.* a negative Wassermann reaction, then salvarsan is used intramuscularly, at first, however, in small doses. In this group of cases the injections of salvarsan are to be followed by a period of absolute physical rest. Unless a negative Wassermann reaction occurs when salvarsan is administered in the manner stated above, a follow-up course of mercury should be accorded a fair trial, and it may now give a permanent result. The iodides are indicated in the treatment of cardiac syphilis after the active process has been checked or has ceased, in order to effect absorption and replacement of tissue, and it is advisable to outline them so long as progressive improvement is manifest. As a result of personal experience the writer has become thoroughly convinced that the majority of late cases of tertiary cardiac syphilis do not carry a favorable prognosis as to cure, but some degree of amelioration of the symptoms, and prolongation of life in comparative comfort may be expected in the majority of cases.

6. **Compensation and Insurance in Eye Injuries.**—Charles B. Meding draws attention to the fact that commonly all injured persons are first seen and attended by general physicians, and he knows of no branch of medicine in which they are less fitted to serve. If this is true of that service, it is doubly so of their statements as to effects of injury. Yet since they have attended, their statement is received and considered together with that of all others mentioned by patient. In several cases final results were only apparent after compensation had been awarded. In the matter of insurance so far as it covers the expense of medical treatment we are personally interested. There are two sides to the question, and experience makes the writer alive to the company's side as well as his own. There is no doubt a tendency or temptation to overcharge a corporation. We should remember that the majority of these patients are clinical cases. Of themselves they could not afford private treatment. Now that they are insured our clinics are entitled to the money awarded, but should the charge, therefore, be our best private-practice fee or greater? We should agree on definite fees for definite operations. As to the moneys received, the writer believes there should be a diversion between the institution and the surgeon who treats the case. The bills should be sent and collected by the institution and the division should be proportionate with values of work and board.

7. **Reflex Vesical Irritation.**—J. N. Upshur, in discussing this subject, emphasizes the point that any lesion of the cervix, because of its richer nervous endowment, is more apt to be the cause of reflex vesical irritation than are lesions of the cavity on body of the uterus. There is another class of cases which is emotional; the subjects are women who are run down, or schoolgirls in whom the nervous system has been overtaxed by close application and they have become chlorotic and hysterical; or women suffering from neurasthenia, the result of abuse of the sexual relation. Change of air and scene and active ferruginous tonics are the remedies indicated in such cases. Finally, much might have been said of treatment which has been left unsaid. But the whole field is covered by the exhortation to endeavor painstakingly to locate and remove the cause. Get firmly fixed in your mind that in all obstinate and intractable cases there is an appreciable cause somewhere. There may be no lesion of the bladder, but there is the condition, near or remote, responsible, a reflex from some pelvic disorder or gastric derangement modifying the composition of the urine.

Journal of the American Medical Association.

May 6, 1916.

1. Syphilis and Life Insurance with Special Reference to the Wassermann and Luetin Reactions. John A. Kolmer.
2. Endocrinopathic Inheritance. Walter Timm.
3. Industrial Aniline Poisoning in the United States. Rey Vincent Luce and Alice Hamilton.
4. An Outbreak of Typhoid Attributed to Infected Oysters. Paul B. Brooks.
5. Vitamin Solution of the Pellagra Protein. A Preliminary Note. Edward Jenner Wood.
6. Further Observations on the Schick Test for Diphtheria Immunity. George H. Weaver.
7. Pylephlebitis Following Appendicitis, with Report of a Case. H. H. Lissner.
8. Dusty Occupations. Valentine C. Baker.
9. Stasis of Vesical Urine in Relation to Urinary Tract Infections. Arthur H. Curtis.
10. Anatomic Lesions in Late Acquired Syphilis: A Study of 314 Cases Based on the Analysis of 4,880 Necropsies of Bellevue Hospital. Douglas Symmers.
11. The Practical Appreciation of Emotional Glucosuria. Frederick S. Hammett.

2. **Endocrinopathic Inheritance.**—Walter Timm discusses some cases of transmitted abnormalities on characteristics which he deems to be due to disturbed function of the endocrine glands, and goes on to say that it may be interetsing to attempt an explanation of this transmission based on the Mendelian laws of heredity. Of course a great deal must be assumed in such an attempt which cannot be submitted to proof. Such an attempt must also necessarily deal with the simplest factors to which we can possibly reduce, if such reduction is at all possible, the complicated interrelations of the internal glandular system. Such a reduction, the writer believes, might be best expressed in terms of two factors, both of which are end results of disharmony among the endocrine glands. One of these factors relates to the normal control of growth and the other to the normal control of metabolism in the organism. An absence of such a normal coefficient of growth we may assume to result in various structural abnormalities of the individual, on the side either of overgrowth or undergrowth, or even vicious growth. Absence of a normal metabolic factor might be said to result in disarrangements of the secretions and excretions producing underweight or overweight, and increased or diminished oxidation of the tissues, with the incidental hyperglycemia or hypoglycemia. It is admittedly difficult to demarcate sharply the field where growth and metabolism merge into one another, and for our present insufficient and fragment-

ary knowledge only the gross clinical evidences of either type are possible of recognition. The writer then analyzes by means of Mendel's laws of heredity certain cases which presented abnormalities probably due to disturbed function of the endocrine glands. He concludes that this growth-controlling factor is subject to various modifiers and coefficients, producing in one individual, through absence, a giant stature, in another dwarf stature, and in a third absolute lapses in bony continuity, may be reasonably assumed. The actual unit character of growth in Mendel's giant peas was not really, as he first assumed, growth in height, but internodal growth. It simply happened that excessive internodal growth corresponded to increased tallness in his plants. Increased internodal growth might just as well have produced tortuous stems of no greater height than the dwarf peas. Therefore we have a reason for the nonconformity of transmission of gigantism to Mendelian laws as heretofore investigated, gigantism being simply only one form of abnormal growth and not the unit character in itself. The importance of investigating such inheritance is that it may enable us to forecast, within some limits of probability, the characteristics of the offspring of certain marriages and to advise the prospective parents of such probability. It forces on us the necessity of closer study and investigation into the nature and treatment of endocrine disturbances. An interesting observation also in the series cited by the writer was that all the abnormal-growth zygotes were male while all the abnormal-metabolic ones were female. It would seem that abnormal growth is dominant in the male and recessive in the female, while abnormal metabolism may be dominant in the female and recessive in the male. But the observations were far too few to warrant such general conclusions, and many more families and individuals will have to be studied to obtain sufficient data.

3. **Industrial Anilin Poisoning in the United States.**—Rey Vincent Luce and Alice Hamilton deal with the question of anilin poisoning in the United States at considerable length and draw the following conclusions: Commercial anilin, a well-known industrial poison in Germany and in Great Britain. It is just beginning to be known in the United States, where it has already been the cause of numerous cases of poisoning among men engaged in the manufacture of rubber goods, in reclaiming rubber from scrap, in making anilin from benzine, and in using certain washes for press rollers. It is a blood poison, causing the formation of methemoglobin with the consequent "internal suffocation." Poisoning may take place through the skin or lungs. Usually in industrial cases both portals of entry play a part. Exposure to the fumes need not be excessive or long continued to bring about serious symptoms in the susceptible. Young men are more susceptible than the old or middle aged, blonds than dark-haired men, heavy drinkers than the temperate. Hot, humid weather, heated rooms and poor ventilation are important factors in the production of acute anilin poisoning. Early recognition of anilin poisoning is of prime importance so that the sufferer may be withdrawn from the danger of further exposure to the poison. Men working in anilin constantly seem to acquire a certain amount of tolerance to it; nevertheless if the exposure is increased beyond the point of tolerance there is apparently a cumulative effect, and symptoms of chronic poisoning result. After symptoms of poisoning have once manifested themselves the patient is usually hypersensitive to the fumes. The treatment consists in fresh air, oxygen, and heart stimulants, especially camphorated oil. Prevention of subsequent exposure is imperative.

5. **Vitamin Solution of the Pellagra Problem.**—Edward Jenner Wood states that there is no doubt in the minds of a large number of the students of pellagra that the deficiency theory of Dr. Joseph Goldberger is correct. The writer bases his report on the correctness of this theory. He points out that up to recent years, in the South especially, corn was simply crushed between two stones and the power was that of the stream near-by. The only thing removed was the coarse particles of outer skin or husk. This method of milling has been largely replaced by steam or electric milling. By this process the corn is subjected to heat in order to loosen the outer coarse husk. The attention of the writer and coworkers is directed to this portion of the industry to determine how much heat is employed. In the modern mill in which these observations were made the heat is a negligible quantity, but it must be remembered that 120° C. is sufficient to destroy any vitamine that may be contained. This part of the work, therefore, cannot be too strongly emphasized. After the heating process the grain is passed into a "degerminator," which removes the germ. This is done because the germ contains such a large amount of fat that rancidity would soon occur if it were left in the meal. Besides this the germ would give to the meal a yellow color which by modern standards is counted undesirable. The offal, which contains the germ, husks, and bran, some flour and flinty portions of the grain, constitutes about 30 per cent. of the entire weight of the grain. It is known as "corn chops" and is fed to the cattle. The remaining endosperm, after the removal of the offal, is finely ground, and the product is known as granulated cornmeal. The writer refers to it as milled meal. These observations lead him to believe that it is probably not only that pellagra is a deficiency disease but also that the deficiency can be definitely placed to the modern method of corn milling. It would appear, therefore, that the eating of the whole grain in corn countries will stop the ravages of pellagra. Deterioration of corn is productive of pellagra because the germ is the portion of the grain most subject to the action of molds and animal parasites.

The Lancet.

April 15, 1916.

1. The Lumleian Lecture (Abstract of) on Acute Poliomyelitis. Frederick E. Batten.
2. A Note on the Importance of Auscultation in the Diagnosis of the Vascular Injuries Accompanying Gunshot-Wounds. George Makins.
3. Shock and the Soldier. G. Elliott Smith.
4. A Standard Method of Testing Antiseptics for Wounds with Some Results. W. D'Este Emery.
5. The Treatment of Hemorrhoids by Injection. F. Swinford Edwards.
6. Methods of Preparing Sphagnum Moss as a Surgical Dressing.
7. A Note on Precipitin Reaction in Tuberculous Fluids. S. Rodhouse Gloyne.

1. **Acute Poliomyelitis.**—Frederick E. Batten points out that acute poliomyelitis has during the past decade spread in epidemic form over the face of the globe, and considerable advances have been made in our knowledge of the disease. During the year 1913 an epidemic of poliomyelitis occurred in Barrow-in-Furness which was investigated by Dr. H. A. MacEwen, who noted that it was restricted to young children. It is known that Barrow-in-Furness suffered from a severe epidemic of poliomyelitis investigated by Dr. R. P. Garrow in 1910. So the disease when it occurred again in 1913 fell upon a locality in which the susceptibles had been picked out by the former epidemic, and the population, except for those who had come into existence since 1910, had a natural or acquired immunity. It would seem that the susceptible material of a population is fairly soon exhausted. The clinical features of poliomyelitis may be most varied, according to the part or parts of the nervous system affected. The grouping on an anatomical basis suggested by Wickman is that which is most help-

ful to the clinical description of the disease. The groups are as follows: (1) The spinal form. (2) The bulbar, pontine, and mid-brain form. (3) The cerebral form. (4) The cerebellar form. (5) The neuritic form. (6) The meningitic form. (7) The abortive form. The meningitic form is one of the most interesting groups of poliomyelitis, and one which frequently leads to an error in diagnosis. The meningitis is indicated by the presence of lymphocytic cells in the cerebrospinal fluid. Some of these cases show on pathological examination characteristic poliomyelitic changes in the brain. Second attacks of poliomyelitis are very rare. The literature contains some three or more instances of such, but none of them are very convincing nor will they bear critical investigation. The diagnostic value of the examination of the cerebrospinal fluid was discussed. A high lymphocytic count is present in the cerebrospinal fluid, in infection by tubercle, syphilis, mumps, measles, infective conditions of the sinuses, and ear diseases, and also in a group of cases with acute meningeal symptoms described and investigated by Gordon. Monkeys inoculated with an emulsion from the spinal cord and from the parotid glands from these cases were unaffected, the presumption being that the cases were not cases of poliomyelitis. Recognizing that poliomyelitis is an acute specific fever having an incubation period of four to twelve days, the patient should be isolated. As the virus is known to exist in the nasal and buccal mucous membrane it is essential to pay careful attention to the discharge therefrom. There is no doubt that rest is the most important factor in treatment; the too early movement may in some cases restart the disease which has become quiescent. The principles by which physiological rest can be secured to the muscles were considered, and the conclusion arrived at was that the paralyzed muscles must be put in the "zero position," a position defined by Mackenzie as the position in which the individual muscle itself is relaxed and both its own action and that of its opponents prevented. Various methods have been adopted for keeping the affected muscles at rest. Most of them tend to immobilize the patients for many months. It is important while keeping the completely paralyzed muscles in a normal zero position and at rest to encourage other muscles, which may have been more or less affected, to resume their normal function. This is accomplished by re-education. The erect position and walking are the best forms of re-education for the trunk muscles. In re-educating a severely paralyzed muscle it is important in the early stages to place the limb in such a position that the load on the muscle is at its minimum and only a very small force is required to overcome the effects of gravity. A bath is an excellent place to practise the re-education of badly paralyzed muscles, for the weight of the limb is supported and ranges of movement are possible which without the support of the water are impossible. Walking exercises and the erect position are the best forms for the re-education of the trunk and abdominal muscles. When once the legs are splinted it is possible to get the patient into the erect position; and such allows of the phyiological use of the back trunk and pelvic muscles. Such walking exercises are carried out by the use of a walking machine which supports the patient both physically and morally, for it is important to give the patient the feeling of complete security. The adoption of the practice of placing the limb in a position of rest at an early stage of the disease will not only facilitate recovery but prevent the greater proportion of deformities now seen as the result of poliomyelitis.

2. Auscultation in the Diagnosis of the Vascular Injuries Accompanying Gunshot Wounds.—George Makins lays stress on the routine employment of the stethoscope for the detection of traumatic openings in the walls of the blood vessels. Observation of the point at which the bruit is loudest and highest pitched will serve to localize the exact position of the lesion. The examination of a large service of arterial wounds has shown that in a very considerable proportion of the cases the local murmur, whether systolic if purely arterial in origin, or of the "machinery type" in arteriovenous lesions, is conducted to the heart. Such bruits, although temporary, may persist for several weeks. The method of conduction would seem to vary according to the position of the vascular injury and the distance of the local lesion from the heart. When the murmur is conducted upward from the lower extremity it appears to be conveyed by the column of blood in the vessels. In the arteriovenous injuries this is not surprising, because the roar of the continuous murmur is always transmitted the more widely in a central direction. When, however, the bruit is due to a purely arterial lesion the circumstance is less likely to have been suspected, because in the majority of instances the pure systolic bruit is more freely transmitted along the limb in the peripheral direction. In spite of this fact, however, a systolic bruit, even though not of a very loud character, may often be readily audible at the cardiac apex. The pure systolic murmurs are heard at the apex alone, but in one case of arteriovenous aneurysm of the thigh the double murmur was conveyed also to the base of the heart. The writer has dwelt upon the question of the cardiac bruits not because the presence of a conducted murmur can be of general use in diagnosis, in view of the fact that such an occurrence is not a necessary accompaniment of an arterial lesion. Still, the detection of an apical systolic murmur in a young, healthy subject with an injury to the thigh might draw attention to the fact that a grave arterial lesion was present in the limb, and lead to its detection when the absence of local pulsation, together with the presence of free pulsation of the peripheral vessels had led to the question of a serious vascular injury being placed aside.

5. The Treatment of Hemorrhoids by Injection.—F. Swinford Edwards brought the subject before the profession in a paper published in the *Lancet* in the year 1888. He was led to try injection in the treatment of hemorrhoids as a substitute for operation by reports from certain American surgeons, among whom was Van Buren, professor of surgery in the Bellevue Hospital. Edwards's method is as follows. The piles having been protruded, possibly with the aid of an enema, the patient is placed in the knee-elbow position with the buttocks opposite a good light. The parts are then sponged over with an antiseptic, as lysol and water, and an injection of 20 per cent of carbolic acid in equal parts of glycerin and water made through a sterilized needle. From 3 to 6 minims of the solution is injected into the center of each pile in turn. In large piles he often injects 5 minims in two places. The piles are then smeared with vaseline or sulphate of iron ointment and returned as soon as possible, for the injection always causes the hemorrhoids to swell; therefore the longer they remain outside the more difficult are they to return. He advises no action of the bowels for forty-eight hours, and should prolapse occur in the meantime immediate replacement is essential. The great advantages of the injection treatment are: (1) No confinement in bed excepting for a few hours when possible; (2) no anesthetic and therefore no post-anesthetic vomiting; (3) no pain; (4) no enforced absence from business; (5) no risk from the little operation itself, and no risk of stricture or incontinence following, and (6) finally there is an immediate and steadily increasing betterment.

British Medical Journal.

April 15, 1916.

1. On "Colds" and the Influence of the Atmosphere on the Nasal Mucous Membrane. Leonard Hill.
2. "The Soldier's Heart" and the Relation to Thyroidism. James Barr.
3. Chemical Notes on Penetrating Wounds of the Abdomen. H. H. Sampson.
4. Two Cases of Removal of Bullet from the Upper Surface of the Diaphragm. E. D. Telford.
5. Time in Surgery. R. P. Rowlands.
6. A Preliminary Note on the Nature and Treatment of Concussion. T. E. Harwood.
7. Three Cases of Paroxysmal Hemoglobinuria in Soldiers. Desmond MacManus.
8. Heart-block in Jaundice. R. D. Rudolf.

1. On "Colds" and the Influence of the Atmosphere on the Nasal Mucous Membrane.—Leonard Hill states that "colds" are most common when the humidity of the atmosphere is great and the temperature variable but on the whole cool; when raw winds with thawing snow, or strong winds blow charged with cold rain, and the ground is wet and cold. Acute rhinitis or coryza, the common cold, may be caused by bacterial infection—by dust, for example, cycling in the dust of motor cars; by a chemical irritant, for example sulphuric acid from furnaces; the poison cloud of chlorine suffocates by causing the outflow of fluid in the air passages; by the pollen of certain grasses. There is also a class of people who suffer from a nervous derangement of the nasal membrane, from vasomotor rhinitis or paroxysmal rhinorrhea, as it is called. The nasal reflexes of such people are unduly excitable. Sudden changes of atmosphere, a draught, may provoke in these an acute paroxysm. Open fires and properly flued modern gas fires give us radiant heat and a warm floor within the range of this heat. We can toast the feet at these, and much of the hot air goes up the chimney. The so-called radiators, gas or steam, and artificial lights, together with the heat and moisture from the bodies of people, make warm and humid the upper strata of rooms and afford the conditions bad for the nose. Suppose the nasal membrane has become swollen, congested, and covered with thick secretion in these bad conditions and the subjects go outside again into the cold air; then the membrane at once becomes pale, owing to the vasoconstriction ; but for some little time it remains swollen and boggy, pitting on the touch of the probe. The writer believes that these conditions of the nasal membrane have a great deal to do with the "catching of colds." In crowded rooms infection takes place from mucous spray, sneezed, coughed, or sputtered out in speaking. The inhaled bacteria will be caught by the swollen mucous membrane covered with thick secretion. In cold, outside air not only is the membrane kept taut but the flow of blood through it is rapid, for the inhaled air has to be warmed up and moisture rapidly evaporated from the membrane so as to saturate this air at body temperature. Thus more lymph comes out into the membrane from the blood vessels, and this contains the immunizing substances. The offensive bacteria are washed away or destroyed and thus kept out. On the other hand, in the condition where the membrane is covered with thick secretion, congested and boggy, there is a medium more suitable for the bacteria to settle and grow upon, for it is boggy and stagnant, not flooded with fresh lymph, particularly when vasoconstriction takes place on passing from an over-hot, moist atmosphere into the wintry outside air. The washing away of bacteria by the outflow of secretion must be one of the most important methods of defence. In the alimentary canal poisonous concentrations of substances, for example sugar, are diluted and kept away from the living membrane by the secretion of mucus. In the respiratory tract fluid is poured out to dilute and wash away a chemical irritant, such as chlorine. Now the rate of evaporation from the nasal membrane must be of first importance in promoting the outflow of lymph through it and the factors which determine this are worth considering. The writer enters into explanation of the manner in which these factors act, and concludes that when out of doors a man has much more arterial blood flow through his nasal membrane than when indoors in heated atmospheres. He further suggests that now the open-air treatment of wounds is extolled, the surgeon's attention may perhaps be directed to the problems of evaporation from temperature of and blood flow through wounds, in so far as these may be influenced not only by dressing but by the relative dryness, temperature, and movement of the atmosphere

6. A Preliminary Note on the Nature and Treatment of Concussion.—T. E. Harwood notes the fact that in the treatment of neurasthenic conditions arising in the course of the war one point has attracted little attention. Almost every patient will be found to have more or less difficulty with reading. This is usually taken for granted and passed over as a mere incident. In reality it gives a clue to the most efficient treatment of such cases from whatever cause arising. The living body may be compared to an electrical system, which may break down owing to faults either in the circuit or in the battery. Neurasthenia is compared by the writer to a lowered efficiency of the battery of the system, and two lines of treatment are advocated—the one to increase the efficiency of the battery, say by suggestion; the other to give the battery less to do, say by putting the patient to bed. It is absurd, thinks the writer, to ascribe neurasthenic conditions to errors of refraction, but refractive errors are basic errors, and their accurate correction breaks a vicious circle. The earlier the refraction is corrected the easier it is to do, the more likely the correction is to be effectual, and the more willing the patient is to wear the glasses. The nature of the error does not matter in the least, everything depends upon the accuracy of the correction. The object to be aimed at is to leave a minimum, and as far as possible equal, amount of error for each eye to correct. An over-correction does no good and may do a great deal of harm. If the astigmatism is not fully corrected the probable result will be the conversion of, say, a compound hypermetropic astigmatism into an artificial compound myopia or mixed astigmatism. It is useless to attempt the work without an unlimited supply of patience. With simple astigmatism the results are almost certain. Mixed or compound cases are much more difficult. Whether the patient is complaining of his eyes or not makes no difference. Giddiness is far more diagnostic of ciliary paresis than is headache. It is no great compliment to Weir Mitchell to adopt his system of rest cure, which with suggestion, is the usual line of treatment in these cases, and to ignore his pioneer work on the paramount importance of eyestrain.

8. Heart Block in Jaundice.—R. D. Rudolf describes a case of heart block in jaundice, the first seen by him. He agrees with Dr. J. Davenport Windle, who described a case of jaundice in the *British Medical Journal*, January 22, 1916, and does not accept the commonly made statement that the heart tends to beat slow in jaundice. The writer has noticed this for years in civil hospital practice, and since coming to France, where many cases of jaundice are seen, the point has been brought home to him more than ever. But Dr. Windle goes on to say that in his knowledge heart block has never been demonstrated, and for this reason the writer records this case. It was a case of partial heart block, and, strange to say, was at once relieved completely, and as far as the observations of the medical attendants went, permanently, by a single does of atropine. The case was, of course,

not one of simple catarrhal jaundice, but was probably one of organic disease of the liver. The writer had no evidence that the heart block did not exist before the jaundice, except that the patient assured us that he was very fit and quite up to all his work as an officer at the front. The fact that the block was partially relieved by gentle exercise and completely and as far as we were able to watch the case, permanently, by a single does of atropine would all point to the probability of the delay in transmission of stimuli through the auriculo-ventricular bundle, being due rather to vagal origin than to any organic disease there. The patient had not been taking digitalis for days before the tracings were taken.

Berliner klinische Wochenschrift.

April 17, 1916.

Results of Protective Inoculation Against Tetanus.—Kümmell, speaking from nineteen months of experience with war tetanus, states that early in the war surgeons were optimistic in regard to preventing infection. Wounds healed kindly under conservative procedures. Very soon, however, it became only too apparent that active measures must replace passive ones, at least as far as injuries of the skull and extremities were concerned, because of the sudden cumulation of lockjaw, and gas gangrene and gas phlegmon. We are concerned here with the first named, the mortality of which, originally 100 per cent, fell after a time slowly to 50 per cent. All therapy instituted after the development of the disease was valueless and preventive inoculation became the sole reliance, as practised in all suspicious wounds. Kümmell's figures in this field are epoch making. In one base hospital 483 wounded were inoculated and but one developed (fatal) tetanus. In another the number of inoculated was 372 with no case of tetanus. A colleague, Gasch, reports no case of tetanus in 700 inoculated wounded. Adding these figures, we obtain 1555 cases with but one of tetanus. Otherwise stated, there was practically no tetanus in a certain body of troops wounded chiefly with cannon projectiles (shells and shrapnel). Severe wounds with ordinary bullets were included in the material. The ideal is, of course, that all wounded be inoculated. Strict immunization has now been practised from ten to eleven months, and the question arises "How much tetanus would have developed had immunization not been performed?" Queries directed to colleagues who did not practice immunization show in a relatively small material a large proportion of cases. Included are certain cases in which immunization may or may not have been practised and a few in which it did not prevent the disease. In inoculated cases much must depend on the time, dosage, etc.; also on degree of local disinfection. The material controlled by the author shows a remarkable correspondence with American figures for Fourth of July tetanus (in 1914 over 1500 immunized cases with three cases of tetanus, all fatal). All recent cases of tetanus developing despite preventive inoculation are being controlled as far as possible in regard to time, dose and make of antitoxin. Thus far the death rate of such cases is heavy, and stands in direct relation to the internal between wound and inoculation. Protection may be so brief that a second immunizing injection should perhaps be made in case absorption of the germs may have been delayed or favored by wound conditions. Delayed interventions, say a week or more after injury, even if slight, require a new injection. Everything points to the truth of the claim that war tetanus is practically preventable.

Causal Relationship between Angina and Articular Rheumatism.—Brodski states that this sequence, long known, has of late received much corroboration. Of 1200 cases treated in a marine hospital during seventeen months one half (610) had tonsillitis and exactly 10 per cent of these patients developed rheumatism either at the same time or one, two or more days later; sometimes as a true sequel after the tonsils had recovered. The author saw few cardiac complications in his material. Of considerable interest because noted by others was tenesmus and dysuria with the passage of much uratic sediment in the elderly, and enuresis in the young marines. The connection of these phenomena with tonsillitis was in part speculative. A number of cases of anginal nephritis are mentioned, but this association is more commonly seen in hot climates. In the author's material exposure to cold and wet seemed to be one of the chief efficient causes, and this could perhaps have set up the rheumatism and nephritis without the mediation of an angina. Of great importance for selection is the state of the tonsils in young recruits. The examination should be thorough, not merely visual, and any surgical condition should be relieved before the men are recommended. As far as possible the tonsillar mucosa should be spared as representing a bacteria-proof filter.

Treatment of Epidemic Meningitis with Ethylhydrocuprein.—Friedemann refers to the considerable rôle of cerebrospinal meningitis in war morbidity, and its high mortality, even under serum treatment. A chemotherapeutic remedy must still be the ideal, for various reasons, in a bacterial disease; hence the striving for substances of bacteriotropic character which shall be readily available for wholesale use, and despite apparent failure with methylene blue, urotropin and the like we must test new remedies in the hope of finding substances of salvarsan efficiency. Ethylhydrocuprein can prevail over the pneumococcus infection in mice and the author because of its ready applicability through the cerebrospinal fluid elected to test it in meningitis, with the added reason that *in vitro* this substance is decidedly antiseptic to the meningococcus. The remedy was exhibited in eight cases of severe, apparently malignant meningitis. Every patient recovered, a result which might possibly have come about of itself in so small a number of cases, but the chance that all of the cases were of the benign type is infinitesimal. Some months before the author had treated a series of sixteen cases of the same disease with serum and had lost eight of them. The remedy was usually injected once into the cord, while also pushed internally; but two, three and even five injections respectively were used in some cases.

The Diphtheria Toxin Skin Reaction.—Henry Koplik and Lester J. Unger comment on the advantages gained by a prompt recognition of individual susceptibility or immunity to diphtheria and present a method of applying the test which they claim is simpler than that recently devised by Park and Zingher and less likely to be attended by an anaphylactic pseudo-reaction. The technique of their method is as follows: After an area of skin on the forearm has been cleansed with alcohol, the latter is encircled by the thumb and index finger, and the skin held tense between them. The needle is dipped into the bottle of pure undiluted diphtheria toxin and then immediately inserted *intradermally*. The needle is an ordinary hypodermic bent at a distance of one-quarter inch from its point so as to make an angle of about 170°. From the place of bending to the distal end it is shielded so that only the unshielded one-quarter inch can be inserted into the skin. In all the cases tested by the original Schick technique and by this technique the results have coincided precisely. — *Journal of the American Medical Association.*

Society Reports.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

Tenth Triennial Session, Held in Washington, May 9 and 10, 1916.

(Special Report to the MEDICAL RECORD.)

First Day—Tuesday, May 9.

PRESIDENT, DR. WILLIAM S. THAYER OF BALTIMORE.

Diagnosis and General Treatment of Syphilis. — Dr. JOHN A. FORDYCE of New York presented this communication. He said that the future of the syphilitic individual depended upon the early diagnosis of his infection and the intensity with which treatment was carried out in the first six months. In the accomplishment of this purpose the modern aids to diagnosis had rendered great service. The dark field illumination furnished a valuable corroboration of all suspicious genital sores and assisted in determining the nature of extragenital lesions which might simulate chancre. It should be employed in every case of chancroid to confirm or rule out the possible coincident infection with the *Treponema pallidum*. The Wassermann test filled a large field of usefulness not only as a diagnostic medium, but as a guide as to the effect of treatment and a criterion of cure. It was of special value in all conditions of obscure etiology referable to the cardiovascular system, cerebrospinal system, or viscera in which syphilis might be a factor, and in cases with an indefinite clinical picture, such as neurasthenia, febrile attacks, rheumatic pains, etc. Its interpretation was of great importance and required on the part of the practitioner as much training and experience as did the interpretation of the physical signs. The examination of the spinal fluid enabled one to determine the activity of the luetic process in the brain or cord, to distinguish the various pathological types affecting the central nervous system and in many cases to differentiate between these and non-syphilitic affections. Recent investigations had shown that an analysis of the spinal fluid was not complete unless the Lange gold test was performed in addition to the Wassermann reaction and the cytological and chemical examination. Its chief usefulness lay in distinguishing true paresis from types of cerebrospinal syphilis which simulated it, and in diagnosing incipient cases before the clinical syndrome was established. In primary syphilis where the spirochetes were demonstrated and the Wassermann reaction was negative it was possible to cure syphilis by salvarsan alone. It could not be determined beforehand how many doses would be required, and it was, therefore, better to err on the side of safety and to give at least eight or ten doses, and follow this with mercury for six months. In secondary syphilis where the early rash was present and the Wassermann positive it was better to precede the salvarsan with several injections of a mercurial salt, preferably a soluble one. After the salvarsan was begun the combined treatment was continued. Salvarsan might be recommended in courses of five to six, or six to eight, injections, in doses of 0.3 gm. to 0.5 gm. for men and 0.25 to 0.4 gm. for women, at intervals of one or two weeks, depending upon the tolerance of the patient. Two or three such courses were given with rest periods of six weeks. The mercurial injections were given every day if a soluble salt was used, or once a week if an insoluble one. Dr. Fordyce said his preference was for the bichloride of mercury in course of 20 to 30 injections given daily every other day. Of the insoluble preparations, gray oil in the form of mercurial cream, of which five minims represented one grain in series of 10 to 12 injections, or salicylate of mercury (40 per cent.) one to three grains gradually increased, 10 to 12 injections constituting a course. Each series was followed by a rest period of six weeks and then the procedure repeated. Wassermann tests were made periodically, but treatment was not interrupted in spite of a negative reaction until the adequate amount of medication had been given. The dermatologist and syphilologist should keep in mind the possibility of the involvement of the nervous system in secondary syphilis and a complete status should be made when the patient came under observation so that this record could be compared with a subsequent development. The most frequent early signs of changes in the nervous system were irregularity of the pupils, persistent headache, and optic neuritis or auditory disturbance. In latent syphilis with a positive Wassermann reaction an investigation should be made of the cardiovascular and of the nervous systems or of previous involvement of any of the viscera, as, for instance, syphilitic hepatitis. In cardiovascular syphilis the prolonged use of mercury in connection with potassium iodide was probably of more value than the haphazard use of occasional doses of salvarsan. This point was most important. In bone and periosteal lesions attended by severe pain there was no drug in the pharmacopœia that produced so rapid an effect in relieving the pain and reducing the neoplasm. The criteria of cure were a negative Wassermann reaction for at least a year, continuing so after a provocative injection of salvarsan, and a normal spinal fluid, with certain exceptions.

Treatment of Syphilis of the Central Nervous System. —Dr. HOMER F. SWIFT of New York presented this communication. He said that in order to discuss the treatment of syphilis of the central nervous system it was essential to orient oneself in the various problems that this disease presented. It was well known that the majority of patients in the secondary stage suffered from an infection of the central nervous system. As only a small proportion of these patients showed nervous involvement in later years, it was evident that in many cases the infection must undergo spontaneous resolution, which was due in part to treatment and in part to the tissue immunity which developed as a result of prolonged contact between the infectious agent and the host. If the patient received intensive treatment, but not sufficient to kill all the spirochetes, the development of this immunity might be inhibitive and the few remaining spirochetes develop with greater intensity. If this relapse occurred in the central nervous system we would have symptoms of a severe meningitis. Before starting treatment in any case it was well to try to recognize the character of the involvement, for subsequent therapy was determined by the type of manifestation. The present classification of syphilis of the central nervous system comprised (1) interstitial types, (2) parenchymatous types, and (3) endarteritis syphilitica. In both the interstitial and parenchymatous forms the common lesion was a perivascularitis which varied from a simple mantling of the vessels to a collection of cells in the form of a miliary gumma, or, when combined with a similar process in the meninges, to large gumma formation. In the interstitial forms the disturbance of function was due to either actual destruction of the nervous elements or to pressure from the exudate. In tabes it did not seem reasonable to consider that the degeneration followed an infiltration of the dorsal roots which was secondary to a low grade meningitis. In paresis, in addition to the perivascularitis and localized meningitis, they had seen degeneration of the brain due to the actual presence of spirochetes in the cortical substance as an element in the development of parenchymatous syphilis. The infiltration occurred more slowly, and the symptoms were less pronounced until they were well developed. In both tabes and cerebrospinal syphilis they were dealing with diseases of similar nature and the variation seemed to depend upon the difference in the rapidity of development as well as upon the localization of the inflammatory process. In paresis we appeared to be dealing with a disease not strictly comparable to the two just described. The difference in the type of curve, in the gold reaction, and the difference in response to treatment, were striking features. The best prevention of syphilis of the nervous system was prophylaxis of syphilis; next in importance was the proper treatment of syphilis in its early stages. No patient should be released from treatment until his cerebrospinal fluid had been normal in so far as pleocytosis and Wassermann reaction were concerned. At times there seemed to be a slight excess of globulin which could not be eradicated. It was important to emphasize the value of constant methods of making the various tests of the fluid. Of special value was the titration method of Hauptmann in testing the fluid with the Wassermann reaction. The problem of the treatment of syphilis of the central nervous system was complicated by the peculiarities of the subarachnoid space, which was directly continuous with the perivascular, perineural, and perineuronal spaces. Anti-bacterial immune bodies, vital stains, and most drugs were not excreted into the cerebrospinal fluid. Even drugs which acted on the central nervous system when given by mouth or subcutaneously acted in much weakened concentration when injected subdurally. In many cases general treatment affected the course of syphilis in the cerebrospinal axis favorably; this was especially marked in the early forms of the disease. The tendency of cerebrospinal

syphilis to relapse had been long known; even marked improvement in most cases of cerebrospinal syphilis was often not followed by a parallel improvement in the cerebrospinal fluid. The desirability of subarachnoid therapy was evident. After reviewing the various methods of subarachnoid therapy, the essayist said that the use of serum of patients, withdrawn after intravenous salvarsan injection, had been criticized chiefly because of the small amount of salvarsan it contained. By an analysis of a number of sera it had been shown that the amount of serum injected contained from 0.1 to 0.2 mg. This autosalvarsanized serum was definitely spirocheticidal, the salvarsan being present in a colloidal combination which was less easily dialyzed than was salvarsan. Moreover, some of the beneficial effects might be due to the introduction of the serum, for by the injection of serum alone seven out of eight cases showed a diminution in the strength of the Wassermann reaction in the spinal fluid; in three of them it became negative with 1 c.c. In all, twelve cases were treated; in six of them the Wassermann reaction became negative. This proved that there was distinct benefit from the intraspinal injections of serum. The writer said the explanations of these effects were probably theoretical, but so were the objections to the treatment. The injection of autosalvarsanized serum was followed by fewer permanent unpleasant effects than from the intraspinal injection of any other antisyphilitic remedy. In some patients the pain was so severe that the treatment had to be discontinued, but such instances were the exception. Most patients were willing to continue treatment. The treatments were better borne if not given oftener than once in two weeks. No form of treatment should be pushed if the patient became more and more depressed. In the general treatment of syphilis of the central nervous system, if the patient showed signs of involvement of the cerebral meninges, or brain salvarsan should be preceded by a short course of mercury to prevent the occurrence of a Herxheimer reaction in the region of vital centers. If one suspected the presence of gumma a vigorous course of iodide was of value. In the meningitis of the secondary period the response to alternate courses of mercury and iodide and of salvarsan were usually prompt and permanent. In the tertiary form of the disease, alternate course of mercury and iodide and of salvarsan were usually followed by decided improvement. The fluid should be examined before and after each course. If it became normal after a few months' treatment the prognosis was good. In tabes, because of the apparent sensitiveness to mercury, it was better to start the treatment with small doses of salvarsan intravenously, gradually increasing, and giving an injection once a week for six or eight doses. If at the end of this course the Wassermann reaction was weaker, then a course of mercury might be tried, followed by another course of salvarsan. If the reaction did not change appreciably intraspinal therapy was of value. Our aim should be to bring the fluid to normal and to keep it there. This could be done in the majority of cases; 75 per cent. of their cases had a negative reaction with 1 c.c. of fluid, one-half of them had a negative reaction with 2 c.c. Fourteen have remained negative with 2 c.c. Only four had shown slight relapses. Relapses in the fluid were usually accompanied by clinical relapses. In the presence of rapidly advancing tabes or of optic atrophy it was desirable to introduce intraspinal therapy in addition to general treatment from the beginning. Compared with the results in other forms of lues of the central nervous system, the treatment of paralytica dementia had been disappointing, although the number of remissions and the amount of improvement under salvarsan and serum intraspinally was many times greater than in the untreated cases. In the treatment of syphilis of the nervous system we should pay attention not only to the syphilis, but to other conditions which might be present.

Syphilis and Society.—Dr. HUGH CABOT of Boston read this paper, in which he said that since the other papers in the discussion had concerned themselves with what syphilis did for society it might perhaps not be improper to consider what society did or might do for syphilis. It must be admitted that syphilis was the most serious of the contagious diseases which had not yet been subjected to control. It might further be admitted that it was essentially a controllable disease, that in its early stage it was entirely curable, and that at all stages it was controllable as concerned its contagious nature, and that, finally, it seemed likely that if society should fail to control syphilis, syphilis was not likely to fail to control society. Upon this basis Dr. Cabot proceeded to consider what society had done in attempting to control syphilis and what society might properly be expected to do in the immediate future. In discussing the reporting to public health authorities as a measure of control, he pointed out the fact that eleven States had enacted laws or State Board Regulations looking to the reporting of cases of venereal disease in general and of syphilis in particular. Some cities also had such regulations. He distinguished between true and false reporting, stating that true reporting required that the case be notified to the health authorities by the name and address precisely as were the cases of other contagious diseases including tuberculosis. False reporting was reporting by number or by some *quasi* secret method and was evidently an attempt to deal with these conditions in a manner not thought applicable to other forms of contagious disease. On the question of the value of reporting there were three main types of opinion: The opinion of the public health officer, the opinion of the practising physician and the opinion of the enthusiastic layman (generally women). Broadly speaking, the opinion of the public health officer had generally been in favor of reporting, though they realized the difficulties which stood in its way and were prepared to temporize with half-way measures. Such measures could only be justified on the ground that they represented a step toward true reporting and were intended to get the public accustomed to the appearance of these diseases in the weekly or monthly reports and to later support the attempt to make these diseases truly reportable. To this it might properly be objected that reporting by number not only had no statistical value, but was positively misleading. The opinion of the practising physician and particularly of those physicians who dealt with syphilis on a large scale had been almost unanimously opposed to reporting. They reasoned that if physicians were required to report these cases by name they would in a short time, if they were honest, have no patients to report. This would have the exceedingly undesirable effect of throwing this disease into the care of the dishonest physician, the quack, and the charlatan, and far from acting as a method of controlling the disease it would not only make it less controllable, but more severe in its manifestations. Very generally lay opinion had supported suggestions to make this disease reportable, and much existing legislation had come either from this source or from the advocacy of public health officers with an amiable disregard of the gross improbability that such legislation would serve any useful purpose and the almost absolute certainty that it would only encumber the statute books with laws that were unenforceable and served no other purpose than to bring the law into well-merited contempt. Dr. Cabot concluded that reporting had been worthless as a method of assisting in the control of this particular variety of contagious disease. Any law that was to achieve success must be of practical benefit to the patient, a fact which must have been commonly overlooked by the advocates of reportability. Dr. Cabot then proceeded to discuss the status of legislation making syphilis a bar to marriage and showed that most of these laws as such were largely worthless. He cited the law of Wisconsin and pointed out that if the law meant what it said it would require of physicians an amount of time, knowledge, and scientific equipment entirely out of proportion to the fee required by the law. This difficulty the Attorney General was asked to untangle and he did so in an opinion rendered to the effect that if there were clinical and laboratory tests such as the Wassermann test, which required special study and special apparatus for this application and which only a very small percentage of the licensed physicians of scientific attainment could apply, he was convinced that the law did not intend to require and, therefore, did not require such tests. That legislation of this sort interpreted by such judicial opinion and backed by public health authority could exist in a civilized country to-day was the most discouraging feature of the attempt to control syphilis. In regard to the issuing of marriage certificates under any machinery now required by the law, in the opinion of the essayist, any benefit that might result was more than counterbalanced by the harm. It must be obvious to any observer familiar with the intricacies of the diagnosis of syphilis that it was extremely difficult to deny the presence of the disease at any given time, particularly if the antecedents and previous history of the patient were unknown. The probability of error became almost overwhelming if there was any lack of co-opera-

tion between the physician and the patient. It was of the first importance that existing medical opinion as to what constituted freedom from danger of infection for the purposes of marriage should be authoritatively stated. In view of the wide divergence of opinion on this subject this Congress could do an important service in formulating expert opinion in concrete form and he therefore suggested to the properly constructed authorities of this Congress that, if in their opinion it was advisable, a committee be appointed to make a report on this subject. Dr. Cabot then took up the subject of what society did for the individual in the way of diagnosis and treatment of syphilis, and pointed out that society had been exceedingly backward in making proper provision for this condition and even at the present time only the very beginnings of proper arrangements were to be found. The Scandinavian countries had undertaken the wholesale treatment of venereal disease, and, though much difference of opinion existed as to the details, he had heard of none in regard to the principle. Here lay the most fruitful field of effort. The State, the municipality and the university or corporation hospital must be prepared to deal with syphilis upon a large scale not only in regard to diagnosis, but in regard to treatment and subsequent supervision. It had been assumed that treatment should be free or practically free, and that the whole burden of the expense must come from the tax payer who had naturally shied at the prospect. Here seemed to lie the error. There was no reason why society should fear to step in and separate the patient from the private physician. Diagnosis and treatment for all should be offered at a sliding scale of fees proportionate to the ability of the patient to pay. A full-time salaried staff should be put in charge and these salaries should be sufficient to attract first class professional ability. The greatest difficulty which was likely to arise in the course of this attempt would be the lack of control of the patient which such an institution would have. It would, therefore, be desirable to have legislation empowering certain institutions as deputies of the State to compel the attendance of patients during such periods as seemed desirable. Such legislation would not seriously invade the rights of the individual and would, therefore, not meet with violent opposition.

Dr. Isadore Dyer of New Orleans said that in weighing the question of syphilis in its relation to society, meaning the social economy of all the people, two points stood out, the lack of the control of syphilis and the effect this had upon those who had not voluntarily contributed to its spread, namely, those who had acquired syphilis innocently and those who had escaped it. It could be stated as a very safe hypothesis that if every case of syphilis with a chancre or with an early eruption could be promptly hospitalized and treated under compulsion, the disease could be controlled far better than through any system of legislation regulating the reporting of cases or determining the eligibility for such marriage. If enough of those who dealt with syphilis could reach this point of view, it was rather certain that the hospitals would help, for in the large majority of hospitals approached on this subject the very emphatic opinion was derived that the authorities considered the hospitalization of all syphilitics desirable. If syphilis was to be controlled the viewpoint of hospitals must be changed. All general hospitals should have special provisions for the indoor care of incipient or acute cases of syphilis and all men who treated syphilis in public practice should enforce the indoor care of such patients with the object of getting such patients under prompt control and thereby minimizing the spread of the disease. Legislation should be directed at enforcing the hospitalization of all cases of acute syphilis coming under public charge. Educational movement should encourage the public to recognize syphilis among the communicable diseases and amenable to isolation just as were scarlet fever, measles, and other contagious diseases. Discovery and wide use of the newer arsenical preparations in the treatment of syphilis had placed in the hands of the medical profession a group of powerful remedies with rather exact relations to the disease. There had not been time enough to fix the value of these preparations, and yet the majority of medical men had grown to depend upon them in the treatment of disease. Former ignorance and timidity it treating syphilis had given place to a degree of rashness in the use of these remedies which had not been wholly justified. The medical schools were not teaching syphilis properly. All the more reason that the student and the physician should have the chance to study the disease at first hand among cases assembled in hospital wards under the direction of men qualified to teach the subject. It was too early to argue for special hospitals for syphilis, for the public was not educated to see this necessity. This might come as the outgrowth of a more liberal provision in the general hospital. Dr. Dyer suggested that if the medical authority in each State were given the right to supply health certificates, covering particularly the disease which disqualified for marriage, then it would become an easy matter for a State board of health through its medical and laboratory forces, to dispense such certificates after a thorough review of the applicant, including all laboratory tests essential to proper examination. Such a plan would possess the advantage of providing a central bureau of record, and would make for a more systematic knowledge of the incidence of such diseases, and of syphilis especially.

Dr. Hugh T. Patrick of Chicago said he entirely agreed with the previous speakers with reference to the treatment of syphilis, that its successful treatment depended upon early treatment, understanding treatment, and individual treatment. The question before them was when treatment fulfilled these requirements. Excluding paresis and tabes, he advocated the administration of mercury and later iodide, provided enough mercury was given. What enough meant would have to be determined by the results, and not by any stated doses. Then salvarsan might be given. One reason that they got results in many cases by the newer methods of treatment where they did not by the older methods was that the amounts of mercury had been inadequate. In the vast majority of men one could give two high inunctions of mercury daily. When mercury was given in this way the teeth and gums must be scrubbed three times a day. For this purpose chlorate of potassium rubbed (not pounded) with oil of cloves might be added. It might be emphasized that mercury and salvarsan were effected in combating the constitutional disease and potassium iodide which was a spirocheticide was effective in combatting local lesions. The speaker also condemned the attempts at the treatment of syphilis with cacodylate of soda and said that he believed that many were treated for tabes and paresis who did not have these diseases, and that the Lange gold test was not an infallible test for paresis.

Dr. Abner Post recalled that the subject before the Congress in 1891 was also syphilis and this was the only subject to have been brought up before the Congress twice. He compared methods of treatment at that time with those of the present and spoke of the burden that syphilis placed on society, not only from the standpoint of public expenses, but the many private and individual burdens for which it was responsible. He also spoke at some length of the stigma attached to the word syphilis. This was so great that physicians in private practice did not have the courage to give it as a cause of death. This was one reason why one found so many more deaths from syphilis on the records of almshouses and institutions than in the records of the general population.

Dr. William G. Spiller of Philadelphia said he was not an advocate of the intraspinal treatment of syphilis of the central nervous system. He believed that very brilliant results could be obtained in the early stages of syphilis of the central nervous system by extraspinal methods of treatment.

Dr. George Walker of Baltimore said one thing that should be brought out was how much syphilis there was in the community. He had examined 1080 patients at Johns Hopkins Dispensary, exclusive of the genitourinary department, and found 10.8 per cent. with positive Wassermann reactions; 1027 prostitutes with 67 per cent. with positive Wassermann reactions; 480 feeble-minded, expecting to find a large percentage of positive Wassermann reactions, but found less than 3 per cent. positive. In examining sixty of the lowest grade imbeciles he found only one with a positive Wassermann. In a jail with 600 inmates he found 24 per cent. positive, and in the Spring Grove Asylum for both males and females 11 per cent. were positive. In a boy's school where there was a good class of boys he did not find a single positive reaction, while in one of a lower grade he found two positive. He examined sixty-three men in a factory and found one or two with positive Wassermann reactions. He then described provisions made for the care of syphilis at the Johns Hopkins Dispensary and thought many cases of syphilis were better handled by a dispensary than

by hospital and that there was no reason why they should be kept in the hospital the entire time.

Dr. HAVEN EMERSON of New York spoke of the lack of co-operation of the profession with the health departments in reference to dealing with venereal diseases. They had been making considerable progress in the reporting of these diseases in New York. When the regulation requiring the reporting of venereal diseases went into effect there were at first only about fifty cases reported a week; now about 300 were reported weekly, and the figures were approaching 350. He emphasized the fact that that board of health might stand ready to care for patients with these diseases, but that the medical profession at least in New York, was opposed to such a step, and he did not see that much could be done in the direction of State or municipal care of syphilitic patients until the attitude of physicians changed and they were willing to sacrifice their financial interests to the public welfare. The New York Department of Health had made some Wassermann tests in its routine examination of push-cart peddlers among 1000 of whom 8 per cent. were found to have a positive Wassermann reaction. In the examination of 20,000 food handlers they had found 111 who gave a positive reaction, while among 20,000 food handlers examined by private physicians only seven were reported as having a positive Wassermann.

President's Address.—Dr. WILLIAM S. THAYER of Baltimore made this address and chose as his topic "Teaching and Practice." He said that the relations between teaching and practice in hospital and in university had of late been the subject of vigorous controversy in this as in other countries. With all the divergences of opinion the goal aimed at was almost universally the same. It was their desire that the hospital, the school of medicine and the teaching staff should be so organized that the ultimate service to humanity might be the largest; that we might gain greater knowledge of disease; that we might acquire more efficient means, public and private, of recognition, prevention, and alleviation of the innumerable ills to which the human race and its inarticulate companions and servants were heirs that we might become more efficient in the care of our patients; that we might train better physicians. These were the main ends of the study of medicine. In the early days, the study of medicine in this country was begun in the office of the practising physician. Bye and bye there developed schools of medicine in which the teachers were successful practitioners. The first of these schools were associated with hospitals, and although the body of teachers was not large, yet John Morgan in his famous address on medical schools, early pointed out the necessity that special branches of medicine should be taught by men who had given their greater attention to these branches in practice. The professors of medicine and of surgery who bore the brunt of the teaching and directed their department were usually busy men much sought for by the public in their community; and the teaching in the old days consisted largely of didactic lectures, with but limited demonstrations. In such a school of medicine the clinical instruction of a single medical department or unit could be, and often was carried out in a variety of hospitals—those hospitals with which the professors of medicine had the good fortune to be connected. The only association between the university and the hospitals was, in many instances, an amicable agreement on the part of the latter to allow instruction in the out-patient departments, through public clinics in amphitheater and operating room, and to a certain limited extent in the wards. There were no university laboratories connected with the hospital. The hospital was, indeed, a close and valuable accessory, but yet an accessory to the department of medicine. To-day the hospital must be considered not as an accessory to the department of medicine, but as its vital center. One could scarcely conceive of a school of medicine wholly independent of its hospital. The laboratories for the study of the chemical and anatomical and physiological phenomena of disease could not well exist at a center removed from the hospital, or under the control of individuals other than those directly associated with the hospital management. On the other hand, the hospital in many instances had come to depend largely on the co-operation of the university in the performing of some of its most essential functions. Professors, assistants, undergraduate students all went to form a corps of hospital servants invaluable to the institution. In a word, the relations between hospital and school of medicine were so close and intricate to-day that a discussion of the organization of a medical or surgical clinic, or of a department of pathological anatomy, presupposed the assumption that hospital and university men under one management or in such close affiliation as to form a single working body.

But to return again to the organization and constitution of a single department of medicine as compared with that of thirty years ago. The changes in the method of teaching clinical medicine had been great. Demonstrative clinical lectures remained an important element of medical teaching. But the place of the didactic lecture had largely been taken by practical instruction before small groups at the bedside. This involved a considerable increase in the teaching staff and increased greatly the amount of time which the teacher must give to his work. Thirty years ago the professor of medicine might have been expected to give two or three hours a week to his classes. To-day he could hardly be expected to devote less than six or eight hours to personal teaching. The problems of the teaching of physical diagnosis in its restricted sense were not so different from those of thirty years ago; but to-day it was generally recognized that the university should offer the student far more individual practical training than he used to receive. In the old days three men were entrusted with the teaching of a class of ninety; to-day the work would be distributed among six or eight at least. Thirty years ago there was no such thing as a clinical laboratory, and clinical microscopy and chemistry were not taught in the medical department. Indeed, there were no special medical laboratories. To-day a modern medical clinic must, in the first place, control a clinical laboratory presided over by men who were called upon to give a considerable portion of their time to the training of the student in a large variety of methods of examination of secreta, excreta, and body fluids; and this laboratory should also be a center for scientific research. It was easy for one man to preside over the entire department of medicine thirty years ago and to conduct his practice as well. It was extremely difficult, if not impossible, for a practitioner to preside over the clinical laboratory to-day, and at the same time to do justice to his responsibilities as a physician.

To reconsider the problems which confronted the director of a department of medicine to-day. The teacher of thirty years ago followed a relatively simple routine. The chief of a modern medical clinic found himself at the head of a complicated machine, involving the appointment of a large number of salaried assistants, the manipulation of a considerable budget, the coordination of a large staff of trained workers in clinical, chemical, physical, bacteriological, serological, and physiological departments, and the organization of a system of group teaching to which he must himself devote a very considerable amount of his time. It was evident that the director of such a department should be a man who had had a rather broad training, who should have had a basis of chemical instruction such as was impossible thirty years ago, and should have spent a sufficient amount of time in work in each of the branches represented by the sub-departments of his clinic to enable him at least to comprehend the significance of the work which was there being done, and to carry out real supervision. Thirty years ago the professor of medicine was properly he who had obtained the greatest reputation as practitioner or consultant. This reputation was often not attained before the age of fifty, and was gained through the active practice of the art. Such a man, who with years, might or might not have attained financial ease, might suitably in those days be called upon, at a nominal salary, to direct a department and to give the two or three hours a week which were the sum total of the time exacted by the teaching duties of the professor. But to-day it would be extremely difficult, if not impossible, for a man with a considerable consulting practice to organize and direct a medical clinic, and in addition to do the amount of personal teaching which would be necessary. The practitioner, even if he were purely a consultant, was not master of his own time. He might limit his consultations to special hours, but he could not cut off the increasing calls which appealed to his sympathy and came at any moment. And even if he saw ever so few patients, he could not control the complicating side-questions to which relations with any one ill human being were too apt to give rise. To accept such a position would necessitate the abandonment of a large part of that physician's practice; this would mean the loss of the main source of his income, unless he were a man of inde-

pendent means. If then the professor of medicine in a modern university was to be chosen from the ranks of those men who had acquired great experience through professional success, it would be necessary either that the university should pay a very considerable salary or that the professor should be a man of independent means.

One of the questions which had been most actively discussed of recent years was whether a man who had obtained his clinical experience largely or purely in hospitals was properly fitted to teach students the essentials of the practice of medicine. A distinguished student of the problems of medical education had been quoted as saying essentially: "Diseases are the same in the rich and in the poor, in human beings, and in animals. To the clinician the ward is his laboratory, and the study of disease in the patient in the ward is, in all essentials, the same as the study of disease in the animal in a laboratory. The only difference between the study of disease in hospital and outside is that in the hospital the patient may better be observed. It is a mistake to say that it is necessary for a professor of medicine to have had experience in private practice when the same experience may be obtained more intelligently and in a much more concentrated form in the hospital." This conception which had, by some, been regarded as characteristic of the point of view of those who had favored the establishment of professorships of medicine on the so-called "full time" basis, had been looked upon as fallacious and dangerous by many of the opponents of certain modern tendencies in medical education. "No man," they said, "is fit to teach students the art of the practice of medicine who has not himself passed through the experiences of the practitioner. Practice in a hospital ward is one thing; practice in the home of the patient, another. He who has been accustomed to rely on the trained nurse and on the many appliances and instruments of precision which a well-appointed hospital affords can have little conception of the difficulties which he will encounter in private practice. He whose only experience has been with the trusting, unresisting patient in the general wards, will find himself at sea when treating the whimsical, critical, prejudiced, opinionated invalid in private life. He who has been accustomed largely to study serious diseases in the wards of the hospital will have small sympathy with, and little understanding of, the trivial complaints of the supersensitive and nervous members of the more well-to-do classes. The conditions that he is called upon to treat are to be remedied in great part by minor regulations of habits and manner of life. His main duties consist in ministering to the minds of his patients—in kindly counsel and encouragement, in advice tending toward the alleviation of a thousand petty ills which he who knows that they will pass with time—does not even consider in himself, which the less sensitive patient in the ward barely notices. How can one who has never had this experience teach students the art of practice? Is it not folly to take away the teaching of medicine from the experienced practitioner and to give it to one who has had a training which might almost be called academic? Must we not regard this idea as the dream of the layman and of the laboratory student who with all his scientific attainments, is yet wofully ignorant of the conditions of the doctor's life and of his duties? The speaker admitted that there was much truth in these objections. The medical experience suitable to qualify a physician as a consultant or a teacher of medicine could not well be obtained wholly in the free wards of a hospital. There was a great difference between the mental workings of the patient in the free ward and those of the average individual with whom one was thrown in private practice. But fortunately in many hospitals to-day the great development of private wards offer abundant opportunity for the acquisition of just this experience. The man who desired to fit himself for a position as teacher of medicine or consultant should spend a considerable period of time in practice among the class of patients which was to be found in the large private departments of many of the hospitals. Such an experience gained in the hospital would afford him in concentrated manner just what he might obtain otherwise through a much longer period of time in private practice.

Recognizing the magnitude of the problems associated with the organization of a large medical clinic, it had been felt that such a department could best be presided over by men who were able to give their whole energies to the university in organization, in teaching, in the conduct and direction of research. And, notably, at that institution with which the speaker had been connected for more than twenty-five years, several of the clinical departments had been reorganized upon a university plan. Through the generosity of the General Education Board, the institution had been enabled to establish a staff of university professors and salaried assistants who took charge of these clinics for hospital and university. These men, freed from the calls of outside practice, were able to give their entire time to the service of the department in the care of patients, the promotion and conduct of research, and in the teaching of medicine. And, as was well known, the members of this staff had agreed to abstain from the practice of their profession for their own emolument. The discussion associated with this experiment had been very active, centering largely upon the last-mentioned circumstance—the withdrawal or abstention of the university professors and assistants from private practice. Those who had objected to this procedure had regarded the idea as unwise and even unfair to the physician himself, to the hospital, to the students, and to the public. With regard to the professor himself, it had been pointed out that there could be little relation between the salary which the university could or should pay to the professor of surgery or medicine and the gross income of the successful surgeon or consultant in a large city. It had been asserted that the opportunities brought by a considerable income for wide associations with the world at large were broadening to the character of the man and were indirectly of value to the institution with which he was connected; that furthermore it must be a very serious question to the physician himself whether he was justified in planning deliberately a manner of life which could never lead to wealth or real financial freedom, when there might be open to him an opportunity to give to his family and those dependent on him the advantages which came with a large income. But the salaries of university professors, whether in clinical or scientific branches, should be materially—very materially—larger than they had been in the past, if these men were not expected by outside activities to add to their incomes. If the salary were adequate there would always be efficient men whose ambition it would be to occupy chairs of medicine and surgery, even though they realize fully that the chances of the acquisition of a large income were small. So far as the student went, the danger that under the direction of a salaried professor, he might be given a training more purely academic and insufficiently practical seemed small. In the first place, it had already been pointed out that the professor of medicine would doubtless be a man who had had a considerable clinical experience with patients in all classes of life, whose training had been by no means purely academic, and although some of his associates would perhaps be men who have not yet acquired the ripened experience which should be that of the head of the department, yet no one for a moment fancied that *all* the instruction in medicine and surgery would be given by the nucleus of teachers wholly dependent on their salaries. In every large clinic, and in every large hospital affiliated with a university, a considerable part of the instruction in general medicine and surgery, as well as in specialties, must be entrusted to men with or without salaries, who were more or less actively engaged in practice.

The objection so often raised that there was danger that a professor of medicine or surgery who abstained from outside consulting practice might be removed from touch with the profession was comprehensible, but not serious. If the director of the department was one who did a considerable amount of clinical work, he would still keep in active touch with the medical profession even though his consultations were held only at the hospital. In any event, the work of the department itself, set forth by him and by his associates and assistants in public clinics, in medical societies, and in journals, should keep him well before the eyes of the medical world.

One of the most important functions of a modern medical or surgical clinic was that it should afford opportunities for the ambitious student with scientific aspirations to pursue that course of study and acquire that experience which would fit him for a university career. Every year there were graduated from our schools of medicine men with the ideals, aspirations, and abilities of the true student, who, because of financial disability, were obliged to enter directly into active practice. With the organization of the modern medical clinic, there should be a considerable number of assistantships commanding salaries which should make it

possible for many of the really good men to pursue their chosen career. And it was highly desirable that such salaries should be sufficient and so graded that these men might continue their work through long years should they prove themselves of suitable character and ability. There was one point in connection with the reorganization of the clinic upon a university basis which seems to him of real importance—the desirability of ample provision for voluntary assistantships. But where could one find the director of a medical clinic who was not longing for the services of more young men, recent graduates with scientific aspirations, to assist him in the study of a variety of different problems? As it was to-day, only those men who could obtain salaried positions upon the staff or were of independent means could afford to give the time required for such studies. But many a student, upon his graduation, and during the several years that followed, would be more than willing to accept a position as voluntary assistant if he might be given a room and his lodging in the hospital. Every modern medical or surgical clinic should have a number of such positions open to such men as the professor might select. There could be no better investment for the hospital. Research assistants should be considered as essential to the welfare of the hospital to-day as were the regular internes.

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, N. Y., May 16, 17, 18, 1916.

(Special Report to the MEDICAL RECORD.)

GENERAL MEETING.

Tuesday, May 16.

THE PRESIDENT, DR. D. W. STANTON GLEASON OF NEWBURGH, IN THE CHAIR.

Invocation.—The Rev. H. P. Le F. GRABAUOF of Saratoga Springs made the invocation.

Address of Welcome.—Dr. ALBERT WARREN FERRIS of Saratoga Springs made this address. He said, in part: "Last year we met at Buffalo, and contemplated that great wonder of the modern world, Niagara Falls, the perfect type of everlasting, irresistible force; force which may be transmitted as far as you please and be delivered in the form of heat, or of light, or of electricity. To-day we invite you to contemplate the no less mysterious combination of dynamic agencies in our mineral waters for drinking or bathing, due to their natural and inimitable chemical ingredients, and their great supersaturation with carbonic acid gas. It is altogether fitting that this society of ours should meet at Saratoga Springs more fully to comprehend the great plans of the State of New York for the development of the natural mineral water resources here and the provision from year to year, as funds permit, of adequate equipment for their utilization. Critical and intelligent invalids from the eastern part of the country, who heretofore have frequented the resorts of France, Germany, Austria, and England, in search of bath treatment, now look to you for advice, and to New York State's provision at Saratoga Springs for the healing waters, which nowhere east of the Rocky Mountains can be found in such abundance and with such great supersaturation of carbonic acid gas. We physicians fully recognize that ours is the opportunity and that parallel with opportunity lies duty."

Dr. ABRAHAM JACOBI of New York, in response to an invitation from the president, said that if they would refer to some very old books they might learn that he had been president of the Medical Society of the State of New York in 1882. That was a time of rebellion, and perhaps they did not know that that was the time when the old code of ethics was abolished and they were given the code of ethics that made it possible for them to re-enter the American Medical Association. He said he also wanted to remind them that it was good to look back and to see what was behind them and to examine the forward strides that had been made by the medical profession that had made it what it was to-day. He said there was one thing they could all do to help forward the progress of the medical profession, and that was to come to the meetings. If one could not do anything else he could come to these meetings. This much he proposed to do himself, next year, ten years, and perhaps twenty-five years from now.

Address of Welcome.—The Honorable WILLIAM S. OSTRANDER, Surrogate of the County of Saratoga, made a brief address of welcome. He said he once heard a man say that a certain acquaintance was a very learned man, he could tell the simplest thing in a way that no one could understand it; that had always been his idea of the medical profession. He then spoke of the great progress of the medical profession which was the envy of all other professions, described the attractions of Saratoga Springs, and extended a hearty welcome to all the members and guests of the Society.

Oration on Medicine.—Dr. HAVEN EMERSON, president of the Department of Health, New York City, gave this oration, taking as his subject "Will the Private Practitioner Determine the Future of Public Health Work?" He said the very reason for their chosen guest's absence, the wholly admirable excuse of Professor Strong's inability to fulfill his engagement to address them, gave special point to the subject which he offered for their consideration. Professor Strong had gone to make available for all and sundry sufferers from violence and disease among the combatants in France, the services which the practitioners of medicine and surgery were offering daily throughout this State as individuals. Cooperation for a common end was replacing competition for personal gains. He said that the accident of opportunity had put him at a desk where two currents of correspondences, two floods of complaint and comment met. The citizens of New York City sent 46,267 complaints a year which fell roughly into the complaints of the layman that he was neglected and unprotected against his fellow citizen, and the protests of the practitioner of medicine that his privacy was invaded and his living stolen from him. It was his plan and hope to show them that the causes for both complaints might be abated by personal efforts among themselves, without recourse to recrimination or to the legislature. It might be accepted as axiomatic that public health work could progress only so far and so fast as the family physician was ready to go. If he had disapproved of the use of the diagnostic throat cultures, diphtheria would not have been reduced. When he found the examination of sputum and the Widal test of value to his patient, he acknowledged the right of the State to inquire as to the identity, residence, occupation, etc., of his patient for the community's sake. If the practitioner of medicine had not been heart and soul in the attack upon excessive infant mortality, the appeals of the public agent would have fallen on deaf ears. The laity no longer objected to, but welcomed, the visit of the public agent of health, the physician, and the nurse to school, to home, and to factory. The protests were not of officious interference and intrusion but against insufficient inspection and protection. In 1914, Dr. Goldwater called for the assistance of an Advisory Council; this now numbered 240 members. Of these, 72 were physicians, each one a representative of some professional group, an expert in the field in which the department had interests and where the public need would be best met by expert advice and support. The other members were drawn either from social groups whose major interests and whose occupations touched official medicine at many points, such as nurses, social workers, administrators of charities, etc., or from the industries which operated largely under the control of the Department of Health, such as the milk, oyster, food, chemical and drug trades. There were enlisted also members of the technical engineering professions whose knowledge of sanitation was an invaluable aid to the purely medically trained man. In addition to the help and direction of the Health Department, provided by the Advisory Council, important contributions to the health interests of the State and City of New York had been made by the active and effective Committee on Public Health of the New York Academy of Medicine, and within the last few years also by the Committee on Public Health of the County Societies of New York and Kings. He said he would give his answer to the inquiry of the title. The practitioner of medicine was now directing the present policies of public health work. In August, 1915, notice was given that handlers of food employed in kitchens and dining rooms of hotels and restaurants must be examined to discover the presence of infectious diseases in communicable form. It was fully explained that the particular object of the examination was to discover cases of typhoid carriers, active cases of pulmonary tuberculosis, and syphilis and gonorrhea in the active stages. The department maintained a corps of men and women physicians to examine those who were too poor to obtain private services,

and to inquire into the industrial conditions of this small army of 90,000 cooks and waiters working in New York City. One thousand one hundred and sixteen (1116) private physicians had participated in the examination of food handlers under authorization of the department, and they had made and reported to the department 20,550 examinations. During this period, 20 department physicians had examined 20,351. The diagnostic facilities of the department laboratories were available to the private as well as for the department examiners. The results were as follows: The 1116 private physicians discovered 1 case of pulmonary tuberculosis, 7 cases of syphilis, 5 cases of gonorrhea, but no case of typhoid carrier among 20,550. The 20 physicians of the Department of Health discovered 20 of tuberculosis, 111 cases of syphilis, 22 cases of gonorrhea, and 6 cases of typhoid carriers. If the same rate of incidence had prevailed among the food handlers examined by physicians in their own employ as was found among their fellow-workers examined by the Department of Health, there would have been approximately 26 instead of 1 case of tuberculosis reported, 143 instead of 7 cases of syphilis reported, 26 instead of 5 cases of gonorrhea reported, and 7 instead of no cases of typhoid carrier reported. There was much food for thought in these results. The Health Departments could and doubtless would turn over to physicians a larger and larger share of work as fast as the practitioners showed their willingness to join in the partnership of prevention. This most desirable incorporation awaited only the action of the organized medical profession. They were all enlisted in the same army, the army of sanitation, the army for social protection and reconstruction.

The Geology and Hydrostatics of Saratoga Springs.—Dr. ALBERT WARREN FERRIS of Saratoga Springs made this address and gave a lantern slide exhibition showing the geological formation found in this region and also many views of the various springs and the country in this vicinity. He stated that there were three theories to account for these springs. The first that they were basins of water formed in the earth; the second that the rain permeated the earth and reached a lower strata; the third that they were sea water imprisoned in earlier geological times. The first of these theories was manifestly incorrect, since it would not account for the vast quantities of water discharged. The second that they were the result of surface water was not altogether correct, because the spring water was so highly charged with carbonic gas and minerals. The third was wrong because if sea water had been thus imprisoned the salts in it would have been crystallized under the great pressure. There was a volcanic formation in this region, and gases from former eruptions had been imprisoned in the earth and rocks. The water falling on the surface percolated through the shales and crevices of rocks and absorbed these gases. It then passed over mineral deposits and according to the character of these absorbed minerals such as potassium salts, iron, lithium, strontium, barium, calcium and others. The majority of the springs were found at a depth of 300 to 600 feet, but one had been reached at a depth of 1009 feet. The waters were thrust to the surface both because the gas absorbed made them lighter and because of the pressure. When the water lay beneath the surface of the upper ground water it sometimes reached the surface by striking a fault. The geological strata from the surface downward in this region were first drift shale, Canajoharie slate, Amsterdam limestone, and then dolomite and Potsdam and under the Potsdam the older Cambrian strata. The water obtained from the springs came from the dolomite. There were in all about 140 springs. The amount of water discharged varied considerably, but one spring gave 2400 gallons daily.

The Relation of the State to Saratoga Springs Reservation.—His Excellency CHARLES S. WHITMAN, Governor of the State of New York, spoke on this subject by invitation. He said in part that the general public was interested in the medical profession and the work they were doing. He wished to take this opportunity to call attention to the last report of the State Board of Health which showed that for the year 1915 the lowest death rate occurred in the history of the State; this was due not alone to the Health Department, but was an achievement in which they had all had a part. In 1915 there had been a saving of 4000 lives as compared with the previous three year period. The general death rate was the lowest in the history of the State; the infant death rate was the lowest in the history of the State; the death rates from tuberculosis, from measles, from scarlet fever, diphtheria and whooping cough were the lowest in the history of the State. They were very proud of the Department of Public Health of the State of New York. While Dr. Biggs was to be felicitated on the record just read, and his was the most wonderful Health Department in the United States, they all knew that much was due to the devoted skill and conscientious work of the physicians all over the State. He felt conscious of the responsibility of the governing power of the State to do everything in its power to uphold and assist the hospitals and public health work of the State. He realized that the public health was a matter of the most vital concern to anyone who took the office of Governor of this State. As to the work to be done at Saratoga Springs, he wished to make it plain that much depended upon the attitude of the members of this association and on the physicians throughout the State. If these springs were to be developed as had been those of Europe to a point of world-wide fame it must be done here as it had been done in Europe by physicians. Americans had been flocking to Europe to the spas to receive the benefits of the spas, but it was stated on the authority of those who had made the investigations that the waters of Saratoga contained more healing powers than the spas of Europe, that by these healing powers men might receive life extension through health conservation. While he hesitated to mention what might seem like taking advantage of the wretched conditions in Europe, if Saratoga Springs were developed now and Americans who could not go to Europe could find rest and health here by the use of these waters their value might be established for all time. It must be emphasized that if these springs were to be brought to a place of equality with those of Europe it must be done through the help of physicians. He said that there was a sentiment to the effect that medical men should not indulge in political activities. He felt that the medical profession had taken something less than an active interest in political affairs and that they had shown too much faith in "absent treatment." The state needed the advantages of their teaching and scientific investigations. They had been seeking to reduce infant mortality, for the inspection of school children, for the reduction of working hours, they had been fighting slums and working to banish preventable disease. The physician was becoming the overparent of the people. The government was placing a new emphasis on health matters, and because of this the physicians should be alert and take an intelligent interest in public affairs to the end that "the wise thing might be done wisely and the unwise thing left undone." There was no automatic device for good government, and it was the duty of every citizen to do his part. We were now facing a time, it seemed, when a decisive stand would have to be taken, when we should have to answer the problem whether American institutions could hold their own. The children of the present would have to be prepared for citizenship. He stood for social preparedness as well as for military preparedness; he believed we should take the water out of blood, the chalk out of milk, and disease out of life. Physicians should take the leadership in this battle for social preparedness; they should take a keen interest in the political life of the day. Many had come forward and given their services to the State without reward or request for reward, and he hoped this generosity would be characteristic of all throughout the State. In taking the Hippocratic oath the physician had assumed an obligation to the State as well as to the individual patient. The State had transferred Saratoga Reservation to the Conservation Commission, which had charge of the water courses, oyster beds, and other natural resources of the State, and the Saratoga Conservation Commission had been abolished. Special tribute should be paid to George Foster Peabody, who had done so much to develop Saratoga. The government would now extend the benefits of this resort freely to the people. Their development depended not only upon the will of the people, but in no small degree on the medical profession.

The Therapeutic Importance of a Scientifically Conducted Health Resort.—Dr. WALTER B. JAMES of New York presented this paper. He said health resorts, like psychotherapeutics, had in this country been discovered by the general public. The patient asked for this form of treatment and the physician accepted it with more or less reluctance. We had formerly depended upon European literature and European schools and hospitals to keep abreast of the times in medicine. Now the time had come when the facilities in this direction

were as great in this country as in Europe. But there was one department where we must still turn to Europe, and that was with reference to the study of the complex agencies of hydrotherapy, mechanical therapeutics, environment and diet. A few advances had been made in diet, but we had no experience in the combinations of the above-named agents such as they had in Europe at Nauheim, Vichy, Carlsbad, Kissingen, etc. The value of the treatment at these places was no longer a matter of debate. The great number of Americans and Europeans who had obtained relief there was proof of their value. Many remedies had been used in the past empirically, before we knew the chemistry and physiology involved in their action. Quinine was used in malaria long before the parasite of the disease was demonstrated. The influence of climate and environment combined with the thousand minor details was recognized in the treatment of tuberculosis. While it could not be said that any one of these factors determined the success or failure of the treatment, when they were wisely correlated they determined the difference between success and failure, between health and disease. There were other diseases in which this combination of diet, rest, fresh air, climate, and these waters were of value. It was not the baths alone, or any one of the other factors, but the combination of all. In the use of the waters science must be our guide. The science of medicine should no longer be dominated by empiricism. The attitude of the world had changed and they no longer regarded disease as a punishment sent by God, but as an evidence of man's carelessness or ignorance. The large infant mortality of former times illustrated this. As an instance Dr. James cited Queen Anne, who, after giving birth to seventeen or eighteen children, left no heir to the throne, all having died in early life. To-day this would have been considered a subject for judicial investigation, perhaps punishment. Much had been accomplished in the reduction of infant mortality, but when it came to the diseases of middle life little serious work had been done. Such conditions as chronic heart disease, high blood pressure, arteriosclerosis, and chronic Bright's disease, all testified to the need of more careful study of these diseases. They had been attributed to the nervous tension of modern life, but a study of history showed that "dyspepsia" was common 2,000 years ago, practically as common as it was to-day. It was in such disorders that the well regulated treatment at Saratoga would prove valuable. The same treatment was not suited to all, but must be used discriminately, and must be developed on a scientific basis. The Nauheim treatment for heart disease required a wisely regulated diet, annual manipulations, and various other features, a life carefully regulated in every particular. The patient must adhere to the scientific plan of treatment laid out for him. A single concrete example might serve as an illustration. If one had a case of kidney trouble with chloride retention, the diet for this patient should be very poor in salts or salt free, and in such a case the waters of Hatshorn Springs, which were rich in salts, would defeat the purpose of the treatment. Now chloride retention could be recognized only by the most careful laboratory and dietary methods. This meant that to be efficient a spa must be equipped with every modern laboratory and clinical appliance for diagnostic purposes, for they had in hydrotherapy a two edged sword. After speaking of the careful detail employed at Nauheim, he said no Nauheim bath was given without the prescription of a physician. For the proper administration of such treatment they would have to go to the Old World for instruction and guidance; they would have to learn how at the same time to cure, amuse, and recuperate. The speaker then described the life at Vichy. He said first that this had been conducted as a co-operative corporation; the shares were very high in price and paid 16 per cent. dividends showing the financial possibilities that a similar development here might hold out. They had every kind of electric and mechanical therapeutic appliance and all laboratory and hospital facilities. When a patient went to one of the hotels he was carefully examined and a diet was carefully made out and sent to the kitchen and the chef and head waiter devised a proper menu, showing such remarkable skill that after the patient had been there for three or four weeks he scarcely realized that he had been on a diet. In closing, Dr. James commented on the remarkable spectacle of a State turning over such a resort to the people, said there was nothing like it in this country unless it was Hot Springs, Ark., and that bringing to fruition the promise it held rested in the hands of the medical profession.

HOUSE OF DELEGATES.

In Memoriam. — Dr. W. STANTON GLEASON presented the following memorial to Dr. Wisner R. Townsend, who died March 12, 1916, and who had been Secretary of the Medical Society of New York for ten consecutive years: "Paramount to rules and orders, and rising high above business considerations is the tribute we owe to the memory of our late Secretary, the man and the physician, Dr. Wisner R. Townsend. Encomiums are meaningless to you, his friends, for it was the little unremembered acts of devotion that bound him to you. His winsome personality and adaptability placed him in close touch with our entire membership. Out of the depths of our appreciation we place this laurel wreath of affection to his memory in the archives of this Society."

Report of the President.—Dr. W. STANTON GLEASON presented this report. He said that having gone a decade beyond their centenary it was well in restrospect to briefly estimate their status as an organized body, whether it were for progress or inertia, whether they were advancing consistently with the present era of science and development, or whether they were following the unchanging grooves of precedent. He felt that their scientific development had been positive and that a great interest had been stimulated through a division of the society into sections. The best minds of the State reflected their influence through the high standard of work accomplished. Their official body had been carefully and judiciously selected, and it had been their desire to keep in the line of progress. The opportunities offered during his tenure of office had shown him that contentment and a rapidly broadening interest in high grade scientific work were largely the governing factors in the District Branch and County meetings. Sectional unrest was periodically manifested, but recourse could always be had to the House of Delegates, which was and should be arbiter on all matters of expediency. After expressing his appreciation of the work of the officers and committees of the society during the year Dr. Gleason spoke at some length on legislation affecting the medical profession. He called special attention to the fact that in the tentative plans drawn up for enactment by Congress no attempt had been made to provide the increased military force with adequate medical attendance. We must be prepared before the emergency arose and physicians were the best judges in the final selection of medical men to care for the health and lives of the soldiers of our country. At the December meeting of the council a committee had been appointed to further the Society's interests in this important matter. He said further that in the State Legislature many bills had been introduced attacking the fundamentals of regular medicine. The intelligent effective work of the Committee on Legislation was worthy our highest praise. The indifference and lack of information on important medcal legislation of many of the members of the society was a serious drawback to the Legislative Committee, for they needed the intelligent and balanced support of every physician to prove to law makers their honesty of purpose and the justice of their claims.

In speaking of the Compulsory Health Insurance Bill, Dr. Gleason said that this was one of the most important proposals ever brought before the State. It was the duty of every physician to familiarize himself with this proposed enactment, recognizing the fact that health insurance sooner or later was inevitable. Dr. Gleason then said that the interpretation of the principles of ethics of the medical profession should be legally given over to the Medical Society of the State of New York, and that the form of this legal recognition should include the right of the Medical Society of the State of New York to bring charges of unprofessional conduct or breach of ethics, to hear such charges, and to fix the penalty. It should then be binding upon the Board of Regents to impose such penalty as the Medical Society of the State of New York should fix, without further hearing or hearings upon the matter.

This report was adopted and the recommendation referred to a committee for consideration.

Report of the Secretary.—Dr. FLOYD M. CRANDALL of New York presented this report. After paying tribute to the masterly manner in which Dr. Townsend had conducted the business of the Society, he reported on

the membership of the Society. On January 21, 1907, the membership of the Society was 5,857. To-day there was an increase of over 2,000. During these nine years 4,610 new members had been admitted, and there had been 820 deaths, 451 resignations, and 18 expulsions. The membership of the Society was increasing more rapidly than were the accessions to the profession.

Report of the Council. — In addition to a few minor changes to the by-laws the following amendment was offered: "A Committee on Medical Economics and Medical Education shall be appointed which shall consist of five members, including the chairman. It shall investigate all matters affecting the economic status of physicians, and shall report annually to the House of Delegates such recommendations as may, in its judgment, seem proper."

The Report of the Committee on Publication Appointed by the Council.—This committee reported that the regular monthly issue of the journal was each month from 8,750 to 9,000 copies. In spite of a gross increase of over 4,000 copies the cost to the State Society for the year was $2,803 less than in 1914. This committee also reported that all monies due the society had been collected and that there were no doubtful debts to be charged off at the end of the year. The directory had been published at a total saving in 1915 over 1914 of $4,167.

Report of Committees on Prize Essays.—This committee reported that no essay had been presented for the Lucien Howe Prize for 1916.

Report of the Treasurer.—Dr. ALEXANDER LAMBERT presented this report. He referred to the saving in the publication of the Journal and Directory and stated that the excess of income for the last ten years was $6,240.01.

Report of the Committee on Public Health. — Dr. JOSHUA M. VAN COTT of Brooklyn presented this report. He stated that nothing had transpired during the current year requiring the special action of this committee. The progressive activity of the State Department of Health was worthy of highest approval and could not but yield results far reaching in benefit, in the control and lessening of disease and the education of the public at large along sanitary and prophylactic lines. The appointment of Dr. Haven Emerson to succeed Dr. Goldwater as Commissioner of Health of New York City was of State-wide interest, as he would not only continue the policies of his predecessor, but his wonderful energy and efficiency as a health officer would be felt as a stimulus throughout the State to those interested in public health.

This report was accepted and the recommendation referred to a reference committee.

Report of the Committee on Legislation.—Dr. JAMES F. ROONEY presented this report. After giving a brief history of the bills upon which the committee had taken position he stated that this committee had appeared at hearings on the bill licensing and regulating the practice of osteotherapy; on all of the bills making changes in the present law relating to the use and administration of habit-forming drugs; the changes of the medical practice act; the annual registration of the physicians and definition of unprofessional conduct; the institution of a system of health insurance. In conformity with a request of the committee a bill had been introduced by Mr. Mills, who introduced the original Health Insurance Bill, to establish a commission to investigate sickness. It seemed imperative that the House at this session make some arrangement for the concerted attitude of the profession either for or against the whole question of Health Insurance, and for the appointment of a committee with power to appear before the Commission instituted under the Mills bill, or some similar bill that might be presented at the next Legislature.

This report was accepted and the recommendation referred to a committee.

Report of Committee on Medical Research. — Dr. FRANK VAN FLEET of New York presented this report. He reviewed the various bills designed to restrict annual experimentation that had been introduced during the meeting of the Legislature of 1916 and stated that he had appeared at all hearings on these bills and as yet not one of them had been reported out of committee.

Place of Meeting—After considerable discussion a motion was passed that the place and time of the next meeting be referred to the Council with power to act.

Report of Reference Committee on President's Address.—This committee reported in favor of adopting the recommendation embodied in the President's address that steps be taken to interest the Board of Regents to take steps legally to recognize the Medical Society of the State of New York; and that the Board of Regents should propose that the principles of ethics of the medical profession should be legally given over to the Medical Society of the State of New York to bring charges of unprofessional conduct or breach of ethics and to hear such charges and to fix the penalty. Resolutions were passed providing for the cooperation of the Legislative Committee of the State Society with the Board of Regents having for its object the formulation of a suitable code of ethics and the making of provision for the support by the Board of Regents in the enforcement of this code of ethics on the part of the Medical Society of the State of New York.

Election of Officers.—*President*, Dr. Martin B. Tinker of Ithaca; *First Vice-President*, Dr. Henry L. Winter of Cornwall; *Second Vice-President*, Dr. J. Richard Kevin of Brooklyn; *Third Vice-President*, Dr. Montgomery E. Leary of Rochester; *Secretary*, Dr. Floyd M. Crandall of New York; *Assistant Secretary*, Dr. Albert E. Sellenings of New York; *Treasurer*, Dr. Alexander Lambert of New York; *Assistant Treasurer*, Dr. Harlow Brooks of New York; *Chairman of the Committee on Scientific Work*, Dr. Samuel Lloyd of New York; *Chairman of the Committee on Public Health*, Dr. Joshua M. Van Cott of Brooklyn; *Chairman of the Committee on Legislation*, Dr. James F. Rooney of New York; *Chairman of Committee on Medical Research*, Dr. Frank Van Fleet of New York; *Chairman of the Committee on Medical Economics*, Samuel J. Kopetzky; *Chairman of the Committee on Prize Essays*, Dr. A VanderVeer of Albany; *Delegates to the American Medical Association*, Dr. Wendell C. Phillips of New York, Dr. William J. Cruikshank of Brooklyn, Dr. Frederic E. Sondern of New York; Dr. Dwight H. Murray of Syracuse, Dr. J. W. Flemming of Brooklyn; *Alternates*, Dr. Arthur J. Bedell of Albany, Dr. May Gage Day of Ulster County, Dr. Sylvester J. McNamara of Brooklyn, Dr. Mary E. Potter of Brooklyn, and Dr. N. O. Brooks, Oneida County. Dr. O. E. Jones of Buffalo was appointed delegate to the American Medical Association, to take the place of Dr. Henry L. Elsner, deceased.

(*To be continued.*)

THE PRACTITIONERS' SOCIETY OF NEW YORK.

Two Hundred and Seventy-eighth Regular Meeting, Held Friday, April 7, 1916.

DR. JOHN S. THACHER, PRESIDENT, IN THE CHAIR.

Some Mechanical Factors in Colonic Stasis. — Dr. CHARLES H. PECK read this paper. (See page 895.)

Dr. BREWER said that he recalled very distinctly a case in a young school boy who had perfectly definite symptoms of intermittent obstruction with violent pain in the region of the splenic flexure. The case was sent to him as one of renal calculus, on account of the severe pain. He saw, however, that the case was an evident intestinal one, with visible peristalsis. An early bismuth plate was not very satisfactory, but the definiteness of the attack led Dr. Brewer to make a left rectus incision. The case was a peculiar one; the junction of the middle with the left third of the transverse colon appeared too high. It was found that the inferior mesenteric cartilage was cut off at the superior end instead of being cut off below. The artery behind made a vascular fold which in certain positions produced a distinct angulation. A lateral anastomosis was done to the transverse colon. It was evidently this vascular fold at the origin of the inner cartilage which had caused almost a complete obstruction. Dr. Brewer said he would like to ask Dr. Peck the origin of the bands in one case—was there peritonitis, or could that not be studied? Was there anything on the left side?

Dr. PECK said he could not tell; the last case seemed to be a straight peritoneal band. Two others were apparently connected with the left border of the omentum and fixed the gut so strongly that it had little perisaltic motion. None of the patients had any history of any acute inflammatory attacks to account for the formation of the band.

Dr. BREWER said a left-sided case must be rare. One he had in mind was due to new growth. On the right side a lot of gas had accumulated and it required good judgment to decide the location of the lesion. Jackson's veils over any part of the ascending colon did not harm at all; in fact, they might be said to be free from any pathological significance in many cases; but in left-sided cases some of these bands became very fibrous.

In one case where the abdomen was opened and nothing was found the pain continued to be very violent and a diagnosis of carcinoma was made. An exploratory operation was then done and five distinct bands were found very strongly constricting the gut and the actual lumen was small. Relief of the constriction made the patient perfectly well. This occurred ten years ago. Dr. Brewer said he did not understand the origin of the bands, but the patient was perfectly well now. In many cases he had been in doubt as to whether to remove the bands or not. Sometimes a patient had indefinite appendix attacks without inflammatory history. There was indefinite right iliac pain. The abdomen might be opened and some pathological changes might be found in the appendix. With the removal of the appendix the patient did not cease to have pain. There were generally pretty thick folds over the cecum. In one case of this kind Dr. Brewer said he removed the appendix; the next year he was obliged to remove dense thickened bands, which operation finally relieved the symptoms. A recent case was recalled in which the patient, a man who had had his appendix out and had been in consultation with most of the prominent gastric and enterological specialists, finally consented to have an exploratory operation. There were found two or three bands across the hepatic flexure, one just above the umbilicus. The band was as thick as a slate pencil. The cause was not known. It made a loop over which the intestine might be forced. Had Dr. Peck any theory as to the cause of these Jackson's veils?

Dr. DANA said that there was a medical side to the question of mechancial obstruction. Very carefully arranged exercises, posturing, mechanical supports had been combined to secure therapeutic results. Such a system of treatment had been and was being used in certain epilepsies, in recurrent depressions and other neurasthenic states. With time and patience they produced good results. Surgical shortcircuiting the colon was not a wise measure in neuroses.

Dr. WILLIAM H. POLK said he had been wondering when Dr. Dana was speaking if one was not well within the province of exploratory incision to be applied to many patients before subjecting them to this long, rather tedious method of medical treatment. He would like to present this question to Dr. Peck. In earlier days, when the question of abdominal work came up, exploratory work was done by operators as a matter of course. He could well remember a well-known surgeon coming into his ward, where there was a case in which there was a question of a possible diagnosis of fibroids. The surgeon said: "Why bother with investigation; explore!" That was in the days before exploratory incision became so safe as it now was. It seemed to him, however, that to save people who were victims of some neurosis, exploration would not be an undesirable thing.

Dr. ROPER asked Dr. Peck if from the plates they had been able to verify the impression that the obstruction was due to Jackson's membrane? Did the buckling of the ascending colon show in the pictures?

Dr. PECK said that one case was that type. The plates did not show buckling. He said that the picture was taken from both above and below. He had had many cases of the Jackson's type. It was not shown in the plates unless the buckling was sharp enough. It would not show rotation or interference with peristalsis.

Dr. ABBE asked if the method of filling and using the fluoroscope picture would show more.

Dr. PECK said that he did not know that it would.

Dr. BREWER said that if a bismuth meal was given and then a bismuth enema, it would show where the bismuth came from.

Dr. MILLER said that he thought there was a good deal to be said from the medical standpoint which Dr. Dana had presented. Certainly medical men saw a good many cases which presented these symptoms, but perhaps not to the degree that Dr. Peck had described. Medical men were asked to deal with many cases of intestinal stasis. In some cases there was a definite feeling of discomfort and of distention and accumulation of gas on the right side, so that it was a question whether or not a chronic appendicitis was associated with this type of case. With that, or following it, might come a chronic colitis and intestinal toxaemia. These cases happened to be very frequent, and Dr. Miller wondered whether when these conditions persisted for a long time the mechanical factors involved, such as the stretching of the peritoneal folds and the distention of the gut, might not set up a chronic peritonitis which might give definite bands with obstruction after a time. Dr. Miller said he must confess to a certain amount of doubt as to which type of cases one would surgically treat. Some might perhaps have to be operated on long before such a procedure is even considered at present. He would like to know if Dr. Peck had aids to early diagnosis which would make the condition clear much earlier than it had been customary to recognize it.

Dr. THACHER asked if any of these bands, especially on the left side, were associated with changes in the intestinal wall, such as chronic diverticulitis.

Dr. PECK said he had not seen diverticulitis in any of these cases. The *x*-ray had not apparently shown the obstruction on the left side, though that amount of distention would suggest that it was there. Repeated plates led the radiologist to believe that the lesion was at the hepatic flexure, and Dr. Peck fell in with that view. The radiologist was very competent and the plates in a series showed some defect in the region of the hepatic flexure.

Dr. BREWER said that it was often impossible to get the bismuth to stay in long enough to fill the flexures. This was not so significant as in the transverse colon.

Dr. PECK said that the great dilatation made them feel that the lesion was at the splenic flexure. He added that he did not feel that his paper covered all the ground of clinical conditions. This group of cases proved to be due to non malignant conditions. Operation gave a marked degree of relief. To cull this group of cases from a number was extremely difficult. The first case was a record of 30 years, and after operation the patient experienced for the first time real comfort. Undoubtedly she could have been operated on many years previously with benefit. Unfortunately there was no adequate means of determining whether the type of case would be benefited surgically. This group of cases was very small. In regard to Jackson's membrane, he noticed that an interesting fact was that in the cases in which the right portion of the omentum was thickened there was an appearance of inflammation, and the left portion appeared perfectly normal. There must often have been chronic peritonitis of a low degree going on in that part of the colon. This may have been due to slow absorption from the colon. In many cases the mere presence of the membrane had no pathological significance at all. Where it was pathological it was apt to assume the type attached to the lateral parietes, and cause longitudinal rotation to the right. These were real obstructive cases. The symptoms they produced were sharp enough to warrant operation. As to medical treatment of these cases by posturing and so forth, Dr. Peck thought they should be tried before trying surgery. Surgery was for those cases which did not respond to medical treatment. Dr. Polk had suggested that exploration was better than letting the condition go on. This point should be decided between the physician and the surgeon. Operation should be done when it was decided that medical help had failed. Dr. Peck said that he had had no success at all in enteroptosis cases. Where that was the essential condition operation certainly did no good.

Dr. ROPER asked Dr. Peck what he had done in those cases.

Dr. PECK said that he had closed up the abdomen and sent them back to a physician.

Dr. BREWER said that he thought in enteroptosis cases operation made the patient worse.

An Unusual Case of Intestinal Obstruction.—Dr. J. C. ROPER presented this case, with specimen of stone and gall-bladder. The patient had been a man of 60. He had a severe attack of typhoid fever twenty years before. There had been two slight attacks of biliary colic in 1913, accompanied by mild jaundice. In 1914, about two years before present illness, he had a severe attack of gall stone colic, accompanied by fever and marked jaundice. He had been confined to bed for three weeks. Since that time he had had no jaundice or urobilinuria, although subject to attacks of asthma that were regarded as possibly due to reflex irritation from the gall bladder. On March 25, 1916, he had developed pain and tenderness in lower right quadrant. Sixteen hours later he began to vomit. This persisted, becoming fecal in character within twelve hours. Operation had been performed thirty-six hours after onset. A biliary calculus about the size of an English walnut was found at the ileo cecal valve. This could not be readily forced through the valve, so it was removed through an incision. The bowels had failed to move after operation and patient had died thirty-six hours later. At autopsy an opening (1.5 x 1 cm., oval in shape) was

found between the gall bladder and the duodenum, about four inches beyond the pylorus. The atrophic gall bladder contained a calculus almost as large as the one removed. It seemed probable that the gall stone had escaped from the gall bladder some time before the onset of symptoms of obstruction, possibly during the severe attack of 1914. It may have increased in size during its stay in the small intestine.

Dr. ABBE asked if pituitary extract was usually effective in relieving these conditions.

Dr. BREWER said he had seen wonderful effects in one case of a man of 50 with paralytic ileus, but had seen no success since.

Dr. ROPER said that Dr. Gibson claimed that he had found it effective. On the patient, however, it had no effect.

Dr. THACHER said the intestinal obstruction by gall stones was not generally due to obstruction of the ileo cecel valve and it was interesting that fairly small stones would sometimes produce obstruction.

Dr. BREWER said he had had three cases of gall stone obstruction in which there was no previous history of gall stone attack. He had had two such cases in two weeks. It was interesting that in some cases there was never any history whatever.

Dr. ABBE said he had seen five cases in rapid succession in about two years, since when he had not seen any.

Case of Esophageal Stricture.—Dr. ABBE presented this case. He said he had recently seen a case of esophageal stricture in a child 6 years old. At 4 years old the child had severe typhoid fever and after recovery could not swallow very well. Finally only milk would go down, then nothing. Dr. Deaver made a gastrostomy and could not find any opening above the esophagus. There was no opening to be found either when Dr. Abbe explored from below. The esophagus was entirely obliterated. The question was, why should this obliteration follow convalescence from typhoid? Was there known to be any ulceration of the mucosa in typhoid which would account for the condition? Was there a phlegmonous gangrene of the esophagus in typhoid?

Dr. THACHER asked if the dysphagia followed immediately after the typhoid.

Dr. ABBE said that after convalescence the child gradually swallowed less and less, until it was at the point of death. No entrance could be made from above or below.

Dr. POLK asked how long a time elapsed between typhoid and complete obstruction.

Dr. ABBE said two years. The child never swallowed anything solid after typhoid.

Dr. ROPER asked how far down was the obstruction.

Dr. ABBE said the bismuth made a little cup-shaped depression at the top of the esophagus. There was no trace of the esophagus at all.

Dr. BRANNAN asked if there had been any attempt at gradual dilatation.

Dr. ABBE said no.

Dr. BRANNAN said that Keen of Philadelphia had recorded in his Surgical Complication and Sequelae of Typhoid Fever two cases of stricture of the esophagus following typhoid ulceration.

Dr. THACHER said that typhoid ulcerations might take place at any part of the alimentary tract.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

COLORADO STATE BOARD OF MEDICAL EXAMINERS.

January 4, 1916.

(*Concluded from page* 851.)

SYMPTOMATOLOGY.

1. Discuss pericarditis without considering treatment.
2. Discuss the diseases of the mediastinum without considering treatment.
3. Give the causes, symptoms, and signs of aortic insufficiency.
4. Give the causes, symptoms, and urinary findings in chronic interstitial nephritis.
5. Give the symptoms of duodenal ulcer.
6. Give the symptoms of tetanus and distinguish it from strychnine poisoning, hydrophobia, and meningitis.
7. Give the symptoms and complications of acute rheumatic fever.
8. Discuss ascites.
9. Discuss tonsillar infections.
10. Give the symptoms of bronchopneumonia.

OBSTETRICS.

1. Describe local maternal changes at end of first half of pregnancy.
2. Give your method of conduct of a normal labor.
3. Describe mechanism of labor in an L. O. P.
4. Name the positive signs of pregnancy.
5. Etiology, symptoms, and diagnosis of puerperal insanity.
6. Diagnosis and management of placenta previa at the eighth month.
7. Indications and contraindications for use of forceps.
8. (a) How would you control post-partum hemorrhages?
   (b) How deliver the aftercoming head?
9. (a) Describe the clinical course of extrauterine pregnancy.
   (b) Differential diagnosis of ectopic pregnancy.
   (c) What would you carry in your obstetrical bag?
10. (a) Describe briefly your conduct of the puerperium.
    (b) Name the three most frequent causes of hyperemesis gravidarum.

SURGERY.

1. Give signs and symptoms of cerebral hemorrhage.
2. Describe tumors of mammary gland.
3. Give differential diagnosis of cholecystitis.
4. Give the signs and symptoms of appendicitis.
5. Give the differential diagnosis of tuberculosis of the kidney.
6. Give the differential diagnosis of arthritis of knee-joint.
7. Give differential diagnosis of injuries of the hip-joint.
8. Give the differential diagnosis of salpingitis.
9. Describe bursitis, synovitis, tuberculous meningitis.
10. Give the signs and symptoms of exophthalmic goiter.

ANSWERS.

SYMPTOMATOLOGY.

1. *Acute pericarditis* is generally due to some infective fever; and the inflammation may result from extension of inflammation from a neighboring structure. The resulting changes are similar to inflammation in other serous membranes. These changes present themselves as acute plastic or dry pericarditis or pericarditis with a serofibrinous, hemorrhagic, or purulent effusion. Varying grades of myocardial inflammation are encountered in combination with pericarditis. The disease is characterized by slight fever, precordial distress and pain, disturbed cardiac action and circulation, dry cough and dyspnea. If the effusion becomes purulent, there will be the additional symptoms of sepsis—chills, pallor, irregular fever, sweats, marked leucocytosis. During the first stage of acute pericarditis auscultation reveals excited heart action and usually a rough to-and-fro friction sound, synchronous with the cardiac sounds, uninfluenced by respiration but often increased by pressure with the stethoscope, heard best at the fourth left interspace. Later as the effusion forms, the cardiac sounds are feeble and deep-seated, especially at the apex. As absorption progresses, the friction sound returns, being replaced shortly by the normal heart-sounds. During the effusion stage, the impulse is feeble or absent and when present is considerably displaced. The precordium may bulge. The dullness assumes a triangular shape with the apex upward and base on a line with the sixth or seventh rib. A characteristic sign is dulness in the fifth right interspace (Rotch's sign). Sometimes an area of dulness is found posteriorly below the ninth rib.—(*Cyclopedia of Medicine and Surgery.*)

2. The chief *diseases of the mediastinum*, are: *Inflammation*, which is characterized by dyspnea and severe pain behind the sternum. *Tumors*: almost every form has been found here, and they give cardiac symptoms, pressure symptoms, hemoptysis, neuralgic pains, cough, and dyspnea; they tend to develop inward rather than outward, so that erosion of the chest walls is rare. *Emphysema* may occur, independently of emphysema in

the neck; and *abscess* has also been found, chiefly in the anterior mediastinum.

3. Aortic Insufficiency. *Causes.*—Atheroma, ulceration or rupture of the cusps. *Symptoms.*—None while compensation lasts; hypertrophy and forcible heart action follow as compensation fails, then headache, Corrigan pulse, insomnia, and precordial pain; later on, dyspnea, cyanosis, palpitation, cough, ascites and hepatic and renal disturbances are observed. *Physical signs.*—"*Inspection* shows that the cardiac impulse is forcible and displaced downward and to the left. The pulsation is visible far beyond the normal apex. *Palpation* confirms inspection. It may at times serve to detect a diastolic thrill over the base of the heart and the adjacent large vessels. The Corrigan's pulse and the capillary pulse are recognized by palpation. *Percussion* serves to demonstrate an increase in the area of cardiac dullness downward and to the left. Occasionally it is increased upward and to the left of the sternum as the result of hypertrophy of the left auricle. *Auscultation* reveals characteristic alterations in the heart sounds. The first sound is forcible; the second sound is replaced or associated with a churning, rushing, or blowing murmur of low pitch, well heard at the second right costal cartilage (aortic area), but most distinct at the junction of the sternum and the fourth left costal cartilage. It is diastolic in time, and is transmitted downward and toward the apex. A presystolic rumbling murmur (Flint murmur) may occasionally be heard over a limited area at the apex."—(Hughes' *Practice of Medicine.*)

4. Chronic Interstitial Nephritis. *Causes.*—Often unknown; gout, alcohol, lead, over-eating, and syphilis are likely causes. *Symptoms.*—Insidious onset, dimness of vision, headache, dropsy, retinitis, choked disc, anorexia, nausea, dyspnea, itching of skin, increased arterial tension, uremia, hypertrophy of left ventricle, arteriosclerosis. The *urine* is increased in quantity, has low specific gravity, albumin is scanty or absent, and a few hyaline casts are generally present.

5. *Symptoms of duodenal ulcer.*—Pain in right hypochondriac region two or three hours after eating, dyspepsia, intestinal hemorrhages (which may be so severe as to cause anemia), tenderness on pressure over right hypochondrium; vomiting may be present.

6. The *symptoms of tetanus are.*—Dysphagia; stiffness of lower jaw; pain; spasms in muscles of back, abdomen, face, limbs; the jaw becomes locked; opisthotonos is present; the features become distorted; convulsions ensue. The diagnosis is made from the symptoms with history of a wound.

In *strychnine poisoning* the history is different, the symptoms develop more rapidly, and there is no early trismus.

In *hydrophobia* there is no trismus, and the history is different, and there is no opisthotonos.

In *meningitis*, the presence of Kernig's sign and of the specific microorganisms in the cerebrospinal fluid will indicate the diagnosis.

7. Acute rheumatic fever. *Symptoms.*—"The onset is usually quite sudden, although there may have been a history of anorexia, sore throat, pains in the affected parts, or a general body "ache." The inflammatory process first attacks the larger joints, which become reddened, swollen, and excessively tender. Often the inflammation may subside quickly in one joint to attack another. The parts most often affected are the joints of the knee, elbow, shoulder, wrist, and ankle. Occasionally, however, one joint alone is involved. There is a sudden onset of high fever, 103° to 104° F., and the pulse is usually greatly accentuated. With the onset of fever acid sweats occur, and the patient may be bathed with the excretion almost constantly. The sour odor is quite characteristic. The urine, as in gout and lithemia, is high-colored, scanty, and loaded with an excess of uric acid and urates.

Complications: "Hyperpyrexia; endocarditis (very common); pericarditis; myocarditis; pneumonia: pleurisy; cerebral symptoms, as delirium, convulsions, meningitis; cutaneous symptoms—scarlatiniform rash, urticaria, purpura; rheumatic nodules; peritonitis."—(*Cyclopedia of Medicine and Surgery.*)

8. *Ascites* is a collection of serous fluid in the peritoneal cavity. The *causes* are: Portal obstruction, chronic inflammation of the peritoneum, abdominal tumors, cardiac disease, Bright's disease, chronic emphysema, anemia, cirrhosis of the liver. *Symptoms, etc.:* Generally of gradual onset; abdominal distention, sense of weight and fulness; dyspnea; gastrointestinal disturbances; lineæ albicantes, presence of fluid may be detected by palpation, percussion or aspiration. If due to heart or lung disease, ascites will occur elsewhere, and the legs are generally affected first; in hepatic disorders the abdominal distention is marked and appears early; in renal disease, the abdominal fluid is generally small in amount.

9. *Tonsillar infections:* Most of the conditions popularly known as "sore throat" are due to bacteria which are normally present in the crypts of the tonsil. The chief of these microorganisms are the streptococci, staphylococci and diphtheritic bacilli. They only become virulent when the general health of the patient is lowered. Ordinary tonsillitis, follicular tonsillitis and suppurative tonsillitis (or quinsy) are the chief infections noted. In all of them there is pain on swallowing, fever (sometimes very high), rigor, malaise, and dryness of the throat.

10. *Symptoms of acute bronchopneumonia:* "Its onset is announced by a gradual rise of temperature to 102° to 103° F., the febrile phenomena assuming a typical remittent character, with rapid, laborious, and shallow breathing, as shown by the widely dilated nares and violent action of all the accessory muscles, while the insufficient distention of the lungs is shown by the great recession of the lower part of the chest-walls and sinking in of the intercostal spaces. The inspiration is short and imperfect, the expiration noisy and prolonged; the pulse is frequent, 100 to 120 or more, and somewhat compressible; the cough, which during bronchitis was loose, now becomes short, hacking, dry, and painful, soon followed by more or less copious mucopurulent expectoration; the appetite is impaired, the bowels somewhat loose, the urine scanty and high colored, and the surface frequently covered with a more or less profuse perspiration."—(Hughes' *Practice of Medicine.*)

OBSTETRICS.

1. The *local maternal changes at end of first half of pregnancy*, are: Enlargement of the abdomen, pigmentation of the linea alba, striæ over lower abdomen and thighs, purplish hue of the vagina, softening of the cervix, the vulva is swollen, the vagina is thickened, hypertrophied and congested, and the mammary glands are enlarged, hard, with prominent nipples and darkened areolæ.

2. *The patient* should receive a full bath before labor begins and all bed-clothing and personal clothing should be clean. If there are any pathological discharges from the genitals, the vagina should be thoroughly scrubbed with tincture of green soap and hot water, followed by a mercuric chloride douche (1:2000); this followed by a douche of sterile water. The physician's hands should be scrubbed for ten minutes with tincture of green soap and hot water, followed by alcohol, and immersion in mercuric chloride (1:1000). All instruments should be boiled for ten minutes or immersed in mercuric chloride 1:1000 for half an hour. Examinations should be made when necessary to determine the position, presentation, size of the fetus, etc.

During the first stage a rectal enema of soapsuds with turpentine (3i) should be given, and when the os is dilated to the size of a silver dollar, the patient should be placed in bed, lying upon the side toward which the fetal back looks. If the pain is severe, chloral hydrate (gr. 15) may be given every half-hour for three doses.

During the second stage, examinations should be made only when necessary. In multiparæ, the membranes may be ruptured with the finger or with some aseptic instrument. Care should be taken not to injure the child's scalp or the lower uterine segment. The pain may require the administration of chloroform or ether, but not to the extent of complete anesthesia. The expulsive force of the abdominal walls may be increased by directing the patient to pull upon a sheet firmly secured to the foot of the bed. Attempts may be made to prevent laceration of the perineum by making firm backward and upward pressure against the occiput during the pains; by restraining voluntary expulsive efforts during the pains; and by securing expulsion of the head between the pains. The head should be supported when born; the eyes should be cleansed with sterile water; and if the cord is coiled about the neck, it should be loosened or slipped over the head. Delay in delivery of the shoulders may be overcome by stimulating the uterus by friction through the abdominal wall or traction. The cord is ligated and cut when pulsation has ceased, and the child is placed by the

mother's side with its face turned away from the maternal discharges.

During the third stage, 31 of fluidextract of ergot is administered and irritation of the uterus by friction through the abdominal wall is practised for ten to fifteen minutes. If the placenta is not expelled by this time, the uterus is firmly grasped between the thumb and four fingers and compressed. Firm pressure is then made from above downward and backward in the direction of the pelvic canal. This usually causes delivery of the placenta. A vulvar pad of salicylated cotton and carbolized gauze and an abdominal pad and binder are then applied.—(*Pocket Cyclopedia.*)

3. *Mechanism of L. O. P. position.* 1. Flexion. 2. Descent. 3. Rotation, in the majority of cases all the way round to the symphysis pubis (when, on reaching left acetabulum, it, of course, becomes converted into a L. O. A. position); in the minority of cases backward rotation of occiput to sacrum. 4. Extension of occiput downward and backward over perineum, while forehead, nose, and chin, successively escape under pubic arch. 5. Restitution, internally of shoulders, right one to pubes, left to coccyx; externally of occiput to left thigh (thigh corresponding to the sacroiliac synchondrosis at which it originally presented).—(King's *Obstetrics.*)

4. *Positive signs of pregnancy:* (1) Hearing the fetal heart sound; (2) active movement of the fetus; (3) ballottement; (4) outlining the fetus in whole or part by palpation; and (5) the umbilical or funic souffle.

5. *Puerperal insanity.*—Heredity and personal predisposition, exhausting and debilitating conditions, postpartum hemorrhage, excessive lactation, intoxications, primeparity, mental distress, and septic infection are generally given as the etiological factors. The condition generally comes on early, in the first week; it is of a maniacal type, and may be suicidal or infanticidal; persistent insomnia is said to be a precursor of this insanity; when menstruation returns the condition often improves. Puerperal insanity is to be distinguished from lactational insanity; this latter generally comes on later, about the fourth month, and is apt to be of a depressed and melancholic type.

6. *Placenta prævia* is the condition in which the placenta is attached in the lower uterine segment, and may be near or over (partially or completely) the internal os. *Symptoms:* Sudden hemorrhage, accompanied by syncope, vertigo, restlessness, and feeble pulse. *Treatment:* Stop the hemorrhage by vaginal tampon; this must be tight and thorough. *Accouchement forcé* is indicated; this consists of dilatation of cervix, version, and immediate extraction of the child.

Treatment before term: Rest in bed, with or without a *tampon,* will arrest hemorrhage for the time; the sinuses are closed by thrombi, and the case may go on to term or another hemorrhage. The patient should be allowed cold drinks; opium may be used where pain is present. If the hemorrhage is great, it is safer to induce labor at once than to wait. Occasionally no hemorrhage occurs during pregnancy, not even in labor.

7. *Indications for the use of forceps are:* "1. *Forces at fault:* Inertia uteri in the presence of conditions likely to jeopardize the interests of mother or child. (*a*) Impending exhaustion; (*b*) arrest of head, from feeble pains. 2. *Passages at fault:* Moderate narrowing 3¼ to 3¾ inches, true conjugate; moderate obstruction in the soft parts. 3. *Passenger at fault:* A. Dystocia due to (*a*) occipitoposterior, (*b*) mentoanterior face, (*c*) breech arrested in cavity. B. Evidence of fetal exhaustion (pulse above 160 or below 100 per minute). 3. *Accidental complications:* Hemorrhage; prolapsus funis; eclampsia. All acute or chronic diseases or complications in which immediate delivery is required in the interest of mother or child, or both."—(From Jewett's *Practice of Obstetrics.*)

Contraindications: Mechanical obstruction in the parturient canal; incomplete dilatation of the os; nonrupture of membranes; non-engagement of the presenting part; the fetal head being too large or too small; distended bladder or rectum.

8. (*a*) *Treatment of postpartum hemorrhage:* Grasp the uterus at once, through the abdominal wall, and massage it firmly. Anything in the uterus should at once be cleaned out. Pass one hand into the uterus, and with the other on the outside make firm pressure. A hypodermic of ergotin, or ergot can be given by an assistant. An intrauterine douche of hot sterilized water (about 115° F.) may be given. Sometimes a very thorough packing and plugging of gauze of uterus and vagina may be necessary. Whatever is done must be done promptly; and everything likely to be needed for this emergency should be prepared beforehand in every labor.

(*b*) *Extraction of the after-coming head:* "If the arms are extended by the side of the child's head, they should be delivered first. The posterior arm is located by the position of the trunk and shoulders. To deliver the right arm, the child's ankles should be grasped with the left hand, and the body raised upward and outward over the mother's right thigh. The fingers of the right hand are passed along the posterior surface of the arm beyond the elbow. The fingers are hooked in the elbow, and traction is exerted; the forearm is then delivered by extension. The left arm is delivered in a similar manner. In the *Wiegand-Martin method* extraction of the after-coming head is effected by the insertion of the index finger of the supinated right hand into the child's mouth and making traction upon it, while pressure is exerted through the abdominal wall by the left hand. In the *Mauriceau* or *Veit-Smellie method,* in addition to the right hand index finger in the mouth, the left hand is also introduced into the vagina, along the back of the child, the middle finger presses against the occiput, while the remaining fingers exert traction over the clavicles. In the *Prague method* the child's ankles are grasped in the right hand, the fingers of the left are flexed over the clavicles, and traction is made. In these methods, when the perineum is distended, the child's body is raised toward the mother's abdomen. *Forceps* may be applied after the child's body has been raised and traction made in the direction of the axis of the parturient canal."—(*Pocket Cyclopedia.*)

9. (*a*) ECTOPIC GESTATION. *The Symptoms* for the first few weeks are exactly similar to those of normal pregnancy. Later, sharp, cramp-like, periodic pain occurs and is reflected down one thigh. About the third month menstruation returns. The bleeding is profuse and attended by some pain. Flesh-like masses (decidua) are discharged. Nearly all the signs of normal pregnancy are present. Physical examination will reveal a softened cervix, an enlarged and displaced uterus, and the presence of a small cystic tumor, sensitive and adherent, on one side of the uterus. *Rupture* is attended by great pain and syncope. If the hemorrhage is intraperitoneal and extensive, death results in a few hours, attended by symptoms of profound shock; rapid, weak pulse; blanched, cold skin; sighing respiration, and fall of temperature. If the hemorrhage is extraperitoneal, it will be limited and the symptoms of shock and bleeding will be slight. Before rupture the diagnosis is difficult, but afterward the history of early pregnancy, intense pain, syncope, and collapse will distinguish this condition.

The treatment consists of removal of the affected tube and ovary as soon as the diagnosis is made. In late extrauterine pregnancies it may be necessary, after controlling hemorrhage, to suture the sac-wall to the lower angle of the abdominal incision.—(*Pocket Cyclopedia.*)

(*b*) The followng tables (from Dorland's *Obstetrics*) give the main points to be looked for in a *differential diagnosis of extrauterine pregnancy:*

From *cornual pregnancy:*

EXTRAUTERINE PREGNANCY.	CORNUAL PREGNANCY.
Rupture is most prone to take place at some period during the first three months.	Rupture usually occurs between the third and sixth months.
The tumor exists to one or the other side of the uterus, and is usually distinct.	There may be but one tumor, this being dependent upon the degree of bifurcation.
The tumor is exceedingly sensitive and semi-elastic.	The tumor is not so sensitive and presents the characteristics of a uterine tumor.
The round ligament may be felt attached to the uterus on the inner or uterine side of the gestation sac.	The round ligament is displaced outward and is attached to the external side of the gestation sac.
Examination of the removed specimen shows an absence of true decidual tissue.	True decidual tissue will be found surrounding the fetal membranes.
In interstitial pregnancy the gestation sac communicates with the uterine cavity by the orifice of the Fallopian tube.	The two halves of the uterus are united by a muscular band.

From *pyosalpinx:*

EXTRAUTERINE PREGNANCY.	PYOSALPINX WITH INDISTINCT HISTORY OF PREGNANCY.
The uterus is enlarged, with a soft cervix and the peculiar softening of the body that is present in pregnancy.	The uterus is probably not enlarged, the cervix is not soft, and there is not the elastic feel that is present in pregnancy.
There is a history of sterility, with the signs of endometritis or salpingitis.	There is a history of acute attacks of peritonitis occurring at intervals after an attack of gonorrhea.
The tumor is small, exceedingly sensitive, but, as a rule, not firmly bound down in the pelvic cavity.	The tumor is large, moderately sensitive, firmly bound down in the pelvis, and surrounded by a mass of exuded lymph.
Rupture is likely to occur at some time during the first three months.	The history may have covered a period of months without the symptoms of rupture.
The usual clinical manifestations of pregnancy will be present.	The clinical manifestations of pregnancy are absent or very indistinct.

From *intrauterine pregnancy with fibroid tumor:*

EXTRAUTERINE PREGNANCY (TUBAL VARIETY).	INTRAUTERINE PREGNANCY COMPLICATED WITH FIBROID TUMOR.
There is discovered to one side of the uterus a mass, rounded, exceedingly sensitive, and elastic or semi-fluctuating.	The mass may be rounded; more often it is nodulated, very hard, non-elastic and non-fluctuating, and not sensitive to the touch.
The uterus is enlarged, but not to a size proportionate to the period of gestation.	The size of the uterus corresponds to, or is even in excess of, the time of gestation.
The menstrual history is irregular, and there may be an early return of the show.	Menstruation is likely to be suppressed.
Rupture occurs at the usual time.	No signs of rupture follow.
Pain is an early and prominent symptom.	Pain develops only after the tumor has reached sufficient size to press upon the surrounding structures.

(*c*) The following articles should be taken by the accoucheur to a confinement. Tablets of bichloride of mercury, or some other material for making antiseptic solution; forceps; ether or chloroform, with inhaler or mask; fluidextract of ergot, hypodermic syringe, with tablets of strychnine, morphine, etc.; needles, sutures, and needle holder; nail brush and nail cleaner; umbilical scissors; carbolized vaseline; stethoscope; male catheter (rubber); a one per cent. solution of nitrate of silver.

10. (*a*) *Care of mother during puerperium:* "*During the first week* the patient keeps the bed, but after the first few hours she has considerable license. She may assume the sitting or half-sitting posture to take her meals and to nurse the baby, and, if necessary, for evacuation of the bladder and rectum. She should assume the lateroprone posture both right and left, several times a day, and lie upon her abdomen for at least an hour daily. Frequent change of position favors uterine drainage and massages the uterine supports. *During the second week* she has greater liberty, while the greater part of her time is spent on the bed or lounge. She may sit up for her meals, to urinate, and for bowel movements, and she should spend at least half an hour, twice daily, in abdominal and leg exercises to keep up her muscular tone. *The third week* she may be moved to a chair for a part of the day, having the liberty of the room. After sitting up for any length of time she should be instructed to take the genupectoral position before lying down. Prescribed exercises for the legs and abdominal muscles are to be taken daily. *The fourth week*, if all goes well, she may leave the room and have the benefits of air and sun. Physical exercises should be continued. The duration of the lying-in period and the degree of freedom to be given the patient after the second week must, however, depend on the character and amount of the lochia, the general progress of her convalescence, and the rate of the uterine involution."—(Polak's *Obstetrics.*)

(*b.*) *Three most frequent causes of hyperemesis gravidarum:* Toxemia, reflex irritation, neuroses.

SURGERY.

1. *Cerebral hemorrhage. Signs and symptoms:* "The onset is usually sudden. Headache, vertigo, numbness or tingling pains in the knees may precede the attack. *Primary symptoms:* The patient may fall in a convulsion or become unconscious. Hemiplegia is usually present. The face is flushed, the lips are blue, the pulse is full and slow. The eyelids are half open, and the pupils may be dilated or contracted. The respirations are snoring in character. There may be twitching of the extremities and rotation of the head. to one side. There is generally a lowering of the body-temperature, followed by a rise if the patient survives. A very rapid rise of temperature renders the prognosis grave. There are involuntary urination and defecation.

Secondary Symptoms: Restoration of consciousness and motor paralysis occur. Sensation usually remains good. The muscles of the thorax and face generally escape. The tongue, if protruded, deviates toward the affected side. There is rigidity of the muscles on the paralyzed side, and, if the damage to the brain has been extensive, aphasia, loss of memory, etc, may result.—(Pocket *Cyclopedia.*)

2. *Tumors of the mammary gland: Adenoid* tumors are innocent and encapsuled, and characterized by—(1) spaces lined with cuboidal epithelium, which may be slit-like or distended into cysts; (2) epithelium which shows no tendency to spread beyond the basement membrane; (3) intracystic growths occasionally; (4) an interstitial structure of fibrous connective tissue.

Pure adenoma is rare, but *Fibro-adenoma* is common. It occurs in young adults as a rounded, well-defined movable tumor, which may or may not be painful. The axillary glands are not enlarged, the skin over it does not dimple, and the nipple is not retracted. On section after removal it is encapsuled, pinkish, and foliated, and does not infiltrate the surrounding tissues. Microscopically there is more fibrous tissue than is met with in normal breast.

Sarcoma is not common. It usually occurs in young women. A rounded, rapidly-growing tumor forms, which may lead to ulceration of the skin and fungation. In the early stage it can only be distinguished from fibro-adenoma by the rapidity of its growth. Secondary growths may occur in the axillary glands, or general dissemination may occur. A spurious capsule may be found in the early stage. Secondary changes may occur in the tumor, such as hemorrhages and myxomatous degeneration.

Carcinoma. Scirrhus commences in a lobule of the breast. The epithelial cells proliferate, and spread along the lymphatic spaces into the surrounding tissues. There is a tumor, which is usually small, stony-hard, ill-defined in outline, and incorporated in the breast substance. In the early stages the skin moves over it, but soon the suspensory ligaments which connect the breast with the skin are infiltrated and contracted, so that the skin dimples when moved over the tumor. The whole breast may be contracted, so that the nipple on that side is at a higher level than the other. If the galactophorous ducts are involved in the growth, the nipple becomes retracted as the fibrous portion contracts. In time the growth invades the skin and pectoral fascia. The skin may become the seat of a typical scirrhus ulcer, with an excavated, smooth, clean, or, if not kept clean, a sloughy base, and a raised, rampart-like edge. Or the skin may be affected with numbers of separate nodules of growth.

Cancer *en cuirasse* is a name given to the condition in which the skin over the whole gland and side of the chest is infiltrated. The skin then has a "pig-skin" or "orange-skin" appearance.

When the tumor is adherent to the pectoral fascia, it cannot be moved freely in the direction of the fibers of the pectoralis major with the arm outstretched.

The lymphatic glands of the axilla are early enlarged, first the set running along the border of the pectoralis minor, then the subscapular and remaining axillary sets, and next the supraclavicular glands. The disease may also spread to the mediastinal glands, or to the opposite breast and axilla by lymphatic communications.

Encephaloid cancer is much less common, but is more rapid in growth and more quickly fatal. The tumor

contains little fibrous stroma, so that it is softer, and the signs due to contraction are absent. It quickly ulcerates and disseminates.

Atrophic scirrhus is a slowly-growing form, which may last as long as fifteen years, dissemination only occurring at the end. The excessive shrinking of the stroma destroys the cancer cells. The nipple is deeply retracted, and the tumor and breast converted into a scarlike mass. (From *Aids to Surgery.*)

3. In *cholecystitis* there are pain, tenderness, and muscular rigidity over the area of the gall-bladder, also fever, rapid pulse, vomiting and leucocytosis. In *appendicitis*, the rigidity and tenderness are lower down, and the fever and leucocytosis are not so pronounced at the beginning of the disease. In *gall-stone colic*, the pain is much more severe and radiates to the right shoulder, and the fever and leucocytosis are less marked. In *gastric ulcer*, the pain is referred to the epigastrium, and it occurs daily for long periods of time and within two or three hours of taking food.

4. *Signs and symptoms of appendicitis.*—Sudden pain, generally in right iliac fossa and most frequently referred to McBurney's point; moderate fever; nausea and vomiting; constipation or diarrhea; leucocytosis; tenderness over region of appendix; the right thigh is generally flexed on the abdomen; the right rectus muscle is rigid; sometimes an indurated mass may be felt beneath McBurney's point.

5. *Tuberculosis of the kidney* is diagnosed by the symptoms, which are as follows: Pain, slight at first but severe later; tenderness on palpation; possibly colic from blocked ureter; a tumor of moderate size may be felt; urine is increased in quantity, is acid, contains pus and blood and tubercle bacilli; cystoscopy shows the orifice of the ureter red and retracted or with pointing edges; pain may be felt at neck of bladder; rise of temperature is noted in the evening, also anemia and loss of flesh; methylene blue given by hypodermic is excreted very slowly (or not at all) by the diseased kidney. In *pyelonephritis* there are no tubercle bacilli in the urine; in *renal calculus* there are no tubercle bacilli in the urine; there are present intense colic, with the pain radiating to testicle or leg; the urine is scanty; the attack ends suddenly, and the stone may be passed or become impacted in the urethra, or remain in the bladder; *x*-ray may demonstrate the calculus.

6. In *arthritis* the joint is distended with fluid, there is severe pain in the knee and also some swelling, the surrounding tissues are edematous, the knee is semiflexed because in that condition the patient is most comfortable; at night the muscles relax and the joint surfaces rub together, causing pain, and thus awakening the patient. In *synovitis* the knee is hot, swollen, painful, semiflexed, adhesions may form and the muscles which move the joint may atrophy; the synovial effusion causes a fluctuating swelling. *Tuberculous disease* is of slow onset, and the synovial swelling is pulpy rather than fluid; the inflammation is slight or absent, there are starting pains at night, and there may be a reaction to tuberculin. *Sprains* are characterized by prompt swelling, marked ecchymosis, and a history of violence. *Charcot's disease* is generally of rapid and painless onset, and is accompanied with the signs and symptoms of tabes dorsalis (generally); the synovial distention is marked; deformity is pronounced.

7. *Backward dislocation of the hip* is marked by inward rotation of the thigh, flexion, inversion, adduction, shortening of the limb, loss of function, and the great trochanter is above Nelaton's line; the head of the bone may be felt on the dorsum of the ilium, and there is a hollow over the front of the joint. In *penetrating wounds* of the joint, there may be escape of the synovial fluid, there is no deformity, and arthritis may develop. In *intracapsular fracture of femur* the limb is rotated externally and drawn upwards, but the actual shortening is very slight; the signs of dislocation are absent.

8. *Salpingitis* is marked by a dragging sensation in the neighborhood of the affected tube; colicky pain, which is increased on exertion or even on standing; abdominal tenderness; menstrual disorders, as amenorrhea, metrorrhagia, dysmenorrhea, menorrhagia; dyspareunia; there may be septic symptoms and peritonitis; sterility generally ensues. On examination there will be found a fullness in Douglas' pouch and one or both lateral fornices; in these latter will be felt either the tubes, distorted and possibly adherent, or a sausage-shaped tumor, which is very painful; the uterus is retroverted or retroflexed, and may be bound down by adhesion; there may be an intermittent expulsion of pus accompanied by a burning pelvic pain.

The following tables are given by Dudley in his gynecology:

SALPINGITIS
1. Commonly bilateral.
2. Tube oblong and tortuous.
3. Commonly adherent.
4. Ovary often palpated and distinguished.
5. Usually not larger than fist.
6. May be leucocytosis.

CYSTIC OVARIAN TUMOR
1. Commonly unilateral.
2. Spheroidal or spherical.
3. Less commonly adherent.
4. Tumor is diseased ovary.
5. May grow to enormous size.
6. No leucocytosis.

SALPINGITIS
1. Common.
2. Usually bilateral.
3. Sensitive to pressure.
4. Usually fixed.
5. Elastic or fluctuating.
6. Result of infection.

SOLID TUMOR OF TUBE
1. Rare.
2. Usually unilateral.
3. Not sensitive.
4. Usually free and mobile.
5. Firm consistence.
6. Cause unknown.

SALPINGITIS
1. Usually sharply circumscribed and of rounded contour.
2. Commonly bilateral.
3. Position relative to uterus: mass usually higher in pelvis near fundus uteri; not connected with cervix. Vaginal vault not depressed.

PELVIC CELLULITIS
1. Not sharply circumscribed; may be flattened.
2. Commonly unilateral.
3. Position relative to uterus, usually lower in pelvis, often closely connected with uterus. Vaginal vault commonly depressed.

SALPINGITIS
1. Mass usually elastic; may fluctuate.
2. Adhesions common.
3. Sensitive to pressure.
4. Uterine end of tube enlarged.
5. History of infection.

TUBAL PREGNANCY
1. Consistence often quite firm.
2. Less common.
3. Not sensitive.
4. Commonly normal except interstitial tubal pregnancy.
5. History of pregnancy.

SALPINGITIS (RIGHT SIDE)
1. Tumor felt by vaginal touch.
2. After acute stage, size of tumor may not materially diminish.
3. Recurrence less dangerous and less frequent.
4. More frequently of gonorrheal or tubercular origin.

APPENDICITIS
1. Tumor not usually within reach of vaginal touch, but felt or is tender to pressure on external palpation in region of McBurney's point.
2. After acute stage, tumor apt to disappear.
3. Recurrence more dangerous and more frequent.
4. More frequently due to colon bacillus, less frequently of tubercular origin; never gonorrheal unless by extension from tube.

9. *Bursitis* is inflammation of a bursa. The *acute* form is generally the result of traumatism. The symptoms are a fluctuating swelling which is circumscribed, painful and tender; sometimes crepitus may be elicited. The *chronic* form may follow the acute, or may be due to syphilis, tuberculosis or irritation. The bursa is enlarged and thickened; in tuberculous cases the swelling is doughy rather than fluid.

Synovitis is inflammation of the synovial membrance of a joint, the other structures being unaffected. The joint is distended, swollen, hot, painful, tender; fluctuation is present, and the joint is generally semiflexed; constitutional symptoms may be present. In the chronic form motion is restricted and atrophy of surrounding muscles ensues.

Tuberculous meningitis is "an inflammation of the soft intracranial membranes due to the deposit of gray miliary tubercles. It is usually secondary to tuberculosis elsewhere, and is seen most often in children. The onset is usually attended with various prodromes, such as irritability, anorexia, headache, insomnia, etc. The stage of excitation is characterized by headache, vomiting, convulsions, intermittent temperature, soft, irregular, and compressible pulse, and a red line upon drawing the finger-nail over the skin. This stage lasts for about two weeks and is followed by depression, in which the pulse is slow and compressible, temperature is depressed, and somnolence and stupor alternating with delirium, convulsions, headache, and peculiar shrieking are present. Collapse, coma, convulsions follow, and death usually occurs in from 1 day to 2 weeks. Treatment is unsatisfactory."—(*Pocket Cyclopedia.*)

10. *Exophthalmic goiter.*—The symptoms are tachycardia, exophthalmos, goiter, tremor, insomnia, palpitation of heart, headache, irritability; the eyelids do not completely cover the eyeball, when the eyeball is rolled downwards the upper eyelid is unable to follow it; winking is frequent; the interpalpebral fissure is widened; dyspnea, digestive disturbances, and pigmentation have also been observed.

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PUBLIC HEALTH AND THE DEFECTIVE.*

BY MARY SUTTON MACY, M.D.,

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NEUROLOGIST, DEMILT DISPENSARY

SIR GEORGE NEWMAN of London, in one of his recent reports as chief medical officer of the Board of Education, says: "A national scheme of child welfare, . . . including medical inspection, medical care and treatment, and physical education, . . . needs time for its development, and cannot rightly claim to be judged by any other result than the growth of a strong and healthy race of children. For the existence and strength of a nation ultimately depends upon the survival of its children and their physical and mental health."

Systematic medical examination of school-going children has revealed an immense amount of physical defect. The English figures, which I am going to quote just now, have to my mind a bearing of greater general value than many of our American figures, for the reason that the English statistics are compiled from data gathered from urban and rural communities, whereas, most of our American statistics, in fact, all of a generalized character that I have seen have been almost without exception either entirely urban or entirely rural, and therefore for general purposes open to some criticism. The English figures are approximately: Defects of vision, 10 per cent.; defects of hearing, 5 per cent.; ear disease, 3 per cent.; tuberculosis, 2.5 per cent.; malnutrition, 10 per cent.; mental defect, 1.5 to 2.5 per cent.

These figures do not, as far as I can ascertain, include all the blind or all the totally deaf, who in many cases are not in the schools at all, and which form in one sense separate educational problems, though not necessarily distinct public health problems. Neither are these figures inclusive of all the cripples, but only those crippled by tuberculosis.

America is awakening to her responsibility and to the urgent need of her children. Here in New York we have been awake for some time, but our problem has been complicated in large measure by the lethargy of the communities about us, both proximal and remote. We, as a nation, are only beginning to understand that defectiveness of every form must be reduced to a minimum, and that all varieties of preventable disorder must be dealt with by effective agencies. "Safety first!" is a new slogan, and, within limits, an excellent one; multiplied four-fold in its value, if we ally with it two other slogans—one almost as new, the other a little newer—I mean "Conservation" and "Preparedness."

In this connection it speedily becomes evident that medical science as it concerns and is connected up with educational authority, has a two-fold duty; (1) The control and improvement of all school conditions reacting on the child; and (2) the cure or alleviation of certain well-defined personal ailments, disabilities or maladies, which, tending to incapacitate the child, render him unable to take full advantage of the education provided, or which become, by neglect or lack of supervision, sufficiently widespread to constitute a menace to the physical welfare of the community.

The term defectives, as I shall have occasion to use it, is a very comprehensive one, including, as it must, not only the mentally and morally defective children in the schools or recently out of them, but also the blind, the deaf, the cripple, the generally physical incompetent, child and adult, in relation to the problems of public health and its conservation by means of preparedness and safety first methods.

In the first field of duty which I have suggested for medical science, namely, "the control and improvement of all school conditions reacting on the child," our New York City schools have made opportunity for tremendous strides; far ahead in most respects of other parts of the country. The creation of a department of school hygiene in connection with the department of physical education, under the Board of Education, is theoretically at least a long step in advance looking toward control of this character. It is premature to estimate how this department is to work in practice, as it has been in existence but a short time, and like many other educational activities—or activities of the Board of Education—it has been much hampered by the curtailment of funds. Of this I can have nothing further to say at present.

In the other field of medical duty I mentioned, namely the cure or alleviation of certain well-defined personal ailments, disabilities, and maladies, which, tending to incapacitate the child, render him unable to take full advantage of the education provided, or which become sufficiently widespread to constitute a menace to the physical welfare of the community. New York City has occasion to preen herself upon her magnificent showing in this line of effort. The stupendous work of the Child Hygiene Department of the Board of Health is familiar to you all; it is a source of civic pride to every good New Yorker, and needs no comment or elucidation from me. The equally important and stupendous work of the departments of the Board of Education which have to do with the defective children is another matter. It is a field of medical endeavor less well known than the child hygiene work of the Board of Health for several good and sufficient reasons, first, perhaps, because largely—not entirely—under the supervision of lay directors, the medi-

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cal work has taken an apparently somewhat subordinate place to the educational work, and second, because the number of medical workers having been very small and the amount of work very large, there has been little or no time—and less strength—left for talking or writing about what they were doing. Of this field of endeavor I may have a little more to say in another lecture, but I have no intention of narrowing the subject to our municipal problems. The defectives are a national problem, may become a national menace, and must be studied and handled on broad nationalized lines, and not narrowed to urban or rural or urban and rural foci.

The guiding principle for conservation and preparedness in the handling of this problem of defectives should be correlation, and the lines along which such action should proceed should be first, prevention, and, second, treatment and remedial measures when, despite precautions, defectiveness appears. If it were possible to make the educational authority responsible for children from birth until they leave school, it would, by making it possible to supervise more closely the health and treatment of the children, make for efficiency and prevent the present hiatus from birth to five or six, and also prevent much overlapping of functions.

The doctor of public health, or whatever title the hygienist of the near future may come to bear, will undoubtedly derive much help from the present-day efforts at segregation, not only of the mentally, but also of the physically unfit, but, if he is to be worth his salt, his main preventive efforts must be directed upon infancy and the early years of life before school control makes segregation possible, and while prevention of the many ills that childhood is heir to is still possible. The questions of infant foods, of housing, of domestic economy and domestic hygiene all have as vital and intimate bearing on the prevention of defectiveness as they have on the prevention of infant mortality, of measles and kindred contagious affections, and of malnutrition *per se*. Dr. Hope, health officer of Liverpool, England, has rightly said, "If the child of school age is found to be underfed, the local educational authority has now power to feed it, but its younger brothers and sisters may be, and commonly are, in just as bad a condition. . . . Classes for mothers dealing with all matters relating to the home should be encouraged and organized, and parental ignorance or indifference, the cause of much unnecessary child suffering, combated. The various organizations dealing with this matter should be linked up with the medical officer of health—and with the school medical officer, too, where these posts are not held by the same officer—and these officers should be ex-officio members of the committees of these organizations."

Beside these general health problems, such as food, housing, etc., and their bearing on the production of defectiveness, the public hygienist of the near future must, among other things, give more attention to the prevention of rachitis or to the prevention of avoidable rachitic deformity once rachitis is acquired. Rickets, as we know, becomes manifest, in a great majority of cases, between the ages of six months and two years. Comby, in his study of 1662 rachitic children, found that 89 per cent. gave evidence of the disease before the second year. Measles is a common starting point for rickets—that is to say, an acute illness, such as measles, may initiate an attack of rachitis or, in later childhood, cause a recrudescence; and the deformities may appear at any age up to puberty. Kossowitz, in studying rickets in Vienna showed that, though children of all classes of society were liable to rickets in mild or severe form, the more serious deformities were confined to the children of the poor. Kissel, in Moscow, states that deformities are much less severe among the better class children, though rickets prevails equally in all classes. Clement Dukes, at the II International Congress of School Hygiene in London, in 1907, showed the extent of preventable deformities—many of them rachitic—found in boys examined for admission to Rugby School. His figures indicate serious inattention to hygienic principles in the upbringing of children which permits them to reach the age of fourteen showing 44.5 per cent. lateral curvature of spine, 12.6 per cent. pigeon breast, 6.4 per cent. bow-legs, 52.6 per cent. knock-knees, 32.9 per cent. flat feet.

Broadly speaking, rickets is confined to the countries of Central Europe and the United States of America, though even within these limits the plains and high altitudes are exempt. In general its incidence is proportional to the density of the population, and there is a notable concentration of the disease in the large cities, particularly in the congested industrial areas, though it would appear that the various racial elements composing the same town population are affected in varying degrees. Our American population does not suffer to nearly the same extent as do the immigrant races, in particular the Italians and negroes.

All marked deformities, wherever situated, involve serious physical disability. The consequences are specially serious when chest and female pelvis are involved. Rickets is responsible for the physical disablement in 50 per cent. of the children (of whom there are about 750) attending the special schools of the Glasgow School Board for physically defective children. Into these special schools are received only such children as are physically incapable, owing to the severity or nature of their deformities, of making the journey to the ordinary elementary school. In 1911 a census was made in Birmingham, England, by a special sub-committee of the educational authority, of the crippled children and adults: 717 under 16 years of age were found in the city and 11 under the care of the Poor Law Guardians; of these 728, rickets was responsible for 10.1 per cent. of the cripples. The age group above 16 years, numbering 828 cases, showed rickets as a cause in 0.8 per cent. of the cases.

In 1906 an official census was taken of all the crippled children of the elementary school class in Germany. This census disclosed the fact that Germany numbered at least 100,000 cripples under 14 years of age, or 14.8 per 10,000. Of these 100,000 children 56,000 were considered by the medical experts to be cases calling for institutional care, and of these 56,000 crippled children 15,000 suffered also from nervous disorders, 11,000 from tuberculosis, 11,000 were rachitic, 37,000 were epileptic, 344 were deaf and 226 were blind; 97 per cent. of all the crippled children, *i.e.* of the 100,000, were mentally normal. The following definition of a "suitable institution case" (heimbedürftig) has been officially recognized: "A crippled child is in need of institutional care when, in consequence of a congenital or acquired nerve, bone, or joint disease, he is hampered in the natural use of his limbs to such an extent that his physical disabilities bring him into total disharmony with his environment; and when

his removal to an appropriate institution offers the only chance of so training and developing his remaining faculties as to procure for him the best possible conditions of health and independence, the institution in question being specially adapted to deal with his individual physical and educational requirements."

The first institution for the schooling and technical training of cripples was established in Munich in 1832. England followed in 1851 and Sweden in 1890. The chief object is to make them self supporting, or partially so, that they may not be a burden on their families or on the community. There are three primary objects in view in the institutional care of these cases: first, orthopedic treatment; second, common school education, and third, and most important to the community is the special industrial training which makes the crippled boys or girls partly or wholly self-supporting. By self-supporting one does not mean supported by the patronage of charitable people, but that the cripple should be so trained that he—or she—may take an independent position in the community. For many of the more seriously deformed and many of the genuinely tuberculous cripples this ideal aim is of course not possible, and for them the only solution is apparently the home or institution, under philanthropic or, better, State control, where necessary provisions for them can be made and where trades adapted to their special needs may be pursued. The famous school at Copenhagen, Denmark, had to resort to this system, and, like others which have tried it, proved the plan to be more than self-supporting, leaving a profit toward the original expenditure even after the wages of the workers have been paid.

In securing ultimate results it is, of course, essential to find for each individual cripple some occupation wherein he has a reasonable chance for successful competition with physically normal workers. In seeking trades in which cripples are to be instructed the object, naturally, is to find those which require the use of such members as are not deformed or incapacitated. The fighting countries of Europe are presented with those problems in gigantic scale, by the immense number of war cripples which their hospitals are turning out into the community. The problem of training crippled children is in some ways more complex, in some ways less so. Many occupations have been tried and instruction in them given to crippled children and the social phase of this work is of great importance. When the crippled child is first encountered he is usually in a thoroughly discouraged state. His helplessness has, intentionally or unintentionally, been impressed upon him from his earliest childhod and he is, more or less, imbued with the idea that his life must be a useless one, as he has been in the past, and probably will be in the future, unable to spend his time in anything but idleness. It is not hard to conceive the mental effect of such an existence, and the first aim in the social care should be to counteract this attitude.

The easiest solution for industrial training has come in the form of needlework for the girls. Most of the crippling deformities—in other than war cripples—appear to affect the lower limbs, leaving the hands and arms in large measure free, and even in cases where one arm or hand is incapacitated some form of rack can be arranged to hold an embroidery frame, and many girls cultivate an astonishing dexterity. For girls who are not too deformed, stenography and bookkeeping offer attractive and well-paid occupations, and the position of librarian, offering, as it does, work usually done in conjunction with others or independent of active direction, is both pleasant and profitable. For boys there appears to be even a wider choice of trades depending, of course, upon local conditions and individual abilities, and as the handicap for the cripple usually comes in physical ability, special emphasis should be placed on mental work. Thus for example, proofreading, telegraphy, both the wireless and wire forms, telephone switchboard operating—this is even practical for the girls as well—typographic work, especially where type composition machines are in use, reed and willow furniture work, basket making, chair caning, rush seating, mattress and general upholstering, cabinet making and repair work, copper and silver smithing, mechanical drawing, mosaic art glass work, engraving in its various branches (including brass and steel die work, wood cuts and jewelry engraving), cobbling and tailoring, jewelry making and watch and clock repairing, as clerks and as ticket-sellers, and newsdealers with public service corporations, in theaters and similar businesses.

The general aim in dealing with the cripple is, as we have said, to make his attitude and his position as nearly normal as possible. When the crippled child goes from under the care of the organization that educates him his aim is to become independent. To do this as an adult, he must, as a child, come constantly in contact with people who are not cripples and he must meet them on their own ground and in their own way. The future should always be considered in the care and education of such a child, and to retain the best type of self respect he must make his way on his own merits. Every effort, therefore, should be made to inspire self-confidence in the crippled child; as a matter of fact cripples can do more than most people suppose, and the child should not be treated as an invalid any more than is absolutely necessary; he should be given opportunity and encouraged to do all that his abilities will permit. In short, what the crippled child needs is normal training plus the special aid necessary to offset the handicaps imposed by his deformity. One of our State institutions for crippled children has a baseball team, which plays a remarkable game of ball, especially so if one considers the deformities of the players; whenever it wins, as it does in the majority of its games with the neighboring teams, all the children in the institution, whether ball-players or not, are jubilant, and such healthy interest, together with the pride in the prowess of their fellows, has a most wholesome influence and gives a very concrete form of encouragement.

The provision for crippled children in the United States is very irregular; some localities have many institutions, some have none. New York State, Minnesota, and Massachusetts have each established State institutions for crippled children. There is need for such institutions in every State, particularly for the crippled children from rural districts. From a national standpoint, however, the situation is at present unsatisfactory at best, as most if not all of the existing institutions and schools are grouped around four or five cities. The most serious national defect is in the number and extent of the immense sections, especially of the West and South, that are without provision of any kind. It is of utmost importance that some adjustment should be made, as there are in these sections large numbers of crippled children whose needs demand at-

tention in a most urgent manner, and a little judicial prodding and influence exerted upon the Legislatures might produce the required State provision.

In an article on "Trade Training for Adult Cripples," appearing in the *American Journal of Care for Cripples*, 1914, Dr. Charles H. Jaeger says: "In considering the problem of trade training for cripples, we must first classify them in groups according to the nature of their disability and then state the problem as it relates to each group.

"1. The Congenital Cripples.—Those born with some malformation not amenable to medical or surgical treatment, who must go through life with a physical handicap.

"2. The Cripples from Disease, of which there are two kinds, (*a*) those who are suffering from some constitutional disease like tuberculosis, which makes the patient, in addition to his diseased condition, weak and incapable, and (*b*) those who are left crippled by some disease like infantile paralysis or hemiplegia, which leaves them more or less badly disabled but which has no influence on their physical well being.

"3. The Cripples from Accident (the various amputations).—Again we have two classes those crippled in childhood, thus subjected to all the unfavorable influences surrounding the diseased crippled child, and the second class, those crippled by accident in later life. . . . It is the last class which is a very important class, firstly, because of the very large number of people maimed in this country in the pursuit of their daily occupations, and secondly, because we have here a group of people who have had a normal youth, who have acquired no mental kinks and who have been trained to some occupation or trade. . . . Assistance to persons of this type is imperative, as they are the ones psychically most affected by their accident. They easily become depressed, and their long convalescence induces habits of idleness."

From our point of view these three classes mentioned by Dr. Jaeger are of interest both on the safety first and the conservation principles. With regard to the congenital cripples, there is comparatively little that we can do for them after birth, except have organized a general corelation between lying-in hospitals, midwives, and doctors engaged in obstetrical work among the poor and the various orthopedic hospitals and dispensaries, so that there may be a minimum amount of deformity permitted to develop among the congenitally physically unfit. One preventive measure calculated to minimize this congenital deformity, which is or should be within the control of the hygienist of the future is control of the antenatal influences which are conducive to such deformities. In a very interesting little monograph on Child Life and Labor, Dr. Margaret Alden of London has said: "Antenatal influences may be thus classified: (*a*) Factory labor: When injurious to the health of the expectant mother. (*b*) Various poisons: Acting through the mother on the child, viz., the poisons of certain diseases, certain drugs, and above all, alcohol.

"(*a*) Factory Labor when Injurious to the Health of the Expectant Mother. Physical work in itself need not prove injurious either to the mother or the child. It is only when such work is especially arduous, and carried on for long hours under unfavorable conditions that it becomes a danger. . . . Factory labor on the part of a mother acts injuriously on the child in two ways: (1) It brings into the world immature infants, who are unable to withstand the exigencies of life. The returns of the Registrar-General show that the death rates of infants from immaturity increases year by year, till now some 30 per cent. of the total infant deaths are due to this cause. (2) It induces deformities among infants which largely diminish their chances of life. This point has been clearly brought out by Dr. George Reid, Medical Officer of Health for Staffordshire. He compares the North Staffordshire manufacturing towns, where many married women are engaged in factory work, with the South Staffordshire manufacturing towns, where practically no women are engaged, and so far as abnormalities and still births are concerned, he gets the following results:

	Abnormalities	Still Births
North Staffordshire	15.0	9.4
South Staffordshire	6.0	3.2

"A mass of evidence proves without doubt that among the antenatal causes of infant mortality factory labor of the mothers plays the largest part, and yet we have no legislation which can prevent a woman from doing factory work even up to the very hour of childbirth. The law of England does not contain one clause to protect the mothers of her future citizens in this respect. To use a phrase of Mr. Chiozza Money's, 'The Factory Act is not aware that pregnancy precedes childbirth.'

"(*b*) Various Poisons Acting through the Mother on the Child." These have more relation to mental than to physical crippling and cannot be considered here just now.

So much for the suggestion we in America may get from our English cousins! While our immediate laws may be better, or worse, than Dr. Alden claims for England, dependent, of course upon what State of the Union we are called on to do our Public Health work in, the situation remains that the prevention of infant mortality and the prevention of infant deformity or congenital physical incapacity are very closely linked up one with the other. Having studied the problem as presented in our individual sphere of work, it becomes our duty to exhaust preventive measures, then to turn our attention, as hygienists, to the alleviation of such deformity as we have been unable to prevent. On the manner of meeting this point we shall have more to say later.

Dr. Jaeger's second class of cripples, *i.e.* those from diseases, presents even a more acute public health problem. He mentions two subtypes: (*a*) those from such constitutional diseases as tuberculosis, and (*b*) those from such diseases as infantile paralysis and hemiplegia. Both types offer problems linked up with disease prevention, and, both may be considered as preventable classes of deformity. It has already been suggested here that a large part of the future work should be directed to the pre-school years in the prevention of rickets, and to this should be added tuberculosis, meningitis, anterior poliomyelitis and similar contagious conditions under Board of Health supervision and control. The work of the contagious disease divisions should not stop at diagnosis, isolation, and quarantine of the sufferer from such contagious conditions; there should be some provision for follow up work, which will protect the child from the crippling sequelæ, or at least see that means and opportunity are provided to minimize the disability by adequate and prompt medical and surgical provision. Here, too, presents the problem of adequate

provision for those whose deformities we are unable to obviate, when we have exhausted all measures of prevention, and this problem should be faced in early childhood and not first approached when the child is already well into the school age, or perhaps beyond it, as is still too often, unfortunately, the case. This problem we will consider in a few minutes.

Take now the third class, the cripples from accident, whether they are adult or child, and we find other public health problems connected up with them in amazing number. Consider only a few of the causes for these accidental cripplings and the vista which opens gives one a sensation of individual helplessness, though I trust not one of hopelessness. Safety first! becomes a very emphatic element here. The prevention of accident in congested streets, the control of traffic, regulation of overcrowding of vehicles of public transportation, of buildings, of elevators, and so on ad libitum; the control and regulation of safety devices in factory, mine and shop; the grading of streets and roads with reference to railway crossings, and the maintenance of clear right of way through suburban and through congested urban districts where railway tracks are not enclosed or tunnelled. These and innumerable other problems of similar character suggest themselves to the thoughtful student who aims to promote the control of preventable deformity, and are too complex for us to do more than suggest them here. This accidental crippling of children presents the same type of problem offered by the congenital and the disease class, and is amenable to the same types of solution, if its prevention has proved impossible. For the adult of this accidental group the problem is different, and, as Dr. Jaeger says, "To save a man of this group from pauperism is not only more satisfactory but is of more economic importance. Well-intentioned but ill-advised friends and relations coddle the patient. He is cared for and supported until he has lost his ambition to work. In his idle hours he seeks solace and companionship in the saloon. This environment still further aids in the moral decline. It is an easy step to beg for the money thus needed, and when he once finds out how profitable this is, he loses his desire for work.

"The cripple who can get about easily, for whom the problem of going to and returning from work does not exist, and whose appearance is not objectionable, can easily take care of himself. We have, however, a large class, comprising the victims of severe infantile paralysis, who are confined to a wheel chair, and the spastic paraplegiacs. These manifestly cannot hope for employment in large shops. They belong to the "shut-ins" who must work at home and seek their market outside at some exchange or among private customers. The shut-in cripple needs guidance, particularly in the choice of articles he puts on the market, as well as in discrimination as to design. By offering well designed articles of intrinsic value, the purchasing public, which has hitherto been confined to a few wealthy individuals impelled to buy from charitable motives, will be augmented by the public at large."

Thus it becomes evident that a system of trade instruction, instituted during the patient's convalescence from the accident, with a view to providing a lucretive occupation adapted to the limitations imposed by the acquired deformity, solves at once two difficulties which beset this class of accidental adult cripple; he is prevented from acquiring a morbid mental and degenerative moral attitude, and he is provided with a substitute gainful occupation or trade adapted to his individual physical limitations. This is the problem of the war-cripple, and our future public health officers in peaceful America may gain much practical and beneficial information by observation of the methods employed in warring Europe to meet and solve the emergency; our field is limited in contrast, but the problem is the same in effect.

To return now to the problem of the crippled child, be it the unavoidable deformity of congenital, disease, or accidental origin, we face the same situation. Two solutions are possible: (1) Institutional care and training, or (2) Home care and day-school training.

The first offers many advantages in that it makes possible the early segregation of the child, and therefore the possibility of avoiding a mental kink due to his early environment and training in idleness and incapacity, and also because it places the child at once where adequate medical and surgical care can minimize to the utmost the extent of his deformity, or the ravages of his disease, or both, but it is open to the very forceful objection that it removes the child from the influences of family life and shifts the parental responsibility, which is always detrimental socially and ethically.

The second solution, *i.e.* home care and day school-training, offers also some advantages and some disadvantages. First, and perhaps most important of the objections, it offers that hiatus from public control between birth and school age, which encourages two very serious results, (*a*) the development of the mental attitude of helplessness which is so hard to combat in all cripples of school age or older, who have had no occupation but watching their physically able brothers and sisters go out to their daily school or play occupations and live a normal healthful life, and who have consequently acquired a habit of thinking "I am different and useless;" and (*b*) the development of their disease, or the progressive incapacity induced by the actual physical deformity. Parents are apt to sympathize unduly with the affliction and to underestimate the mental powers of their crippled children, and consequently apt to neglect to give them the necessary preparation for a useful life. These poor, neglected children, if not spoiled by overindulgence or schooled in depravity, are those who best prove that with a little care and effort expended along right lines, the problem of the cripple can be solved. As a matter of fact, however, all too frequently the indulgence of elders during the childhood of the cripples has developed the attitude that the world owes them a living, and not having been inspired with hope or ideals, they readily take to mendicancy or criminality. The manifold incapabilities, with their attendant limitations, result in unusual brain proccess. "We have," says Dr. Jaeger, "those who are precocious, having been reared amongst adults and deprived of the companionship of children of their own age. We have those who have been unduly spoiled because of their affliction supplemented by an appealing child's countenance. We have those whose sauciness was mistaken for cuteness and who have developed into adults of rare impudence in speech and an aggressive attitude toward others. Most cripples are sensitive to an abnormal degree, rendering it difficult to deal with them, as they take offense where none is intended. For this reason they will give up a position, leaving behind them an

impression of disloyalty and ingratitude. As they have rarely had mental training—especially with the view of becoming self-supporting—their schooling has been at least haphazard, so that they have acquired neither concentration nor discipline. For this reason many cripples, after having become proficient in a trade, take up the desultory life of begging and tramping in preference to following their regular occupation. There is also a large class of undeveloped cripples and I cannot emphasize too strongly that work with this type offers the best opportunity for successful results."

In addition to proper surgical and medical care, what the cripple most needs is help to offset or counterbalance the peculiar limitations set upon him by his deformity, and he should be afforded educational advantages fully as advantageous as those offered to the normal child who is his contemporary. For the normal person education is desirable, for the cripple it is necessary, else he becomes a charge upon the State, which is not only uneconomical for the State but also bad for the cripple. An estimate made by Dr. H. W. Orr would show that there are approximately 3,500 cripples to the million inhabitants, or about 3.5 per cent. of the population, and it has been estimated that there are 30,000 cripples in New York City alone. With such numbers of crippled in the country, and especially in cities, who would profit by care in the day schools, it becomes an acute problem as to how the educational facilities are best to be provided while the children are still at a receptive age.

Universally very little has been done along this line, though England has developed a splendid system of day schools for crippled children in conjunction with the organized public school; and New York City has provided some day schools under both State and private auspices; Chicago maintains some classes in the public schools, and Boston has an excellent industrial day school under private management.

Writing in 1910 of Primary Education for Crippled Children, Mr. D. C. McMurtrie says: "For crippled children attending such schools it is necessary to provide in addition to the instruction at the school daily transportation from the homes and nursing supervision over the children's physical condition. . . . In cases where the children are moved daily from place to place, it remains largely a matter of judgment as to whether the clinical work shall be done in the schools or elsewhere, as at hospitals or dispensaries. In view of the fact that removing such work from the schools makes the educational system more normal for the chilren, this would seem the more advisable course. Where possible it is well to leave as much of the responsibility as possible with the family—where it belongs. If the family can be trained so as to fulfil this, then the most permanent results are attained. The relations of the child to his parents remain natural, and as such they function in the healthiest manner. The home situation is not strained and no unpleasing readjustments are necessary. . . . Such a policy would give him (the crippled child) his education through ordinary means, and as a right, not a charity. It would also make for a more thorough and healthy mental growth and development."

Given the primary education in this manner, the cripple must then be afforded opportunity to fit himself for some particular niche in life, and this appears best accomplished by trade schools and trade classes for cripples in the organization of the public school system. It is important to select trades adapted to the individual and that are not already overmanned by good workers. After the training is received the question as to the possibilities of obtaining employment is to be faced. Working papers are no guarantee of employment. For various reasons many manufacturers will not employ badly crippled workers at all, and in other cases, only if the workers' skill is most unusual. The new factor of compulsory industrial insurance is also working against the employment of the crippled, because, it is presumed that he is less able to guard himself against injury and therfore accident, insurance companies will not issue a policy to a factory employing crippled men.

All these factors, and many others, work together to render the state institution the most desirable place, and the achievements of other countries illustrate how best to deal with the question. In England governmental orders are executed in custom tailoring for the army and navy by institutions which teach the trade to and employ and provide for cripples. Cripple institutions in Germany buy from and sell various supplies to other governmental institutions, thus carrying out the cooperative idea. In Russia trade classes in a Petrograd hospital make orthopedic braces, which serves the double purpose of teaching the trade and providing at a minimum cost the braces needed for cripples of the poorer or indigent classes.

The type of such institution is most important. To begin with, it should be located in the country, sufficiently close to some city to afford a market for its manufactures, it should be a combination of school, hospital, trade school, shop, and farm, built and managed on the cottage plan system, sufficiently self-centered to provide much of its own produce, and pay reasonable, market wages to such inmates as are capable of doing the various types of work and still, from its shops, afford sufficient income to pay all expenses and some interest on the original investment. There should be a competent orthopedic surgeon resident, to have charge of the hospitals and direct the treatment of the various cases, and a thoroughly competent teaching force, both academic and trade, to have supervision of the educational work, but the largest proportion of workers should be recruited from the crippled inmates themselves.

Turning from the physically crippled child whom we have stated needs a normal child's education plus special aid to overcome his handicap, we come to another form of defectiveness to which the same statement of needs will apply with only a little variation of meaning. The deaf child is not different in general organization or mental character from the normal child, except in the one respect, that he has never heard. This, of course, means that without special training he cannot speak, and that he is apt to be somewhat behind the normal child of his years, because the fact that during the first five years of his life—the years of rapid language formation—he has had no language except the very limited language of natural signs, and that, therefore, the normal education of those first formative five years is lost to him to such an extent that at eighteen years he is usually in a position similar to a hearing child of fourteen years.

Every deaf child, otherwise normal physically and mentally, can be taught to speak and to understand when spoken to and can, therefore, also be given as

good an education by the speech-method, without the use of any form of manual communication, as if it were not deaf. Every deaf adult, possessing moderately good sight and an average alertness of mind, can learn to supplement imperfect hearing by training the mind to associate ideas with visual impressions so that much of the strain and inconvenience of impaired hearing can be removed and obviated. While it is far better to begin the training of speech as early as five years—or earlier, if the intelligence of the family is sufficient to carry out the early instruction—nevertheless it is possible, especially where a pupil is anxious to learn, to teach a person of good intellect to speak who has never spoken a word up to eighteen or twenty years of age.

From the very valuable Special Report relating to the Blind and Deaf compiled from data obtained in the Twelfth Census of the United States, I have culled the following statistics and points which I felt to be of value to us in this discussion of the deaf.

"The age when deafness occurred is definitely stated in 81,590 cases, and of these 59 per cent. became deaf before reaching the age of 20 years, 48 per cent. became deaf before reaching the age of 10 years, 40 per cent. became deaf before reaching the age of 5 years, and 17 per cent. were born deaf. In the Twelfth Census 89,287 persons were returned as deaf, and in 10,115 cases the causes of deafness were unknown. In the remaining 79,172 cases the supposed causes were specified. In many cases, however, the assigned causes are vague and unsatisfactory. To these may be added the curious and fanciful causes of deafness sometimes assigned in individual cases. No less than 1,514 cases of this character were reported. Such causes as these—even if they are connected with the production of the deafness, which is often doubtful—are very remote causes indeed. Scarlet fever and other diseases, usually accepted as legitimate causes of deafness, belong to this same class, for they only act indirectly through intermediate agencies."

Scarlet fever may be the proximate cause of an abscess in the middle ear; the suppurative process in the middle ear may cause serious injury and even total destruction of necessary parts of the delicate machinery of the ear; and the injury to the ear may thus cause deafness. There are many other diseases, however, that produce a similar injury to the ear and in a similar manner. For example, measles, influenza, diphtheria, pneumonia, erysipelas, smallpox, tonsillitis, bronchitis, etc. In this special report, therefore, all these diseases were grouped together and the deafness attributed to "a suppurative affection of the middle ear."

It appears that among the classified cases the principal assigned causes were:

Scarlet fever	7,424
Disease of ear	4,210
Measles	2,469
Influenza	1,776
Catarrh	11,702
Colds	3,074
Malarial fever and quinine	2,826
Meningitis	1,991
Brain fever	2,013
Typhoid fever	2,875
	40,350
Minor causes	7,017
Aggregate classified	47,367

Malarial fever is given as a cause of deafness in some cases, and quinine in others. In large doses quinine is known to affect the hearing; but it is doubtful whether malarial fever, without quinine, produces deafness. The best disposition of these causes seemed to be to group them together and attribute the deafness to an affection of the internal ear, for quinine is known to have a specific effect upon the labyrinth. Meningitis included all persons returned as deaf from cerebrospinal meningitis, meningitis (simply), or spotted fever. It is probable that brain fever is the same thing under another name; but the number of cases returned under this head seemed to be sufficiently large to justify the retention of brain fever as a specific cause. Catarrh and colds probably constitute one and the same disease; but the number of cases of deafness due to colds seemed to be large enough to demand separate recognition.

Among the assigned cause of deafness in the classified cases, the following are specially predominant: Catarrh and colds, 14,776; scarlet fever, 7,424; meningitis and brain fever, 6,004. These three causes alone include the majority of the classified cases (58.8 per cent.).

It appears that among the unclassified cases the principal assigned causes are:

Congenital	14,472
Old age	3,361
Military service	3,242
Falls and blows	2,243
Sickness	2,143
Fever	1,436
Hereditary	909
	27,806
Minor causes	3,399
Aggregate unclassified	31,205

First in importance and overshadowing all of the others are the congential cases—14,472 in number. These, with two others, tabulated under the head of "other causes unclassified," constitute the "deaf from birth"—14,474 cases.

Congenital deafness probably involves the internal ear, for the deaf from birth as a class are totally deaf. Falls and blows also are apt to produce injury to the internal ear. Those deaf from old age are as a class, only partially deaf, so that in their case the internal ear is not incapacitated. It is probable that the defect relates chiefly to the external ear, resulting from impacted cerumen or thickening of the drum membrane. Military service may mean almost anything. Deafness due to the discharge of artillery would affect the internal ear; so would typhoid fever and malarial fever accompanied by quinine. Other diseases incident to military service, like catarrh and colds arising from exposure to the weather, might involve the middle ear. Sickness, fever, and hereditary causes would probably not involve the external ear, but might refer either to the middle ear or the internal ear.

It is clearly seen that the predominent causes of deafness are different in the case of the deaf from childhood and that of the deaf from adult life. Scarlet fever, meningitis, and brain fever, which are among the leading causes of deafness occurring in childhood, are comparatively insignificant as causes of deafness occurring in adult life. On the other hand, catarrh, colds, and influenza, which are the leading causes of deafness occurring in adult life, are of lesser importance as causes of deafness in childhood.

Occupations: The same classification of occupations was adopted for the deaf in this Special Report as was used for the general population at the Twelft Census. A comparison is therefore possible of the deaf and of the total population ten years of age and over gainfully employed.

	Total Number 10 Years of Age and Over	Number Gainfully Employed	Per Cent
Total population	57,949,824	29,073,233	50.2
The deaf	83,388	32,142	38.5

These figures indicate that deafnesss is a drawback to some extent in securing employment; but they also show that the deaf as a class are by no means a burden upon the community. Few of the deaf who are under twenty years of age are engaged in gainful occupations, but this is no discredit to them, for the vast majority of these persons are attending school. Of those over twenty years of age 43 per cent. are engaged in gainful occupations.

The census tables relating to occupation reveal the astonishing fact that there are extremely few occupations pursued by the people of the United States in which deaf persons do not find employment. This is not only surprising, but at the same time encouraging, as widening the scope of possible usefulness for the deaf.

There can be no question that the industrial training provided by our special schools has been of material assistance to their pupils in securing employment. The deaf who have attended school show a much larger percentage of their number pursuing gainful occupations than of those who have not attended school. The kind of employment—whether skilled or unskilled—is also largely determined by school attendance.

It appears that the deaf from childhood are more self-supporting than the deaf from adult life. This is especially surprising when we consider the fact the deaf from childhood include practically all of the deaf and dumb, and that most of them are totally deaf; whereas the deaf from adult life include none of the deaf and dumb (at least substantially none), and most of them are only partially deaf. Of the deaf from childhood who were over 10 years of age, 40.6 per cent. were gainfully employed, and of the deaf from adult life only 36.8 per cent. Of the deaf from childhood who were 20 years of age or over, the majority (51.6 per cent.) were gainfully employed, against 36.8 per cent. of the deaf from adult life. The deaf from adult life are undoubtedly better equipped by nature for the task of earning a livelihood, for most of them possess perfect speech and partial hearing, and yet the deaf from childhood seem to be more successful in this respect.

The explanation for this apparently anomalous condition of affairs seems to lie in the fact that many persons who become deaf in adult life fail to accommodate themselves to the new condition of deafness. They lose their positions on account of increasing deafness, and feeling themselves too old to begin life all over again in their crippled condition by seeking some new occupation with which deafness would not interfere, they lose heart and drop out of the struggle, becoming dependent upon their friends for support, or living upon the savings of former years, without entering into new pursuits.

In the case of the deaf from childhood, however, the accommodation to the environment has been complete before the dawn of adult life. Many of these persons have never experienced any other condition than that of deafness; and most of them enter upon the duties and responsibilities of adult life with that feeling of buoyancy and hope that is so characteristic of youth. Nor should we neglect to notice in this connection the powerful influence exerted on the deaf from childhood by the special schools which have been established for their benefit.

Dr. James Kerr Love of Glasgow, a British authority on the education of the deaf child, states: "Deaf children differ from hearing children in these points, apart from the presence of deafness and its consequences; (1) They have worse eyesight. (2) There is a larger number of mentally deficient children among them—about 15 per cent. (3) Deafness, when congenital, is often hereditary, and so persistently hereditary, in spite of a healthy environment, that congenital deafness becomes one of the chief objects of attention of the medical inspector of deaf children."

For purposes of classification and the discussion of educational needs, we may divide the deaf into the following groups:

1. Children:
   - A. Under school age, or from birth until about five years.
   - B. Of school age, including:
     1. Those whose hearing has been slightly impaired from infancy;
     2. Those whose hearing has been seriously impaired from infancy;
     3. Totally deaf from infancy;
     4. Those who are adventitiously partially deaf after speech has been acquired;
     5. Those who are adventitiously totally deaf after speech has been acquired;
2. Adults:
   - A. Those whose hearing is but slightly impaired by conditions which will yield to treatment.
   - B. Those whose hearing is slightly but permanently impaired.
   - C. Those whose hearing is seriously and permanently impaired.

Class 1, Group A. Children under school age, hearing tests and treatments are usually rather unsatisfactory, but adequate instruction by the parent, provided they are sufficiently intelligent, may do much to obviate the detrimental effects of the deafness. Because even slight deafness in a child interferes with its proper acquisition of speech by imitation of the speech heard from others. For this purpose, if the child has even a moderate amount of hearing, great care should be taken to speak distinctly to the child and near its ear; if the child is evidently very deaf, then in addition the parents should be taught to be careful to have the child's gaze fixed on their lips when they talk to it, in order that it may, even in infancy, acquire the habit of watching the lips, and so gradually and unconsciously learn to associate ideas with movements.

Class 1, Group B. For this class the years from 2 to 10 are the most critical, since in them must be acquired the child's vocabulary and its ability to read lips. The teaching which the child receives during the first three years of his school life is of vital importance to him and he needs then, even more than he will ever need again, the teachers of highest skill and greatest experience. The child with a remnant of hearing will need special care to maintain or improve that remnant. The child who has acquired speech before the adventitious impairment of his hearing will need particular care in preserving his enunciation. Children of all these types need to learn lip reading and the reproduction of sounds in order to acquire the ability to speak.

For the Class II cases the problems are different but the prime essential again is training in lip reading.

Lip reading and the ability to speak once acquired, the problem of teaching the deaf is robbed of its greatest difficulty and the remainder of their education is more on a par with that of normal hearing persons. Unlike the physically crippled, they are not so liable to find much difficulty in securing employment, provided they make the necessary adjustment of their requisites to their defect and for this reason institutions for the permanent care of the normal deaf are not so vital a State need as are institutions for the permanent care of the crippled. In sections remote from good day schools where instruction can be given to the deaf child by qualified teachers of the oral method, it becomes necessary to provide institutions for such education of the deaf of tender years in order that they may acquire the ability to speak and to understand speech, but once this ability is acquired the urgent need for institutional care is past.

It cannot be too strongly impressed that for the deaf child, as for the crippled child, the future must always be considered and the best type of self-respect maintained by placing the child in such position that he makes his way on his own merits and recognizes that this is so, and that he is not an object of pity and philanthropy. His early environment and the shut-in mental attitude his deafness entails, all tend to start him with a sense and feeling of dependence, and a duty, which education owes him, is to inspire his sense of personal independence by the manner in which it places in his hands the weapons of lip reading and articulate speech, with which he, on an equal footing with his hearing brother, may combat the exigencies of life.

Still another group of defectives, the blind, demand similar care, and their education as a group proceeds along similar lines to that of the cripple and the deaf. That is to say, they are capable of and entitled to a normal education plus the special attentions necessitated by their handicap. The blind can and do become self-supporting and efficient citizens, and the system of public health and public education which neglects their interests and welfare is open to grave criticism on the ground of inefficiency.

The conditions which are responsible for blindness may be classed under certain broad heads: (1) Blindness due to causes which are in their nature accidental. (2) Blindness due to general, and in many cases, preventable, diseases. (3) Blindness dut to congenital deformity.

In the first group is included a very large proportion, approximately 45 to 48 per cent., of blindness, and it reinforces the value of the motto "safety first"! because with the prevention of such accidents as produce the blindness we can obviate much unnecessary suffering and wasteful expenditure of money and energy in the re-education, or in the education, of the blind. Of the blind children in the London County Council Schools, 44 per cent. were grouped as cases due to accidental causes. Mr. Bishop Harman says of them: "In most of these blindness has followed destruction of the eyes by reason of the accidental inoculation of the surface membranes with some virulent microorganism. In a few the eyes were injured by blows, foreign bodies entering the eyes, etc., which set up inflammation of such a serious kind that the eyes were destroyed. Of this group of cases 84 per cent. (or 36 per cent. of the total blind) were blinded by the purulent ophthalmia of the newborn. Of the remainder, purulent conjunctivitis in later years accounted for 7 per cent., accidental injuries and sympathetic inflammation arising therefore for another 7 per cent., and smallpox for 2 per cent. In days not far remote in our own land, and even now in the Orient, purulent inflammations in the later years of life blinded innumerable eyes, and the present smallness of the total blindness arising from this cause is striking evidence of the effcacy of modern medicine. Smallpox was formerly even more notorious as a blinder of the eyes of the young, but now the tale has shrunken to insignificant proportions, and let it be noted those on my list so affected had not been vaccinated."

The second class of blind, that is blindness from general diseases, many of them preventable, includes approximately 30 per cent. of the blind, and a larger proportion if we include in this class the cases from ophthalmia neonatorum.

The third group, *i.e.* congenital blindness, includes approximately 25 per cent., and is, of course, the least subject to public health control.

The principal facts concerning the blind set forth in the general tables of the Special Report from the Twelfth Census are those relating to sex, color, general nativity, marital condition, present age and age at which blindness occurred, causes of blindness, and occupations.

The general relation of these data to the blind, distinguished as totally and partially blind, is shown briefly in the tables and comments:

"Sex.—Of the 64,763 blind reported, 57.2 per cent. are males, 42.8 per cent. are females."

Regarding the degree of blindness, it is shown that 35,645, or 55 per cent., of the blind are totally blind, and 29,118, or 45 per cent., are partially blind. Of the totally blind, 56.5 per cent. are males and of the partially blind, 58.1 per cent. To state these facts in another way, blind males show a smaller proportion of their number totally blind than do blind females. The figures indicate that blindness, both total and partial, is more common among males than females.

The number of blind per 100,000 of population is considerably greater among the foreign born white population than among the native white (foreign born whites, 104.7; native whites, 80.4).

Of the totally blind, 2,317, or 65 per 1,000, have been blind from birth, and 2,084, or 58.5 per 1,000, became blind after birth but under 2 years of age. Of the partially blind, 2,413, or 82.9 per 1,000, are blind from birth, and 1,352, or 46.4 per 1,000, became blind before reaching 2 years of age. Thus the number who lost their sight, either entirely or partially, before reaching the age of 2 years, is 8,166, or 126.1 per 1,000 of the blind at all ages. Of the specific causes of blindness, those to which the greatest proportion of cases per 1,000 from all causes are: Cataract, injuries, accidents, and operations, congenital, old age, and sore eyes. Unknown causes are responsible for a slightly greater proportion than any of the above, namely, 123.6 per 1,000.

Considered with reference to the degree of blindness, the percentage totally blind is considerably greater than that partially blind when the defect is due to the following causes: Meningitis, glaucoma, congestion or disease of brain, scarlet fever, small pox, venereal diseases, injuries, accidents, and operations, neuralgia, grip, and colds, while the percentage partially blind is greater in the cases due

to granulated lids, old age, scrofula, catarrh, measles, and military service. The causes resulting in a greater proportion of blindness among the whites than among the colored were: Granulated lids, catarrh, colds, measles, scarlet fever, smallpox, cataract, neuralgia, glaucoma, congestion, or disease of brain, congenital, military service, and grip.

The great disparity between the white and colored in the occurrence of blindness as the result of granulated lids and glaucoma confirms the opinion, generally held by observers in America, that granulated lids, or trachoma, which is so fruitful a cause of blindness among the Irish, the Russians, the Jews, and the Itlaians, is almost unknown among the negroes in this country.

The causes producing a greater proportion of blindness among the colored than among the whites were: Scrofula, sore eyes, venereal diseases, exposure to heat and cold, old age, injuries, accidents, and operations, strained eyes, and unknown causes.

Of the 20,704 persons who were blind from childhood, 4.728 were born blind—about 23 per cent.—the other principal causes being injuries, accidents, and operations, sore eyes, cataract, measles, and scrofula.

Cataract, injuries, accidents, and operations, old age, affections of the nervous apparatus, military service, sore eyes, and neuralgia were the principal causes of blindness among adults.

Excluding congenital defects and injuries, accidents and operations, there are 2,556 who lost sight after birth but under 1 year of age, and in 644, or 25.2 per cent. of these cases the cause of blindness was probably ophthalmia neonatorum, or "babies' sore eyes," since other diseases of the eye causing blindness under 1 year of age are extremely rare. The importance of these figures lies in the fact that this disease, which is very malignant and which attacks the infant at birth or immediately after and almost always results in total destruction of the sight—usually of both eyes—or in very seriously impaired vision, is now considered preventable, and if proper measures had been instituted at the time of birth few or none of these cases would have occurred.

"Occupations.—Of 62,456 blind 10 years of age and upwards, 12,506, or 20 per cent., were reported as engaged in definite remunerative occupations. The per cent. of the general population similarly employed was 50.2."

Classifying the occupied blind by degree of blindness, the number reported as totally blind is 5,581, and the number reported as partially blind is 6,925. In other words, 16.2 per cent of the totally blind 10 years of age and over are gainfully employed and 24.7 per cent of the partially blind. The figures show that there is a larger percentage of totally blind persons gainfully employed engaged in professional pursuits, trade and transportation, and manufacturing and mechanical industries than is found in the general population, while the percentage engaged in agricultural pursuits and domestic and personal service is less.

The type of schooling needed by the blind is not essentially different from that for normal individuals, except that their books must be so printed that they can be "read by hand" instead of by eye, and that adaptations must be made of all things in their environment to obviate, so far as possible, the psychical defect due to lack of visual impression. Here applies the same truth iterated for the cripple and reiterated for the deaf. The individual must be taught self-confidence in competition with normal individuals as quickly as possible after adjustment is made to compensate for the actual defect.

It must be clearly borne in mind in any consideration of defectives that there are numerous cases of compound defect; for example, there are a goodly number of crippled-deaf and of crippled-blind, as well as blind-deaf. I cannot place my hand on any percental or estimated figures by which their relative importance to the uncomplicated cases of single defectiveness can be weighed in the balance; neither have I been able to obtain any figures by which to justly estimate the numbers of crippled-mental defectives, of deaf-mental defectives (except Dr. Love's statement already quoted), or of blind-mental defectives, but in the latter case the relative number does not bear on the side we are at present considering; as they, *i.e.* the crippled, blind and deaf aments,—may be more justly said to complicate the problem of the treatment of mental deficiency rather than the problems of the physically or sensorily defective; the thing to fight against most in such cases is the mental deficiency rather than the blindness, or deafness, or deformity.

The problem of the ament is a very large one and must be taken up at another time in our next lecture. There still remains for our discussion to-day the following problems among defectives, and we can only touch them briefly: (1) The generally-physically-incompetent child or adult, and (2) the partially blind or deaf child.

Among the large group which compose the generally-physically-incompetent class of individuals, we find the non-crippled tubercular, the profoundly anemic but non-tubercular, the non-crippled scrofulous or rachitic child, the neurotic individual, who is not plainly insane nor plainly mentally deficient, but usually delinquent, frequently non-social, and always a burden on the state, either in juvenile reformatory, in jail, in prison, or in almshouse, and the type of physically unbalanced individual who, while never distinctly so ill as to require hospital care, is generally so ailing as to be incapable of sustained physical effort, and, who is just beginning to be recognized as a subthyroid, a subpituitary, or a subadrenal case, amenable to rehabilitation by means of proper treatment and care.

For the non-crippled tuberculous class a species of sanitarium care, or of systematic supervisory, follow-up home care, such as is maintained by our New York City Department of Health, is the only type of solution that is socially or economically thinkable in the present age of conservation. Restored to health, or even to a modicum of physical capacity, these defectives are an economic asset which the state cannot afford to neglect nor to support in idleness. This fact has been brought home to the public until the truth of it is widely appreciated by the splendid and systematic work in the fight against the great white plague. It is a fact that applies with equal force to the other forms of general physical incompetency which I have mentioned, and the sooner the truth is recognized and impressed upon the public mind and conscience, the sooner there will be an efficient economic conservation of the public health, the public wealth, and the public welfare. The neurotic defective to which I have called attention in this classification approaches so close to the mental defective that we shall have more to say about him later in that connection. In school care all these types of physically defective sould be placed in open-air

classes and receive the education of normal children.

It is sufficient to point out at present that this type of generally-physically-defective is a public health problem, the bulk of which is at present neglected and ignored, which the hygienist of the future will find looming large in his field of work and endeavor, and the solution of which must be sought and found in the field of prevention, as much, or more thoroughly, as in the field of cure.

The problem of the partially blind or deaf child is largely one of educational hygiene, aside from its strictly medical aspect of visual or auditory conservation. The proper lighting and acoustic properties of school buildings; the character of paper, type, etc., used in text-books and for composition; the length of study periods, the amount of home study, as well as the seating of the individual pupil in the class-room, are all questions in practical school hygiene and sanitation, which concern the school physician, and therefore the public hygienist, quite as much as the problems of (1) providing hospital, dispensary, or medical care for the individual children with the object of conserving as much sensory function as possible, and (2) of substituting the training of the totally blind or totally deaf in those cases whose progressive deficiency cannot be arrested or whose partial deficiency renders them unable to receive a maximum benefit from the education of the normal individual.

Briefly then to summarize the problems presented to us by the cripple, the deaf, the blind, and the generally-physically-defective, we have (1) prevention, (2) cure, or alleviation, and (3) conservation and corelation.

Prevention involves not only public health control of the physical defectives in a community, but the regulation and prevention of all causes contributing to the production of defectiveness, so many of which are allied to other general health problems such as Infant Mortality, Contagious and Infectious Diseases, Factory Inspection, Congestion of Population, General Municipal Sanitation, and so on.

Cure or alleviation involves the diagnosis and registration of the defect and a system of follow-up supervision, as well as the immediate medical or surgical treatment of the defective.

Conservation involves a system of public health propaganda whereby the amount of actual physical inefficiency may be minimized and the amount of individual efficiency utilized to the utmost for the production of work of social and economic value to the community as well as to the individual. And Corelation involves either a centralization of control, such as might be effected by a National Board of Health linked up with the present National Education and National Labor Departments, or else a larger spirit of cooperation between existing organizations, public, philanthropic, and private, wheresoever their fields of endeavor meet, approximate, or overlap.

101 West Eightieth Street.

Incipient Mental Disease.—Floyd M. Alpin states that in his early observation of suspected mental cases there are four major points he uses in much the same spirit as a woodsman would the four points of a compass. First, is the patient above normal in spirits, lowered in his religious habits, bold in manner, free with money and remiss in home relation? Second, is he below the average in spirits? Third, what about any peculiar ideas if any are present? Fourth, does there exist or likely to exist a decrease of mental capacity?—*Wisconsin Medical Journal.*

THE LEGACY OF THE INTEMPERATE USE OF TOBACCO.

By ROBERT ABBE, M.D.,

NEW YORK,

SENIOR SURGEON TO ST. LUKE'S HOSPITAL.

"The public looks to the medical profession for advice—not for reform." Doctors are better observers than moralists, use tobacco quite generally, and deal tenderly with the smoker until he gets into trouble with nervous overstimulation, heart irregularities, precancerous condition, or well-developed cancer of the mouth, or, possibly, with throat cough, or indigestion only.

Patients showing the ill effect of tobacco are only those who have been *intemperate* in its use. Intemperate is a word with shifting meaning. Every man's limit of tolerance for tobacco is different. Some can never touch it without suffering. Others seem to be immune and have no limit. This apparent freedom to use it without restraint constitutes the danger. In this class are found all the victims of its dangerous effects.

I once said I had never seen serious mouth disease in any patient who had not smoked more than three cigars a day. A larger experience confirms that statement. I also said, several years ago, that I had not seen such bad effects from cigarettes, but closer study of many cases has shown me numerous serious cancerous or precancerous mouth conditions in men who used only cigarettes. The last one smoked daily two boxes of ten each. He was a comparatively young man.

The insidious increase in the amount used is associated with the slow augmentation of its effect, usually unrecognized by the victim. The cumulative results in bringing about ultimate degenerative changes are capable of mathematical determination. Indeed, the only safety for those of us who enjoy tobacco in moderation is that we live threescore and ten years instead of twice that. Else we, too, would suffer in larger proportion.

I have been more impressed of late years with the number of men, in commercial life especially, who are inveterate smokers, whose vest pocket bulges with cigars, who sit in an office smoking and being smoked at, forgetful of the successive hours during which they smoke. While there is less drinking of liquor, there is more smoking. The corner saloon is being replaced by the convenient corner cigar store, a welcome social change. The effect in practice is, that we see fewer cases of cirrhosis of the liver and alcoholic gastritis, but more cases of cancer of the mouth. Physicians may well take note and wisely advise the *temperate* use of tobacco for those who find it an agreeable habit at home and a help in business. Strangely enough, it seems to be a helpful stimulant to business men of some temperaments. A charming gentleman and successful merchant once told me he couldn't conduct business sitting "dry-mouthed" on opposite sides of a table with a man, unless they had cigars. But if he had a cigar he could always talk and think better and get the advantage of his customer. Such is competitive business!

The intemperate use of tobacco is apt to be a legacy. An intelligent Italian of middle age recently appealed to me for relief of cancer of the tongue, too far advanced for hope from any known remedy. Not long after, his well-to-do brother came to see if the burning pain on his tongue was the

beginning of cancer. Both brothers had been heavy smokers from boyhood. The father and mother smoked constantly. On inquiring details the son said his dear little old mother always had her pipe in her mouth. For three years before her death she was crippled with rheumatism. Every joint was crippled so that she could only lie awkwardly in bed, from which she was lifted in and out. He imitated the cunning way in which she would twist her hand up to her mouth with the ever-present pipe, and if at night she couldn't sleep she would have a pipe by her bedside and smoke at 3 A. M.

The son was quick to see that he and his brother were victims of tobacco and abruptly stopped it. He had in his mind a new generation of his own children.

That same week two fine young men, brothers, came to me with beginning cancer of the mouth. They might have been twins in appearance and in disease. They could not remember when they had not smoked, beginning with cigarettes at twelve years old. I asked if their parents sanctioned it. "Why, yes. Father smoked all the time himself." I asked about *his* health. "Very well except until lately he had a cancer of the whole lower lip and the doctors had to cut it all away and make him another." Both men gladly and easily broke the smoking habit, and one told me, two months later, he was "gaining flesh, was less nervous, and never felt so well or was so successful in his business."

To make clearer the point of the legacy of tobacco, let me state briefly the case of a gentleman who recently consulted me for an early stage of mouth cancer, to whom I gave the usual counsel that I could do nothing until he gave me his help by stopping his inveterate smoking. He said he had once stopped for a few weeks and he could do it again. I said this time it must be for good. His wife said she would see that he did. In two weeks he came to report his success and was ready to be treated. I had advised him to get all his cigars out of his room to avoid temptation and asked him if he had cleared his desk and library of tobacco. He said, "Yes, indeed, I gave *all* my paraphernalia—pipe, cigar cutters, everything—to my son." "What," I said "to *your son?* That's a nice legacy!" "Oh," he said, "he's one of the steadiest of men—very temperate. I can trust him not to overdo it." I could not help reminding him that one of our great national heroes smoked incessantly, as everyone knew, and suffered and died from the consequence of disease of his throat. His distinguished son, also a heroic figure in our army, adopted the same habit, smoked equally incessantly and suffered and died of the same terrible consequence. This is a heavy price to pay for the intemperate use of such a throat irritating and unnatural habit.

Tobacco smoking is increasing year by year in our country. Collegians are lured by seductive advertisements, which are excluded from two college papers only, and form a large part of the paying advertisement. Of the senior class in one of our finest universities, among 230 members were 136 smokers, 50 of whom began after entering college—a legacy of the college to its alumni.

There is no reason to believe that smoker's cancer is in any sense an inheritance, but merely the legacy of a habit which, when intemperately indulged, results in identical bad results, in a certain number of cases. Whatever the frequency of this grave result, the fact of its unquestionable relation to intemperate use of tobacco is established.

Every smoker must determine for himself what his comfortable limit is, and use his God-given intelligence to safeguard his own and his children's future.

More than ever we need a nation of strong men, not undermined in health by any deleterious habits, which can be just as well diminished as increased. Good medical counsel is something of a nation's life insurance.

13 West Fiftieth Street.

THE VALUE OF EXAMINATION OF APPLICANTS FOR INDUSTRIAL EMPLOYMENT.

By ALVAH H. DOTY, M.D.,

NEW YORK.

The examination of applicants for employment in The Western Union Telegraph Company, which has been in operation during the past two years, was not inaugurated solely for the purpose of securing a healthy and desirable class of employees, but also for the protection of those already connected with the service, chiefly by guarding against the introduction of communicable diseases.

The importance of protecting employees against infection is now so fully recognized and yields such valuable results, so far as the preservation of health is concerned, that no additional evidence is required as to the need of such a measure. However, it may be said in passing that the medical representatives of this company have found many cases of communicable diseases among those who present themselves for examination. For instance, during the year 1915 thirty-six cases of tuberculosis and forty cases of suspected tuberculosis were detected in this way, besides various other sources of infection.

Aside from the protection against communicable diseases, the examination of applicants for employment is otherwise of interest and importance to those already connected with this service, who sooner or later are likely to participate in the very generous benefit fund provided for their comfort, which also must be carefully guarded, for no employer can indefinitely extend substantial aid in this direction if such a fund is improperly or too heavily drawn upon. The importance of this is more seriously appreciated when it is borne in mind that The Western Union Telegraph Company has 40,000 employees.

Physical examinations are not popular chiefly for the reason that those who are personally concerned are often either conscious of some physical defect or fear that something of the kind may be found. Sometimes modesty is the dominant reason why an examination is objeced to. This applies particularly to women. Furthermore, there are those who, although not personally concerned, do not look with favor upon the examination of applicants for employment because it is likely to exclude many who at the time are fully able to work, and would make faithful employees yet may have some physical defect. It has been asked if these persons are excluded everywhere, by what means may they earn a living? There is sufficient reason in this criticism to entitle it to careful consideration.

No one will question the propriety of excluding those who are a menace to the health of others, and it is also entirely proper for an employer to reject those who are incapable of properly performing the work they apply for. For instance, the service of The Western Union Telegraph Company is practically indispensable to the public, and is held respon-

sible for the prompt transmission of important messages throughout the world. Oftentimes, a mistake in the wording of a telegram may cause irreparable damage to someone. Therefore, those who are to enter this service should be mentally and physically fit to perform their duties. This is in the interest of the public as well as the employer.

In preparing a plan for the examination of applicents for employment, The Western Union Telegraph Company has given careful consideration to the various factors related to this subject, and has endeavored to carry out this means of protection in a reasonable as well as a scientific manner and in a way which will be of benefit to the employees as well as the employer, and reject only a minimum number of applicants. This has been a feature of special interest, for it differs somewhat from the means usually employed, in the physical examination of those seeking work.

In order that the examinations throughout the United States and Canada may be uniformly carried out there have been 317 physicians appointed as medical examiners. This very large number is required, for there is hardly a place in the United States, no matter how small it may be, that does not contain one or more employees of The Western Union Telegraph Company. These medical examiners have been selected with the greatest care, and include many leading members of the medical profession. These officers do not receive a salary, but are paid a fee for various services rendered. The examination of applicants is paid for by the company.

The character of the examination is shown by the blank presented in connection with this article. It serves the purpose well, and contains the information required by the Medical Director in approving or disapproving the many applications which are presented for final decision.

REPORT OF MEDICAL EXAMINER

Date..... .191

I certify that I have carefully examined.....
who is personally known to me or has been identified as the person signing this application for employment by the Western Union Telegraph Company, and find.....condition to be as follows:
1. General appearance..... 2. Weight..... 3. Height.....
4. Heart. (A) Valvular disease.... (B) Other affections.....
5. Lungs. (A) Tuberculosis..... (B) Other affections.....
6. Kidneys. (A) Urine specific gravity.... (B) Albumin.....
(C) Sugar.....
7. Eyes. (A) Diseases.....
(B) Vision
R. / (C) With glasses to correct refractive error R
L. / L
8. Ears. (A) Diseases..... (B) Hearing.....
9. Teeth..... 10. Skin or other diseases.....
11. Deformities..... 12. Rupture (Male)
13. Remarks .....
14. Re-examined on .....
(Date)
15. Recommendation .....
.....M. D.
(Signature—Examining Physician)

While no special place is assigned in the examination blank for the report of venereal diseases, the medical examiners are quick to detect any evidence of these affections which may present themselves during the examination, and record is made under the heading "Other Diseases." Beyond this it is not deemed justifiable, at least at the present time, to deal more closely with these affections.

The character of the examination is unobjectionable, and requires no inspection below the waist, except in the case of men, and then only to ascertain if hernia is present.

During 1915 there were 7,201 applicants examined—4,919 males and 2,282 females—and while it is impossible at all times to avoid some little misunderstanding, I am aware of no complaints or criticisms which have been made concerning the method of examination, for every precaution is taken to render it satisfactory to all concerned. So far as practicable, trained nurses are present during the examination of female applicants.

Organic disease of the heart and kidneys, hernia, and other defective physical conditions, are often found among those who present themselves for examination. While at the time these maladies may not impair the usefulness of those concerned, this may occur later on, particularly if care is not taken to maintain good health, for it is well known that in almost all of these conditions the extent to which disability occurs depends largely upon the mode of living. This fact has been given due attention in arranging an examination which is liberal in dealing with this class of applicants. Further details connected with this part of the subject will be of interest.

The examination records show that 149 cases of organic disease of the heart were found (111 males and 38 females) during the year 1915. Of these cases 101 occurred in persons under 20 years of age. At this period of life there is usually good compensation and but little disturbance of the heart action, and unless a very careful examination is made the disease is usually overlooked. There is probably no affection in which the unpleasant results are more apt to be postponed by the proper observance of the rules of hygiene than organic disease of the heart. Therefore, applicants having this malady are informed that the company will accept them under certain conditions. This relates to a waiver of benefits in case of disability caused directly by heart disease. This acts as a very effective stimulus in maintaining care in the preservation of health, and it is largely for this purpose that the waiver is required, for simply a promise to do this would very likely be forgotten soon after entering the service. Furthermore, a waiver interferes but little or not at all with disability benefits or the granting of a pension later in life.

This plan is also followed in connection with hernia and some other conditions. Those found to have hernia are informed of the value of an operation to effect a cure. If they are unwilling to submit to this treatment they are accepted after signing a waiver. In several instances an operation has subsequently been performed and the waiver annulled, or at least a good fitting truss is selected and greater care observed to prevent any of the unpleasant results of hernia.

There is not the slightest doubt that this arrangement constitutes a very valuable means of preserving the health and life of those who are disabled, and in the various ways above described is quite sure to make reliable and satisfactory employees, for under these conditions the persons affected are more apt to lead a regular life than others.

The results concerning the examination of the eyes and teeth are also of interest. During 1915 about 10 per cent. of the applicants for employment were found to present evidence of defective vision, and frequently were not aware of this condition, or had taken no means to correct it. A large number of them suffered from headaches and certain nervous manifestations, which very properly might be attributed to this cause. Of those having defective vision 199 were far below the standard required by this company, *i.e.*, 20/20 in one eye and 20/40 the other (Snellin's Test Type). In some instances the sight of one eye was gone or practically useless.

The company's medical examiners have been very careful to explain to those with defective vision the great value of having their eyes tested or refracted and glasses fitted, and furthermore that if they will give this proper attention and their vision is sufficiently corrected they will be admitted into the service of this company if otherwise in proper physical condition. Out of this group of 199 applicants, 89 took advantage of the offer, had their eyes refracted and returned for re-examination and were employed, and probably for the first time enjoyed good eyesight. Some of the remainder did not attend to this on account of the expense. As a matter of assistance a number of these were given temporary employment until they were financially able to have their eyes refracted and glasses fitted, and were afterward given permanent employment.

Defective teeth were found to be the rule rather than the exception. The frequency with which this occurs has been so fully and generally reported that further comment is uncalled for. Not only were the teeth in bad condition, but in many instances there was marked pyorrhea with evidence of infection.

Special instructions were given by the medical examiners regarding the urgent need of having defective teeth promptly treated, and warning was given of the unpleasant results which might follow carelessness in this direction. Applicants were requested to report for re-examination after this had been attended to. A large number of applicants were given temporary employment until they were financially able to consult a dentist. It may be added that the examination of teeth revealed a display of bridge and crown work, which not infrequently was largely responsible for infection.

Simply to inform applicants for employment or those already in the service that they should consult an oculist or dentist is quite apt to leave them undecided as to the wisest course to pursue, for many of them have had no dealing or experience with these specialists, and as a result often fall in the hands of those who do not properly perform the work or who charge unreasonable fees, or both.

This has led to the adoption of a plan by The Western Union Telegraph Company which has proven exceedingly valuable to those personally concerned. The medical examiners throughout the service have been requested to select an oculist and dentist upon whom they can depend to render proper service to applicants for employment as well as employees and who will charge a reasonable fee for it. There has been a very general and satisfactory response to this request for cooperation on the part of the medical officers of this company.

A careful study of this subject in its various phases will show that the examination of applicants for employment cannot longer be regarded as of interest and value only to employers, but that it is equally important to employees. It is a means of protection which all employers should extend to those already in their service. It is hardly necessary to say that this valuable preventive measure goes hand in hand with the careful and constant observation of employees to detect the presence of disease or ill health and the means best suited to educate them regarding the importance of personal hygiene, and also to provide them with offices and workshops which are in good sanitary condition and supplied with modern appliances all of which go far to maintain the health and comfort of those under observation.

205 West Fifty-seventh Street.

STERILITY IN THE FEMALE.

By WILLIAM P. HEALY, M.D., F.A.C.S.,

NEW YORK.

PROFESSOR OF GYNECOLOGY, FORDHAM UNIVERSITY SCHOOL OF MEDICINE.

It may be said that every woman, almost without exception, who marries harbors within her a maternal instinct which creates a desire on her part to become a mother. When such a woman carrying on normal sexual relations has not become pregnant before the end of the first year of married life she usually consults her physician in an effort to ascertain the reason for the sterility. Very few of these women go to specialists, at least in the beginning, but consult a physician in general practice.

It may be of interest to review briefly the more common etiological factors found in these cases, with particular reference to diagnosis and treatment.

When a woman complaining of sterility presents herself for examination it is important to secure from her a careful and accurate menstrual and past history. The former because any congenital abnormality present will probably show an irregular menstrual history. The latter in order to ascertain whether or not there has been a previous pelvic inflammation.

For purposes of classification one may group diseases or pathological conditions occurring anywhere in the human body under four headings, (1) Malformations or congenital anomalies, (2) Inflammations and infections, (3) Injuries, (4) Tumors.

Practically all cases of absolute sterility belong etiologically in the first and second groups. Instances of relative sterility occur in the fourth group in which we have the cases of one child sterility and miscarriages so frequently associated with fibroid tumors of the uterus, or in the third group in which we may have miscarriages as a result of uterine displacements or traumatic lesions of the pelvic organs, following previous pregnancies.

The form of inflammation with which we are chiefly concerned as a cause of absolute sterility is the one resulting from infection by the gonococcus during sexual intercourse. This infection may have been of the explosive type, resulting in an acute widespread involvement of all the pelvic organs and a well-marked pelvic peritonitis, or it may have been a slow, chronic, insidiously progressive type of infection never incapacitating the individual from active work, but gradually resulting in a low-grade inflammatory disturbance throughout the endometrium and the uterine tubes and showing itself clinically in an increased or prolonged menstrual flow with some dysmenorrhea, and a yellowish mucopurulent vaginal discharge with no special urinary or bladder discomfort. This chronic form of infection may be present without the patient's knowledge. Gonorrheal infections travel by surface extension and very infrequently by the lymphatic or blood stream; in these chronic cases therefore practically the entire lesion may be limited to the endometrium and the mucous membrane of the uterine tubes, with little or no gross change in the organs, so that a bimanual examination gives negative findings and repeated microscopic examinations of smears made from the cervical discharge may fail to show the gonococcus. However, the organism can in many instances be

obtained by expressing the secretion from Skene's tubules at the urethral orifice. Any case of absolute sterility associated with a mucopurulent cervical discharge is practically always the result of a gonorrheal infection.

Another group of cases, many of which are of gonorrheal origin, is that associated with chronic endocervicitis evidenced by the presence of a tenacious plug of mucus in the cervical canal and blocking the external os, but without any pus in the discharge. Such cases are practically always sterile, the mucous plug in the cervix seeming to present an impassable barrier to the spermatozoa.

Many cases of sterility belong to the group of congenital malformations. Of course, cases in which there is a total absence of the vagina or uterus or ovaries are not under consideration, but rather those cases in which all the pelvic organs are present but have failed apparently to reach complete maturity in their development. As a matter of practical observation and clinical experience this lack of complete development is observed more constantly in the uterus than in any of the other pelvic organs, which is fortunate, for we are at present able to cope reasonably successfully with cases exhibiting certain uterine defects.

The clinical findings here fall usually into one of three groups: (*a*) a small, poorly developed uterus with scanty menstruation, (*b*) a small uterus with antiflexion and a normal period except for dysmenorrhea, (*c*) a uterus normal in size but with a long, conical cervix and a stenosis of the cervical canal, the menstrual period tending to be profuse and prolonged and associated with considerable dysmenorrhea. Any one of these groups may be complicated by a retroversion of the uterus.

Occasionally we have cases of absolute sterility resulting from the endometritis accompanying intramural or submucous uterine fibroids. Very rarely one will come across tuberculosis of the endometrium as a cause of sterility.

A certain small number of cases of sterility are dependent apparently upon some other factor than those already mentioned, for a careful examination discloses no congenital defect and no evidence of past or present infection, no injury to the pelvic organs, no neoplasm, and yet with an apparently healthy woman conception does not occur. In such cases one will occasionally find the explanation in an increased acidity of the vaginal secretion as a result of excessive decomposition with lactic acid fermentation, and these cases are often cured by using saline or bicarbonate of soda douches at bedtime.

Sometimes apparently healthy women will go for years without a pregnancy, and then at last when they have reached the menopause and the symptoms of the climacteric are establishing themselves they will become pregnant. In my opinion in such cases we have had to deal with abnormal tubal, uterine, or vaginal secretions which, with the lessening activity of the impending climacteric, have become more normal.

Treatment.—Assuming, then, that we have made a careful examination of the patient and that we have classified her, if possible, in one of the above-mentioned groups and have assured ourselves that the husband is not at fault, how shall we treat the condition found?

If the examination is negative and the woman appears perfectly normal I would say she should use a physiological salt douche at bedtime and intercourse should be restricted to the week preceding the menstrual period, as in many of these cases I believe there is too frequent intercourse, with increased ovarian and uterine congestion, resulting in the production of a uterine secretion which inhibits or is detrimental to the activity of the spermatozoa.

In cases of sterility associated with uterine anomalies I believe that groups (*a*) and (*b*) can be greatly benefited by a thorough dilatation of the cervix, a superficial curettage of the endometrium above the cervix, and the use of a stem pessary retained by a suture and left in for about three weeks. Group (*c*) can be helped by a dilatation and curettage and a Dudley operation on the elongated cervix.

A retroversion occurring in any of these groups should be corrected by the use of an appropriate pessary or by an operation.

Sterility due to gonorrheal infection is least satisfactory to treat. As a rule the infection is no longer active when the patient comes for advice and one has to deal with end results which vary according to the extent of the primary inflammation. If the bimanual examination does not disclose any lesion of the tubes or ovaries, one is justified in performing a careful dilatation and curettage of the uterus and in ordering only saline douches. Should the patient not become pregnant within a year and there is an undoubted history of previous gonorrheal infection, and an examination of the husband shows plenty of normal, active spermatozoa, then I believe one is justified in assuming that the tubes were probably involved in the inflammatory process and in advising an exploratory celiotomy for the purpose of freeing adhesions and opening the tubes if they are found to be closed.

The acceptance of this advice will depend upon how anxious the patient is to leave nothing undone that may aid her in obtaining a cure, and as a matter of fact the patient has to assume the burden of responsibility in cases of this particular type, for the exploratory celiotomy may not disclose any lesion of the tubes, although in many cases chronic salpingitis with adhesions and blocking of the tubes will be found.

Gonorrheal cases which are quiescent but present a definitely palpable lesion of the tubes and ovaries require not only a curettage of the uterus for the purpose of restoring the endometrium to normal, but must also undergo an abdominal operation to permit of plastic surgery on the tubes, which in all probability will be found closed at their fimbriated ends.

Where the sterility seems to be due to the presence of fibromyomatous tumors in the uterus, one should do a curettage and, if possible, a myomectomy.

The following case reports will serve to illustrate some of the foregoing conditions:

Case I.—Mrs. A. S., age 24, married six months. Menses occur every twenty-eight days, duration four days, moderate flow but with severe pain for the first day and a half. Complaint, sterility and dysmenorrhea. Examination, uterus retroverted, freely movable, normal size, tubes and ovaries apparently normal. Treatment, uterus replaced in position, a retroversion pessary inserted, ordered a vaginal douche of salt solution at bedtime. She promptly conceived, showing that the hindrance to conception was very slight and was easily overcome.

Case II.—Mrs. H. T., age 26, married two years. Menses occur every four weeks, duration seven days, moderate flow but with very severe pain. Complaint, sterility and dysmenorrhea. Examination, cervix short

and flattened, external os very small, body of uterus slightly below average size and rather sharply anteflexed. Tubes and ovaries apparently normal. Treatment, the cervix was dilated, the uterus curetted, and a stem pessary inserted for three weeks. The patient became pregnant within five months.

Case III.—Mrs. N. C., age 28, married 2½ years. Complaint, sterility. Menses occur every four weeks, duration three or four days, free flow, not much pain. Patient has had a yellowish, sticky vaginal discharge since marriage. Husband had gonorrheal urethritis before marriage and was supposed to have been cured. Examination, a thick yellow mucoid discharge was exuding from the cervical canal, the posterior lip of the cervix was eroded, the body of the uterus was heavy, slightly enlarged, and slightly anteflexed. The right ovary was small, the left ovary slightly enlarged and the tubes were not palpable. Although smears of the discharge from the cervix were negative for gonococci this was undoubtedly a chronic endometritis secondary to a gonorrheal infection.

Treatment: the uterus was thoroughly curetted, a large quantity of thick, mushy endometrium was obtained, and the uterine canal was irrigated with a weak iodine solution and then the pure tincture of iodine was applied. The operation was done in October, 1906, and the patient was under observation and treatment by vaginal douches, tampons, and local applications almost constantly for three years thereafter before she became pregnant, she went to term satisfactorily and has had two additional pregnancies since.

Case IV.—Mrs. J. V. C., age 36, married five years. Complaint, sterility. One sister died of tuberculosis. Menses began at age of 12, recurred every six weeks until one year ago, now every thirty days, duration six days, moderate quantity, with some pain. Examination, uterus retroverted and freely movable, pelvic organs otherwise normal. Treatment, dilatation, curettage, and Gilliam round ligament suspension of the uterus through a transverse suprapubic incision. The pathological report on the curettings was tuberculosis of the endometrium. The operation was done in 1912 and the patient has not yet become pregnant, although she appears to be in excellent general health.

Case V.—Mrs. E. N., age 30, married five years. Menses recur every twenty-eight days, duration three to four days, moderate quantity, no pain. Complaint, sterility, frequent micturition, pain in the right ovarian region. Examination, patient has a fibroid the size of an orange in the anterior wall of the uterus. Treatment, curettage, myomectomy, left salpingo-oophorectomy, partial right salpingectomy, Gilliam round ligament suspension. Patient has since had one miscarriage and one full term pregnancy.

Case VI.—Mrs. J. McC., age 45, married seven years. Menses recur every four weeks, duration three days, moderate quantity, occasional pain first day. Complaint, amenorrhea for past four months. Examination showed the patient to be in the fourth month of pregnancy, greatly to her surprise, as she supposed she was entering upon the change of life. She had not done anything at any time to prevent conception. She went to term and was delivered of a male child by medium forceps.

Case VII.—Mrs. B. M., age 33, married two years. Menses recur every four weeks, duration three to four days, moderate quantity, very little pain. Complaint, sterility. Examination, marked vaginal hyperesthesia, uterus slightly below the average size, pelvic organs otherwise normal. Treatment, dilatation, curettage, and stem pessary. Five years later the patient's periods were recurring every four weeks, but lasting for only a few hours and the flow was exceedingly scanty. The following year she became pregnant and was delivered of a healthy male child at term by a breech extraction.

It is of interest to note that this patient had been examined by a prominent gynecologist of experience and ability who advised her to adopt a child, as in his opinion she would never become pregnant.

46 East Eighty-third Street

Operation for adenoma of the prostate should not be long delayed if the patient is a "good surgical risk," even though obstruction is not marked, for sometimes these adenomata conceal small areas of carcinoma, unrecognizable except by the microscope. Removed thus early, the patient is usually cured; left to grow into the capsule and surrounding tissues, the condition is usually hopeless.—*American Journal of Surgery.*

MEDICAL LITERATURE AS A SPECIALTY.

By F. ROBBINS, M.D.,

NEW YORK.

"The need for medical men who will specialize in medical bibliography and history, and devote themselves exclusively to medical journalism and medical literature, is becoming more apparent every day. Advanced teachers, like Professor Cushing at Harvard, are already beginning to encourage some of their pupils to take up the literary side of medicine, as a set-off to an ordinary success as internists or surgeons exclusively."

This passage from a recent paper by Fielding H. Garrison (The Uses of Medical Bibliography and Medical History in the Medical Curriculum—*Journal of the Am. Med. Assoc.*, January 29, 1916, p. 323) calls forth a few comments from the personal experience of a pioneer in this field; for the specialist in library research was already in demand many years ago, and as far back as the end of the nineteenth century, Dr. George Dock pointed out the importance of medical literature to his class in the University of Michigan. In 1904, the writer was advised by Dr. Joseph Collins to follow the literary side of medicine as a specialty, and since that time has worked along these lines uninterruptedly and exclusively. Some practical suggestions to future workers in this field may therefore not come amiss from one whose ploughshare has turned many a sod in the acres of medical literature.

Those who contemplate the adoption of this specialty, men or women, should take careful stock of their assets, meaning their general fitness and special qualifications for this work. One of the writer's Ann Arbor professors, Dr. Charles de Nancrede, when asked for advice by senior students concerning their selection of a specialty, was wont to say: "Do not pick out a specialty: let your specialty pick you!" There is much wisdom in that remark. Just as the bird will fly when his wings have grown, so will the man endowed with the historical sense dig, dig, dig into the mines of medical lore and renew his strength, like Antæus of old, with each touch of the friendly earth. Medical literature is exacting in its demands, and requests the unflagging devotion of its followers. Nothing is as tantalizingly elusive as a lost reference, and to those who have the innate hunting instinct, no satisfaction is comparable to the running to earth of an especially slippery specimen of that ilk. If the ardor of this chase appeals to you—if you are willing, nay, eager, to trace unlisted or worse, mislisted references, to their lair—unwatchful of the clock, unmindful of personal reward—then you are equipped with one of the truest arrows in the quiver of the successful bibliographer. As the country doctor wearily but undauntedly plods through the snow and the mire to the bedside of the stricken, proverbially forgetful of his fee, so must the devotee to medical literature be willing to pursue untiringly the host of incomplete or erroneous references which many a careless writer in the more or less remote past has planted in his path. Amusing "literary curiosities" are often encountered in the course of bibliographic work; for example, a sequence of bibliographies reproducing through many years a Tumeur du Sein (Breast Tumor) as a Tumeur du Rein (Kidney Tumor); evidently taken on faith by one compiler after the other, until the original typographical error became

the bugbear of a wrong reference. Six cases of bileduct anomalies in the French literature have grown into ten (dix) cases, through a similar typographical error; and good luck to him who tries to trace the four phantom cases of the inkwell! Encounters of this kind, instead of discouraging the literary detective, should only strengthen and sharpen his own sense of personal responsibility.

A thorough knowledge, not a mere smattering, of at least two modern languages, besides English, is imperative for even a modicum of success in medical literature. French and German are barely sufficient, and a reading knowledge of Italian and Spanish as well as of the Scandinavian languages, is extremely desirable. The acquisition of Russian or Japanese will place a literary specialist of the future in an enviable position by himself. To have recourse to the brief and often belated abstracts provided by American periodicals, instead of tapping the spring itself, is to cripple the work from the start. Deficient linguistic equipment of physicians has already led to the invasion of this field by what for want of a better term may be called the quack in medical literature. Our libraries are invaded by a host of understudies, recruited from the ranks of nurses, clerks, stenographers, secretaries, governesses, and what not, who in the long run are bound to discredit this side of the profession. Medical literature, like other specialties, belongs by rights to those alone who have devoted years of their youth to the winning of the medical degree not only, but to the cultivation of that fine sense of personal responsibility, and the *esprit de corps*, which is perhaps nowhere so well developed as among the disciples of Hippocrates. Only a brother practitioner will serve the patron's interests in the most efficient way, and with absolute self effacement.

The bibliographer of the future must aim at such high standing in his specialty that the fact of his being responsible, for example, for a compilation of cases of a given disease, will serve as a sufficient refutation against the statements of a non-specialist, no matter how high his rank as a surgeon or clinician, who claims in a discussion the existence of a series of cases not included in the list. Not all skillful operators are at home in the library, and for them to claim proficiency in medical literature is well nigh as absurd as it would be for the bibliographer to deem himself an adept in gastroenterostomy, because he has had occasion to compare the merits of many different methods of operation.

Next to a mastery of English, and control of some other languages, an important requirement in the outfit of the medical bibliographer is *perseverance;* a gift still rarer than the philologic or historic sense. Make it a rule to be found day after day at a given hour (and for many hours to come) in the same place, so that your personality becomes identified with your chosen occupation. Allowance should be made for an unremunerative preparatory period, time well spent in the acquisition of the necessary library technique. While the expert specialist has learned how to secure, at once, information along any line of medical or surgical inquiry, none know better than he that there is no short cut in honest work, and the more storehouses of knowledge he is aware of, the more material will he feel in duty bound to overhaul, in the interest of his client. The verifying of the original article, in the journal where it is published, instead of taking on faith the often incorrect and usually incomplete reference in some year-book, will inevitably lead those to whom the author's language is no barrier, to a perusal of the article, often with interesting sidelights on its contents, and incidentally, many a series of valuable cross-references. Indefatigability in taking from the shelves tome after ponderous tome is a part of the work which requires some training, aside from a stock of physical endurance not possessed by all. Good health is an important asset in this work, and it would be a grave mistake to select the literary specialty on account of its apparently guaranteeing a protection against long irregular hours, or unkind elements. The hunting of references by the enthusiast will interfere with meal hours or "amusements," so called, just as inevitably as the hunting of grouse by the sportsman on the Scottish heather. In this specialty, as in many others, "he rides the fastest who rides alone." Domestic shackles, even in form of inflexible meal hours, are not compatible with the serenity of mind that takes no heed of the passing hour, in the pursuit of date or name.

The question of residence is a vital one in this respect, and all would-be literary specialists must realize from the start the necessity of being residents of the few cities which have large medical libraries—New York, Philadelphia, Boston, Washington—and moreover, of living within walking distance of the book shelves. "Married men have better halves, bachelors have better quarters." The best is within a stone's throw of the library, beyond the tender mercies of surface, elevated or subway service. A central location is moreover desirable for another reason: the vicinity of a post office open until midnight is very useful, so that all packages, registered and other letters, may be sped on their way without delay. At a time when every minute was at a premium, on account of a rush of other important work, the writer has been asked by telegram from Texas to supply material for a local medical meeting, leaving barely enough time for the discharge of Uncle Sam's mail service! The distribution to the South, North, and West, of notes gathered in the stack rooms of the library is a stimulating experience in itself. Punctuality, in form of immediate replies to correspondents and unfailing deliveries of material on the promised date, is extremely important in this specialty. Although he may not mention the fact, it is quite possible that the man who calls for literary assistance from a distant city, may wish to make a good showing before some society meeting, and if the notes reach him on the cold gray morning after, the better they are the more will his soul be vexed. *Bis dat qui cito dat*—is an excellent rule to follow!

Perfection is never, perhaps, attained in any line of human endeavor, but competence in literary research is within the reach of all who are honest with themselves and others, diligent, faithful, and last, not least, actually interested in the work itself. *A thoroughly congenial occupation* can never degenerate into drudgery. The enthusiasm in his subject of the man who asks for bibliographic services is transmitted as a living spark to the true literary collaborator. It is one of the fascinating features of this work that it will naturally bring the medical bibliographer in contact with those who rank highest in the profession.

In behalf of all who contemplate the adoption of this specialty, the writer repeats a protest against the threatened competition of purely commercial interlopers. The field belongs to those who have given

years of study and preparation to fit themselves for the tilling of this treacherous ground, on which the lights of medical ethics do not shine. The time is overdue for the institution of a reform movement akin to that so successfully inaugurated by the American Medical Association, in the weeding of the field of medical education. If only such articles were published as are the fruits of the author's experience by the bedside, on the operating table, or in the laboratory, the standard of literary assistance as well would of necessity be raised so high as to exclude non-graduates. Unfortunately, entirely too much of modern medical literature is made up of abstracts or arrangements of the work of other men, and that excellent rule is seldom obeyed: Have something to say. Say it. Stop as soon as you have said it. (Billings, J. S. Our Medical Literature. *Trans. Internat. Med. Cong.* Lond. 1881, I, 54.)

Perhaps in subconscious realization of the ephemeral character of their own achievements, some men are notoriously satisfied with the poorest and cheapest literary assistance. It is no excuse to say that the verifying of a reference, the compiling of statistics, or the mechanical translation of a paragraph do not require a medical graduate. Doctors, this is doctors' work! No item is too humble in the polishing of a literary gem perhaps destined to shine long after its author has joined the silent majority. Furthermore, while collaboration of this kind is perfectly proper and legitimate *within the profession*, conditions differ when a man of parts entrusts the preparation of his work for publication to those who are not members of the profession, and as such alone able to understand, and if necessary, to defend his reason for seeking their assistance.

Ambition as to personal fame, *except as a bibliographer*, must be curbed in the interest of this retiring specialty. Not only must the abstract-maker and compiler of medical literature apparently have no view of his own, or at any rate reveal no bias, but he may be asked to merge his own personality altogether in a paper that he has prepared for publication under another name. In the Paris Salon, on Varnishing Day, admiring crowds gather before certain pictures signed by a "master's" hand, and bearing some familiar evidence of his brush, in a cottage fence, a floating cloud, or a bit of blue water in the background; the rest of the large and carefully elaborated painting is the work of some poor devil of an artist whose shadow never darkens the hall of fame. What is true for art, is equally true for science, and not all boats fly their own flag that sail proudly on the sea of medical literature. Instructive comments upon this and other points connected with the "new" career of medical bibliography and literature may be found in a clever editorial from the pen of the late Dr. De Santos Saxe, which appeared eight years ago in the March number of the American edition of *La Tribune Médicale* (Vol. IV, No. 3, 1908, p. 71), entitled "The Literary Ghost in Medicine."

Following the third rule of Billings—although the end may be abrupt—this is the place to stop, but not without a welcome to the future worker in the Library of the New York Academy of Medicine, and the wish that he may after many years be able to say, with the writer, that his lines have fallen upon pleasant places, in a most congenial bookish atmosphere, brightened by the beautiful spirit of competent helpfulness on the part of the librarians.

41 West Forty-fifth Street

ARTERIOSCLEROSIS.

By EDWARD LIVINGSTON HUNT, M.D.,

NEW YORK.

ASSISTANT PROFESSOR OF CLINICAL NEUROLOGY, COLUMBIA UNIVERSITY.

Arteriosclerosis is a condition which has been recognized for a great many years. Osler says there are four great factors in its causation: the wear and tear of life, acute infections, various intoxications, and persistent high blood-pressure. The vast majority of cases occur in males who are advanced in life; there are many instances in which it has been found in young persons, and over a hundred cases have been reported as occurring in infancy.

Syphilis is the one of all the infections and lead is the one of all the intoxicants which is most liable to cause arteriosclerosis. Alcohol is a cause, but it is not nearly so important a one as is generally supposed, nor nearly so potent a one as excessive eating. Large quantities of food, and faulty elimination, added to the strenuous life of the big city, make up a combination which will inevitably inaugurate high blood-pressure and bring about arteriosclerosis.

I want to call attention to three points which are not sufficiently recognized. One is that the sclerotic process does not affect equally all of the arteries. The temporal and radial may be neither tortuous nor thickened, yet the autopsy may reveal patches of atheroma in the aorta and sclerotic vessels in the kidney. Another is that in different individuals the process may, and very likely will, affect different coats of the vessels. Thus in one the lesion may be in the media, in another in the intima. Another point is the variability of the character of the process. Thus in one the lesion may show itself as an atheromatous patch, or as an area of softening, while in others there may be a calcification, a distention, or an obliteration of the lumen of the vessel.

If these points are borne in mind, it will be seen that the sclerotic process is diffuse, multiple, and varied. The symptoms which the particular patient manifests will, of course, be dependent upon the type and the location of the lesion. Therefore, one should not expect a particular set of complaints, but rather a train of symptoms multiple and varied.

The following case will illustrate some of these conditions:

Mrs. M. was sixty-four, but appeared much older, and seemed considerably broken, both physically and mentally. Her parents had died of senility, one brother of epilepsy. She had been married and had given birth to five children, of which three were born still. She had always been healthy, with the exception of children's diseases, and slight rheumatic attacks. There was no history of lues, or drug taking. She admitted to being a moderate alcoholic and an excessive tea-drinker. Her menstrual life had been regular up to the age of forty-three, when the menopause occurred.

She began to feel sick towards the end of November. At first there was nothing definite, more a feeling of weakness with slight mental impairment, but nothing more than she felt she had a right to expect in the sixth decade. The onset was insidious and progressive. Soon she noticed attacks of vertigo. At first they were infrequent and of short duration, later on they became well defined.

Things appeared to be revolving in a vertical plane towards her. She now knew that her chief complaint was dizziness. The attacks became more and more frequent, and of longer duration. Her walk began to be affected; she would lean backwards, and tend to fall not sideways or forwards, but backwards. She felt very uncertain when on her feet, and walked like a

drunken woman. In the attacks she thought that the color of objects changed. Then the attacks came even when she was lying down. In other words, the condition was distinctly progressive.

Physical examination showed her to be well nourished, but as one who was chronically ill. She was slightly deaf. The apex of the heart was in the fifth space, 5½-inches from the midline. Neither the pulmonic second nor the aortic second was accentuated; there was a murmur heard at the apex. The chest expansion was good, with a normal percussion note and normal vesicular breathing. The abdomen was negative, except for a slight umbilical hernia. The edge of the liver was palpable one-half inch below the costal margin. The glandular system seemed normal. The reflexes were normal. There was no Kernig, no ankle clonus, no Babinski. There was a marked arcus senilis, the pupils reacted to both light and accommodation, but were unequal, the left being the larger. There was a slight nystagmus.

There was a marked coarse tremor of the hands, inconstant and intentional in character.

The circulation was slow, the memory poor, and the patient showed some signs of mental confusion and deterioration. It was evident that there had been some degree of cerebral softening.

The examination of the ears which was made by Dr. Dench showed that both drum membranes were thickened, retracted, and calcified. There was no spontaneous overpointing, nor spontaneous nystagmus. Both labyrinths were active to colonic tests. The ophthalmoscopic examination made by Dr. Wiener showed little that was unusual. There was a marked thickening of the vessels, the discs appeared pale; the outline was dim, shading off slowly into the fundus.

The Wassermann was negative. The urine was 1020 specific gravity, turbid, contained a very faint trace of albumin, no sugar, and an increase of indican. There were a few leucocytes.

The gait was unusual, and not typical. It was not ataxic, but rather tottering. She walked slowly, with great feebleness and uncertainty. There was a constant tendency to fall backwards. The blood-pressure was 180 to 230. The pulse ranged from 78 to 90.

Autopsy.—The left pleural cavity showed strong adhesions over the lung; the right was negative. The pericardium showed a large amount of fat about it, and contained about 5 c.c. of clear, straw-colored fluid.

Heart.—The left auricle showed nothing noteworthy, the mitral valve admitted one finger, and was retracted and thickened. The wall of the left ventricle measured 2¼ inches in thickness. The circumference is 8 cm. the aortic valves were markedly sclerosed, and the aorta itself showed numerous atheromatous patches. The valves looked fibrous. The coronaries showed slight changes. The circumference of the aortic valves was 7 cm. The right auricle showed nothing noteworthy. The tricuspid valves admitted three fingers; its circumference was about 11.5 cm. The wall of the right ventricle measured about 5 cm. The pulmonary valve showed nothing noteworthy; its circumference was 7 cm. The weight of the heart was 350 grams.

The left lung was practically airless, and bound down by tough adhesions; it floated. The bronchial lymph nodes showed nothing noteworthy. The right lung showed nothing noteworthy. The stomach was small and empty. The spleen measured 12.5 by 5 by 3.5. The capsule was dark. On section, the follicles showed up slightly fibrous.

The left kidney showed a large quantity of fat; the capsule was rather adherent; it measured 12 by 6 by 4 cm. Cortex thinned, markings distinct. The right kidney was similar to the left. It showed a cyst and measured 10 by 55 by 35 cm.

The gall-bladder was distended with bile. No stones. The liver was pale, the capsule smooth on section. The pancreas showed nothing noteworthy. The uterus showed nothing noteworthy. The ovaries were sclerotic.

The brain, which so far has only been examined in gross, showed some edema. It was a question whether there was any marked sclerosis affecting the anterior and posterior cerebral vessels. This will have to be determined by the microscopic examination of the sections, which will be done later and on which I shall make a further report.

In this case there was an arcus senilis, an inequality of the pupils, attacks of dizziness, a tendency to fall backward, and a slight nystagmus. The circulation was slow and there were signs of mental confusion.

Here, then, was a train of symptoms most varied, one which could only be explained by a diffuse and multiple process. One which did not affect all the vessels equally, and yet did affect a great many. The autopsy showed the variability of the type of lesion, as in the aorta were numerous patches of atheroma, while the coronary vessels showed but slight changes. The vessels of the ovaries were markedly sclerotic.

41 East Sixty-third Street.

THE ANATOMICAL CAUSE OF THE FREQUENCY OF HYDROCEPHALUS IN CHILDHOOD.

By WILLIAM BROWNING, Ph.B., M.D.,

BROOKLYN, N. Y.

The relative frequency of hydrocephalus in the developmental years, and particularly in young children, is a matter of common knowledge.

Some distinction can be made even clinically between the general run of adult and of youthful cases of this disorder. The adult forms are not only fewer in number, but more uniform in type and more definitely fatal, except such cases of youthful origin as live over to adult life. The adult forms may also occur in younger years, but are so infrequent in comparison they are not apt to impress us. Youthful cases are less uniform; many are so slight in degree as to be ignored; some recover; some live on indefinitely; some progress; most run a slow course; prognosis is less certain.

In the production of hydrocephalus we find two complementary conditions—secretion and retention, both processes normal within limits. Unless there is an abnormal damming-back of the fluid there can be no accumulation, and it is this phase that is considered here.

Many partial and indirect factors have some bearing on this youthful potentiality—narrower passages, softer tissues, thin bones, metabolic growth-errors, etc.

But back of all these is an anatomical and mechanical peculiarity that does not appear to be appreciated or perhaps known by our clinicians. This side of the question in the human was worked out by the author some years ago, though not correlated specifically on this point. The facts upon which the present paper is based are to be found more fully described in the writer's "Circulation in the Central Nervous System," 1897,* and in the article on "Pacchionian Bodies" in the "Reference Handbook" (new edition).

From a mechanical standpoint there are three causes of hydrocephalus: (*a*) over-secretion (as by block in the vein of Galen, leading to excessive production of fluid). (*b*) Closure of the outlets from the ventricles (as at the foramen of Munro, the iter, or the three outlets from the fourth ventricle). (*c*) Interference with the efferents from the subarachnoid space. The possibility of an intermediary form (between *b* and *c*), as claimed for so-called meningitis serosa, does not affect the correctness of this general classification of causes.

The first two (*a* and *b*) are relatively rare, may

*The above mentioned studies may not be known to workers in this field, as the major part of the edition was promptly destroyed by fire in the establishment of the publishers (Lippincott). Copies of it are to be found in some of the larger medical libraries.

occur at any time of life, and are so simple in origin that they need no further explanation. While the third form (*c*) may occur at any time of life (as from inflammation, exudate, etc.), there is an anatomical peculiarity during the early years of life in the human that greatly favors the accumulation of fluid at that time. It is to that fact and its application that attention is here direced.

There are two recognized general classes of these efferents for the fluid from the subarachnoid space. One of these may be termed the animal or quadruped type; the other the (postnatal) human type. There may be additional minor outlets, as along the cranial nerves or by direct absorption through the surrounding tissues, but any such are limited, slow, and entirely inadequate.

The animal type of discharge consists of minute channels or vessels (perhaps comparable to lymphatics) that lead from the spinal subarachnoid space along outgoing nerves to extraspinal tissues. Quincke (1872), from experimental injection of cinnabar emulsion into the spinal subarachnoid of living dogs, found that, "in several cases the cinnabar could be followed on the lumbar nerves to the region of the lumbar plexus between the origins of the psoas, as well as in the sciatic plexus beyond its entrance into the pelvis." And Key and Retzius (*Arch. f. Mikroscp. Anat.*, 1873, Bd. IX), in Fig. 9, picture the injection of the sacrolumbar plexus from the spinal subarachnoid. In the writer's experience this type of exits can be better demonstrated along the lower spinal nerves than along the upper. These spinal efferents persist in animals during adult life.

But in the human we meet with a very different condition of things. Such spinal outlets for the cerebrospinal fluid *exist in the human only during fetal life.* This conclusion was based on a series of injections in human subjects ranging from the sixth to the seventh month of intrauterine life up to 69 years of age.

These spinal efferents in man are demonstrable up to the time of birth at full-term. After that for a very brief period one or another short stump of a passage may be found, but even that promptly disappears. At the time of publication of the above work a full-term fetus was lacking to complete the series. This was subsequently obtained and agreed with the just-given résumé.

It follows from these facts that while animals have an ample system of spinal exits for the fluid, the human must develop some other type or system to serve for this purpose after fetal life.

It is evident that the animal method of discharge would be illy suited to organisms like the human that walk upright. Monkeys, as was also shown by the writer, are intermediary in type. If the animal method persisted in man, the fluid, owing to gravity, would be too rapidly drained off. Some substitute mechanism evidently had to be developed in the process of evolution from quadruped to biped existence. To this we can now turn.

Injection work of various observers has shown that the Pacchionian structures are efferents for the cerebrospinal fluid in man. And such appears to be the generally accepted conclusion. That there may be accessory minor means of exit, as toward the nasal cavity, does not invalidate the essential and dominant rôle of the Pacchionians. These deliver the fluid largely into the parasinual spaces, and thus into the veins and sinuses and the general circulation.

In animals generally, however, these so-called granulations are not present (brains of sheep, calf, rabbit, dog, and cat examined). Luschka found them only in the horse. Bluntschli (1910) describes them in apes, even on the spinal arachnoid, but found none in the lower animals. It is consequently clear that, barring the monkey (*i.e.*, all primates), there can be in animals practically no absorption of the fluid by Pacchionian formations. In them the spinal efferents, as we have seen, serve for this purpose.

In the human these granulations are largely a matter of postnatal development. They increase with the years. Up to the twentieth year they are not apt to develop very greatly. In circulatory troubles, local or general, there may be a precocious development of these bodies.

From all the above facts it appears that the human for a time after birth has but a very limited efferent system for the spinal fluid. This, however, develops with such regularity that, by the time full growth is reached, a system of efferents is in effect that suffices for all ordinary and even many extraordinary demands.

Childhood is the favorite time for the occurrence of hydrocephalus. This finds its explanation largely in the closure of the spinal outlets from the time of birth in the human, and the imperfect development of the Pacchionian bodies at this period. The Pacchionians increase and the frequency of hydrocephalus decreases as childhood progresses. This explanation rests on established data; it meets all the requirements rationally, and it accounts for much that is otherwise obscure.

The conditions that lead to prenatal hydrocephalus may also find a collateral interpretation.

This rearrangement in the system of discharge of the spinal fluid adds another to the list of adaptive modifications of the body and its functions, that accompanied the evolution of man from the four-footed to the two-footed or erect style of body-carriage.

Questions regarding secretion of the cerebrospinal fluid may doubtless, with customary allowances, be investigated by experiments on animals. But in the matter of resorption of the fluid, because of the radical difference in method, the results of experiments on animals are not directly transferable to the human.

54 Lefferts Place

The Frequency of Epilepsy in the Offspring of Epileptics.—D. A. Thom studied the records of 1,536 epileptic patients admitted to the Monson State Hospital. He found that one out of every six was married; that 80 per cent. of the marriages resulted in children; that 138 marriages resulted in 553 offspring, an average of four to each marriage; that of the 553 offspring it was possible to obtain a history of epilepsy in only ten cases or 1.8 per cent. Of these ten epileptics, six died in infancy, two became confirmed epileptics, and two cases were arrested, one for 17 years and the other for 36 years. The study of the family history in 138 epileptics revealed epilepsy in one of the parents eight times, and the study of the offspring of these same patients showed that it had been transmitted ten times; but in two instances there were two children in the same family who had convulsions, so the epilepsy was inherited and transmitted in 5.8 per cent. of the cases. From this study the writer concludes that it would appear that epilepsy is transmitted directly from parent to child less often than we have hitherto been led to believe.—*Boston Medical and Surgical Journal.*

MEDICAL RECORD.

A Weekly Journal of Medicine and Surgery.

THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE INDIGENT MIGRATORY CONSUMPTIVE.

SEVERAL recent publications of the United States Public Health Service are devoted to the problem of the interstate migration of tuberculous individuals, and are very instructive in this connection. The seriousness of this question is there forcibly brought home to us. After a careful consideration and study of the entire situation, the investigations lead one to certain definite and valuable conclusions which may be here enumerated. It is estimated that from ten to fifteen thousand persons afflicted with tuberculosis migrate annually to the West and Southwest to obtain the benefits of the climatic conditions there existing. The States particularly affected by this influx are California, Arizona, Colorado, New Mexico, and Texas.

The conclusion is reached that from one-third to one-half of those tuberculous patients who make this westward journey are really hopeless cases. So true is this that perhaps 15 per cent. die within one month after their arrival in their new place of abode, and it is believed the total number of hopeless cases here mentioned probably terminate fatally within a half year after arrival. In fact so great is the number of those who die in almshouses and charitable institutions, and who must seek charity in other ways, that a bill on this subject has recently been introduced in the House of Representatives dealing with federal aid in co-operation with the various States, for certain classes of tuberculous patients in financial distress. When one remembers that in the great majority of these hopeless cases the patients could in all probability have received at home a proper degree of care and attention for their remaining days under more satisfying and more pleasant environment, at least with friends, family, and other relatives near at hand, the tremendous import of this problem is impressed upon us in some measure. In surveying these reports one is struck by the remarkable fact that of all those who die of tuberculosis in the States referred to from four to nine out of every ten are from other sections of the country, or in other words have migrated to the West or Southwest on account of their tuberculosis. The States of New York, Illinois, Ohio, Missouri, Tennessee, and Kentucky alone furnish half of this number.

What should be our general conclusion from this distressing state of affairs? Although it is true that those who are in financial condition to defray expenses for their sojourn, and who furthermore are not too far advanced in the disease, may find the climatic conditions of the western and southwestern parts of the United States of value in the treatment of their condition, nevertheless it should be remembered that in the average case one ought not to start out on a trip of this sort, unless the following conditions can be met: (1) The individual should have at least $1,000, over and above his traveling expenses; (2) his family should be left in comfortable financial condition; (3) he should not be in an advanced stage of tuberculosis, but on the other hand, should preferably be in an early or moderately advanced stage of the disease; and (4) he must take careful medical advice before he leaves or decides on such a trip, and should be in competent hands after he reaches his goal.

Above all the physician should not forget, and should impress it upon his patients and the public in general, that tuberculosis can be cured and is being cured in any and every part of the United States—in fact of the world. The ordinary workingman, the ordinary individual who suddenly learns that he has tuberculosis and is only of moderate means financiallly, had far better enter a sanatorium right at home, in his own county or State, rather than go West under unfavorable conditions, where he may find himself in financial straits, perhaps even without proper medical care, let alone food. Although climate has a certain value in many cases of tuberculosis, its exact value is still problematical or undetermined. At least there are many differences of opinion on this point. That its value has been much overestimated in the past is surely true and is acknowledged even by those who are firm believers in the climatic advantages of certain sections of the country for the treatment of this disease.

As a final remark it must be said that many practising physicians are not abreast of the times in this matter, that they do not appreciate the problems involved, and that they are not competent to give advice to their patients because they have not given sufficient attention to and studied this problem. It is for the interest and welfare of our patients and their families, that thorough and adequate knowledge regarding this subject should be spread broadcast among the rank and file of the medical profession.

CONSERVATIVE TREATMENT IN THROMBOANGIITIS OBLITERANS.

THROMBOANGIITIS obliterans (often called "Buerger's disease" since Leo Buerger of New York was the first accurately to describe the pathology and appreciate that this form of blood-vessel disease constitutes a distinct clinical entity) is a disease of early adult life, most of the cases occurring between the ages of thirty and forty, and, in typical form, only in the male. Most if not all of those afflicted have been of the poorer classes. The majority of the patients are Polish or Russian Jews, although cases affecting men of other nationalities have been reported as, for example, Swedes by Ochsner and

Japanese by Koga. A large percentage of the patients seen in New York are tailors or cutters and it has been thought that occupation might be an etiological factor; but so many other occupations have now been represented that it is questionable whether this has any influence. The etiology is still obscure, although Buerger is convinced that the disease is the outcome of an infectious process. According to him (*Surgery, Gynecology and Obstetrics*, November, 1914) thromboangiitis obliterans is a process in which an acute inflammatory lesion and occlusive thrombosis of arteries and veins are the characteristic lesions; and he also concludes that from the mechanical point of view and from the standpoint of symptomatology the thrombotic occlusion is the most important phenomenon. The ultimate result is a gangrene of the extremities affected (most often the lower, sometimes both), and until within the past few years the ultimate form of treatment was amputation at progressively higher levels as the disease advanced. With the development of blood-vessel surgery, arteriovenous anastomosis has sometimes been practised, with occasional favorable results; and in a few instances the femoral or brachial veins have been ligated, likewise with some successes and some failures. These are, of course, radical measures, and while simple ligation is easily performed, arteriovenous anastomosis is difficult of accomplishment, the continued patency of the anastomotic opening is problematical, and many question its value even when technically successful.

In view of the uncertainty of improvement following these measures, as well as their difficulty and considerable degree of danger, there has been a persistent effort to develop a non-operative conservative treatment which could be easily applied and would also promise as great and as lasting improvement symptomatically as any operative procedure short of amputation. Two forms of treatment have been most employed: (1) the affected extremities have been treated by superheated air (baking); and (2) since Koga (1913) reported thirteen cases of this disease treated by hypodermoclysis of Ringer's solution, on the basis of Mayesima's theory of increased viscosity of the blood, and noted improvement in every case, this procedure has been employed extensively in this country.

Among the investigators in this field none, with the possible exception of Buerger himself, has been more ardent in the search for a therapeutic measure that would postpone or render ultimate recourse to surgery unnecessary than Willy Meyer. Following a particularly interesting and lucid exposition of the essential facts and theories regarding this disease, Willy Meyer (*Annals of Surgery*, March, 1916) considers the various conservative methods of treatment that have been proposed by others, and to this adds the report of the use (in conjunction with Garbat) of transfusion by the citrate method and of intravenous injections of a 2 per cent. watery solution of sodium citrate, four patients being treated by each of these methods. On the basis of having personally treated thirty cases of thromboangiitis obliterans and having seen many others by the courtesy of colleagues, and through his intimate knowledge of the literature of this subject, he concludes that conservative treatment should be resorted to before amputation in typical cases. He advises superheated air, best combined with systematic hypodermoclysis of Ringer's solution, and, if these measures fail, what one may call the conservative operation of ligation of the femoral vein or arteriovenous anastomosis. Superheated air may bring about an improvement in the symptoms, but seldom a lasting beneficial effect. The systematic hypodermic injection of 400 to 500 c.c. of Ringer's or of physiological salt solution daily, or every second or third day, deserves a place, he says, in the treatment of thromboangiitis obliterans. Even the further progress of gangrene may be stayed by hypodermoclysis, old and obstinate ulcerations may heal, and otherwise uncontrollable pain can be relieved. A simultaneous administration of organotherapeutic preparations deserves a careful test.

Inflammation of the wall of the arterioles or venules is apparently responsible for the thrombosis. It is possible also that an altered quality of the blood may contribute to the occurrence of the thrombosis and subsequent gangrene. If this is so, measures which tend to reduce the coagulability of the blood within the body, Willy Meyer says, deserve to be tried, and therefore intravenous injections of anticoagulating substances, such as a 2 per cent. water solution of sodium citrate, may prove to be a useful adjuvant to systematic hypodermoclysis.

Recent Speculation on the Nature of Eclampsia.

"Eclampsia cannot be the same condition as uremia; for if it were every nephritic woman who becomes pregnant would develop it, and this very seldom happens." This old assertion has never been successfully disputed and is more convincing than many of the fine spun distinctions based on laboratory work. It has recently been shown that neither affection develops as long as the liver can perform vicariously the work of the kidneys. Eclampsia has indeed long been looked upon as an expression of hepatic insufficiency, but this point is not driven home in the case of uremia, because it rests largely on animal experiment. In the clinic "hepatogenous uremia" is not yet an entity. Parlott, however, was able years ago to produce typical uremia by establishing an Eck's fistula in a dog, and Steenhuis by ligation of a branch of the portal vein in rabbits—thereby eliminating part of the liver—could at will set up hemorrhagic nephritis with the entire picture of uremia. Gessner, in a polemial article addressed to R. Schröder (*Berliner klinische Wochenschrift*, March 6), defends his theory from the latter's criticisms. Cystoscopic studies of gravid women have shown that in nearly one-half of all cases there are disturbances of the renal functions of largely mechanical origin, the right kidney being more frequently affected. The causes of eclampsia are therefore twofold, general and local. The kidneys are mechanically crippled by pregnancy, and oliguria results; but before eclampsia can develop there must be insufficiency of the liver. The immediate cause, however, is failure of the renal function.

Significance of Sexual Diseases for the Increase of Population.

In Germany every tenth to fifth marriage is sterile, and in over one-half of all cases this sterility is due to gonorrhea; or otherwise stated 8 per cent. of all marriages are sterile because of that disease. This does not include one-child sterility. As a result of gonorrhea the annual increase of population is cut down by nearly 10 per cent.; and as about 2,000,000 children are born annually in Germany this equals a loss of some 200,000 from this disease alone. Corresponding figures for syphilis are not readily obtainable. We know, however, that by far the greater number of non-criminal abortions are due to this affection. It is also known that from 20 to 25 per cent. of all syphilitics die as a consequence of their infection. As 10 per cent. of all Germans may be reckoned as syphilitic, 2 per cent. of all deaths are to be ascribed to this disease. We can now cure syphilis in its primary stage in almost 100 per cent., and in its secondary stage in 90 per cent., and we can destroy its ineffectivity. Deaths, of course, occur principally from later developments. Nevertheless, the presence of war antagonizes the successful treatment of syphilitic soldiers, for one dare not use salvarsan in uncontrolled subjects. Married soldiers suffer very frequently—in fact to the extent of 30 to 40 per cent. of all syphilitic soldiers. These facts were brought out in a discussion of a paper by Richter (*Deutsche medizinische Wochenschrift*, March 2) on the subject of the decreasing birth rate which was read last December at a meeting of a local medical society of Königsberg in East Prussia.

Recent Views of Addison's Disease.

That Addison's disease ever exists without lesion of the adrenals is hardly believed by those with unusual opportunities for autopsies. Cases in the older literature to the contrary very likely represented errors in diagnosis. In recent years syphilis has been recognized as one cause of this malady through the production of specific lesions of the adrenals. The latter structures may, however, be the seat of neoplasms which do not give rise to a single Addison symptom; instead there is sometimes seen a change in secondary sexual characteristics in the female which is due apparently to some arrest of the function of the ovaries. Some neoplasms of the adrenals are able to continue the functions of the latter and to produce adrenalin. At a recent session of the Aerztlicher Verein of Hamburg (*Münchener medizinische Wochenschrift*, March 28) there was a discussion on Addison's disease, in the course of which Korach mentioned fulminating cases which can destroy life as if by a powerful toxic action in a few days, and protracted cases which may last ten years. The syndrome of melanoderma plus asthenia may be caused by occult cancer. Hypotonia is the most characteristic symptom of Addison's disease, and low systolic blood pressure (70 to 80 mm. Hg.) is very constantly associated with it. In cases of gaseous degeneration distinctly subnormal temperature is the rule, while on the other hand hyperthermia is usually an indication of the presence of a neoplasm. There is no characteristic blood picture. Large doses of arsenic are sometimes beneficial in Addison's disease, but injections of tuberculin and adrenalin apparently only aggravate the symptoms.

News of the Week.

New York's Death Rate.—During the week ending May 13 there were reported in New York City 1,515 deaths, giving a death rate of 14.15 per 1,000. This is a slight increase in mortality as compared with the same week of last year, when the deaths numbered 1,472 and the rate was 14.04 per 1,000. While the mortality of all the acute and infectious diseases, with the exception of whooping cough, was lower during the week than during the corresponding week of 1915, that of cancer, chronic heart disease, nephritis, pulmonary tuberculosis, and lobar pneumonia was increased. The death rate for the first twenty weeks of 1916 was 15.34, as compared with 15.55 for the corresponding period of last year.

Chicago's Death Rate.—During the week ending May 13, the death rate in Chicago was 14.2 per 1,000, as compared with 12.6 for the corresponding week of last year, the total number of deaths being 680 and 591 respectively.

Public Cancer Meeting.—In association with the New York Academy of Medicine, the American Society for the Control of Cancer held its annual public meeting at the Academy on May 18. The speakers were Dr. Louis I. Dublin, statistician of the Metropolitan Life Insurance Company, Dr. Francis C. Wood, director of cancer research in Columbia University, and Dr. George D. Stewart of Bellevue Hospital. Dr. Joseph C. Bloodgood, Dr. John A. Hartwell, Dr. Eugene H. Pool, Dr. David Bovaird, and Dr. William R. Williams joined in the discussion which followed the formal papers. The results of the discussion were discouragingly inconclusive as regards both causation and treatment.

New Red Cross Hospital.—The New York Branch of the American Red Cross announces the receipt of a gift of $24,000, from Mr. and Mrs. George Blumenthal, to be used for the equipment of a base hospital in connection with Mounta Sinai Hospital, New York. This makes the fourth unit to be organized under the branch, those previously provided for being in connection with the Presbyterian, the New York, and Bellevue Hospitals. As already announced, each unit consists of twenty physicians, forty-six nurses, and 125 orderlies and assistants. The equipment of each base hospital will be stored in New York, subject to the instant call of the Government.

Infant Mortality in New York.—In connection with the recent celebration of Baby Week, the Department of Health of New York City prepared some interesting statistics covering infant mortality in the city. The mortality rate for the entire city during 1915, based on the 141,256 births reported, was 98 per 1000, or approximately 1 in 10. As showing the variation in the death rate according to location, however, it was found that in Central Park West 25 babies out of every 1,000 born died in the first year; in the Dyckman section of Manhattan, 50 out of every 1,000; in the lower East Side, 73 out of every 1,000, and in the San Juan Hill district, around West Sixtieth Street, 314 out of every 1,000. The rate for the entire city compared very favorably with the rates for other large cities, that for Chicago being 114 per 1,000 births; for Philadelphia, 105; for Pittsburgh, 110; for Washington, 110; for Baltimore, 120; for Boston, 104, and for Denver, 131. In Los Angeles, however, the rate was only 67 per 1,000 births; for Indianapolis, 89; for St. Louis, 82, and for Rochester, 84. It is interesting to note

that many of the densely crowded quarters of the city show infant death rates far below that of the entire city. Thus, in a number of Health Districts, all situated south of Third Street and east of Broadway, the mortality rate varied from 47 to 91 per 1,000 births. In all districts where the negro population represented at least 10 per cent. of the entire population, on the other hand, the infant mortality rate varied from 124 to 314 per 1,000 births. It is also noteworthy that in some of the districts peopled by persons of considerable means the death rate from congenital malformations and defects was markedly higher than in the poorer quarters. The cause of this difference has not been determined.

Fire Scare at Bellevue.—A small fire in the medical building at Bellevue Hospital, New York, on May 15, caused some alarm among the patients. The fire was, however, confined to some packing of excelsior and paper in the basement, and was extinguished without difficulty.

Dr. Carlisle Honored.—Dr. Robert J. Carlisle of New York on May 16 completed thirty years of service as visiting physician at Bellevue Hospital and attending physician to the Bellevue Nurses' Training School and Nurses' Home. The nurses of the hospital took advantage of the occasion to present to Dr. Carlisle a gold watch with platinum chain and pencil as a token of their appreciation.

Association of Anesthetists.—The second annual meeting of the Interstate Association of Anesthetists will be held at the Hotel Seelbach, Louisville, Ky., on July 26 and 27, in conjunction with the National Dental Association. Full information as to the details of the long and interesting program which has been prepared may be obtained from the secretary, Dr. F. H. McMechan, Avon Lake, Ohio.

Alumni Association of the Medical Department of the University of Buffalo.—The forty-first annual reunion of the alumni of this college will be held in Buffalo on May 30-June 2, 1916, under the presidency of Dr. Lesser Kauffman. The secretary is Dr. Julius Richter of Buffalo. An interesting program is offered for the first three days of the meeting; the fourth day will be given up to the university commencement exercises in the morning and a ball game between the Universities of Rochester and Buffalo in the afternoon.

Instruction Camps Abandoned.—Announcement is made by the Surgeon-General of the United States Army that owing to the withdrawal of troops from their regular stations for duty on the Mexican border, the War Department has been compelled to abandon the camps of instruction for officers of the Medical Reserve Corps, that were to be held during the coming summer.

Harvard Red Cross Unit.—The Cunard liner *Andania*, which left New York on Saturday for Falmouth, carried fifty-eight physicians and nurses, composing the third Harvard Red Cross unit for France. The contingent was in charge of Herbert H. White of Cambridge, Mass. When the party arrives in England Dr. Hugh Cabot of Boston will take direct control. Among the surgeons are Dennis R. W. Crile, Thomas A. Foster, Ralph Matson, Carleton R. Metcalf, George B. Packard, Jr., George C. Shattuck, Henry R. Viets, Jr., and Harold W. Stevens.

Charitable Bequests.—By the will of the late Mary D. Tenbrook of Philadelphia bequests are made as follows: $15,000 each to the Orthopedic Hospital and Infirmary for Nervous Diseases and the Presbyterian Hospital for the endowment of free beds in memory of Henry Davis, Mary S. B. Davis and Mary Davis Tenbrook, and $1,000 to the Home for Incurables.

By the will of the late Sarah Cresson of Philadelphia the sum of $5,000 is bequeathed to the Women's Southern Homeopathic Hospital.

By the will of the late Eliza Y. Henderson of Philadelphia the sum of $2,000 is bequeathed to the Home for Incurables.

Philadelphia General Hospital.—Dr. Robert G. Torrey has been appointed visiting physician in succession to Dr. William Pepper, resigned. Dr. E. J. G. Beardsley has been appointed visiting physician to the tuberculosis department.

Medical Society Elections.—American Association of Immunologists.—At the meeting of the association held in Washington on May 11 and 12 the following officers were elected: *President*, Dr. Richard Weil, New York; *Vice-President*, Dr. John A. Kolmer, Philadelphia; *Treasurer*, Dr. Willard J. Stone, Toledo, Ohio; *Secretary*, Dr. Martin J. Synnott, Montclair, N. J.; *Members of the Council*, Drs. William H. Park and Arthur F. Coca, New York.

Arizona Medical Association.—Annual meeting at Phoenix on May 1. Officers elected: *President*, Dr. Robert Ferguson, Bisbee; *Vice-Presidents*, Dr. William W. Watkins, Phoenix; Dr. Arthur C. Carlson, Jerome; and Dr. F. T. Wright, Douglas; *Secretary*, Dr. Clarence E. Young, Prescott; *Treasurer*, Dr. R. D. Kennedy, Globe.

Kansas Medical Society.—Annual meeting at Topeka on May 4 and 5. Officers elected: *President*, Dr. James W. May, Kansas City; *Vice-Presidents*, Dr. M. T. Sudler, Lawrence; Dr. Alfred O'Donnell, Ellsworth, and Dr. T. A. Jones, Hutchinson; *Secretary*, Dr. Charles S. Huffman, Columbus; *Treasurer*, Dr. Lewis H. Munn, Topeka.

Louisiana State Medical Society.—Annual meeting at New Orleans on April 25 and 26. Officers elected: *President*, Dr. William H. Seemann, New Orleans; *Vice-Presidents*, Dr. Thomas S. Jones, Baton Rouge; Dr. Charles V. Unsworth, New Orleans, and Dr. J. M. Bodenheimer, Shreveport; *Secretary-Treasurer*, Dr. Laurence R. DeBuys, New Orleans.

Windham County (Conn.) Medical Society.—Annual meeting at Windham on April 20. Officers elected: *President*, Dr. Marguerite J. Bullard, Putnam; *Vice-President*, Dr. L. I. Mason, Willimantic; *Secretary-Treasurer*, Dr. Laura H. Hills, Willimantic.

Association of Railroad Chief Surgeons.—Annual meeting at Chicago on May 3. Officers elected: *President*, Dr. Oscar Leseure, Detroit, Mich.; *Vice-President*, Dr. Daniel Z. Dunott, Baltimore; *Secretary-Treasurer*, Dr. L. J. Mitchell, Chicago.

Kentucky State Homeopathic Medical Society.—Annual meeting at Louisville on May 5 and 6. Officers elected: *President*, Dr. Howard P. Fischback, Newport; *Vice-President*, Dr. Frederick L. Juett, Lexington; *Secretary*, Dr. A. H. Seibert, Louisville; *Treasurer*, Dr. Paul E. Kerkow, Covington.

American Climatological and Clinical Association.—The thirty-third annual meeting of this society was held in Washington on May 9 to 11, when the following officers were elected: *President*, Dr. Judson Daland, Philadelphia; *Vice-Presidents*, Dr. William L. Dunn, Asheville, and Dr. John E. Elliott, Toronto; *Secretary*, Dr. Guy Hinsdale, Hot Springs, Va. Surgeon General William C. Gorgas,

U. S. A., was elected an honorary member of the association. The next meeting will be held at Lakewood, N. J., in May, 1917.

WISCONSIN SURGICAL ASSOCIATION. — Annual meeting at Milwaukee on May 10 and 11. Officers elected: *President*, Dr. Charles H. Lemon, Milwaukee; *Vice-President*, Dr. R. H. Jackson, Madison; *Secretary-Treasurer*, Dr. Daniel Hopkinson, Milwaukee.

SOUTHWESTERN KENTUCKY MEDICAL ASSOCIATION. —Forty-sixth annual meeting at Paducah on May 9 and 10. Officers elected: *President*, Dr. E. B. Willingham, Paducah; *Vice-Presidents*, Dr. John F. Kirksey, Sedalia, and Dr. Oliver R. Kidd, Paducah; *Secretary*, Dr. Elbert W. Jackson, Paducah; *Treasurer*, Dr. Henry G. Reynolds, Paducah. The next semi-annual meeting will be held in October at Clinton.

HAMPSHIRE DISTRICT (MASS.) MEDICAL SOCIETY. —Annual meeting at the State Hospital, Northampton, on May 11. Officers: *President*, Dr. Charles A. Byrne, Hatfield; *Vice-President*, Dr. Arthur G. Minshall, Northampton; *Secretary*, Dr. Joseph D. Collins, Northampton; *Treasurer*, Dr. Justus G. Hanson, Northampton.

FRANKLIN DISTRICT (MASS.) MEDICAL SOCIETY.— Annual meeting at Greenfield on May 9. Officers: *President*, Dr. Harry N. Howe, Greenfield; *Vice-President*, Dr. Charles Milne, Sunderland; *Secretary-Treasurer*, Dr. Alfred E. Johnson, Greenfield.

ESSEX SOUTH DISTRICT (MASS.) MEDICAL SOCIETY.—Annual meeting and banquet at Lynn on May 10. Officers: *President*, Dr. Emile Poirier, Salem; *Vice-President*, Dr. John J. Egan, Gloucester; *Secretary*, Dr. Hamlin P. Bennett, Lynn; *Treasurer*, Dr. George Z. Goodell, Salem.

WORCESTER DISTRICT (MASS.) MEDICAL SOCIETY. —112th annual meeting at Worcester on May 10. Officers: *President*, Dr. George O. Ward, Worcester; *Vice-President*, Dr. Michael F. Fallon, Worcester; *Secretary*, Dr. Ernest L. Hunt, Worcester.

BRISTOL SOUTH DISTRICT (MASS.) MEDICAL SOCIETY.—Annual meeting at New Bedford on May 11. Officers: *President*, Dr. Arthur C. Lewis, Fall River; *Vice-President*, Dr. J. C. Da S. Pitta, New Bedford; *Secretary-Treasurer*, Dr. Alanson J. Abbe, Fall River.

Obituary Notes.—Dr. JOHN ROBERT EVERITT of Jersey City, N. J., a graduate of the Long Island College Hospital, Brooklyn, in 1872, died at his home on May 15, aged 71 years. Dr. Everitt had been city physician for thirty years at the time he retired, four years ago, and was also formerly physician to the Emergency Hospital, Jersey City.

Dr. WILLIAM H. SLEDGE of Mobile, Ala., a graduate of the University of Alabama School of Medicine in 1881, and a member of the American Medical Association, the Medical Association of the State of Alabama, and the Mobile County Medical Society, died at his home on April 30, after a long illness, aged 61 years.

Dr. FRANCIS B. BISHOP of Washington, D. C., a graduate of the University of Maryland, School of Medicine, Baltimore, in 1883, and a member of the American Medical Association and the Medical Society of the District of Columbia, died at his home on April 30, after a short illness, aged 63 years. Dr. Bishop was president of the American Electro-Therapeutic Association in 1898-99, and was delegate from the United States to the International Association which met at Liège, Belgium, in 1901.

Dr. EDWARD M. PATERSON of San Jose, Cal., a graduate of Harvard University Medical School in 1871, and a member of the medical examiners for the Province of New Brunswick, the California Medical Society, the American and British Associations for the Advancement of Science, and the American Medical Association, died on April 24, aged 72 years.

Dr. CHARLES B. GASSETT, formerly assistant superintendent of the Rhode Island State Sanatorium, Wallum Lake, R. I., a graduate of the Baltimore Medical College in 1905, and a member of the Rhode Island Medical Society and the Providence District Medical Society, died at his home in Framingham, Mass., after a long illness, on May 6, aged 36 years.

Dr. ALBERT WICKMAN of Newark, N. J., a graduate of New York University Medical College in 1894, and a member of the American Medical Association, the Medical Society of New Jersey, and the Essex County Medical Society, died at his home on May 13, aged 50 years. Dr. Wickman was surgeon to the German Hospital.

Dr. HENRY HORLBECK of Columbia, S. C., a graduate of the Medical College of the State of South Carolina, Charleston, in 1897, and a member of the American Medical Association, the South Carolina Medical Association, and the Richland County Medical Society, died in Summerville, S. C., on May 4, aged 43 years.

Dr. CHARLES P. HARVIELLE of Salt Lake City, Utah, a graduate of the Washington University Medical School, St. Louis, in 1896, and a member of the American Medical Association, the Utah State Medical Association, and the Salt Lake County Medical Society, died in Denver, Colo., on May 2, aged 41 years.

Dr. AUREN ALFRED STAFFORD of Alameda, Cal., a graduate of Cooper Medical College, San Francisco, in 1896, and a member of the American Medical Association, the Medical Society of the State of California, and the Alameda County Medical Society, died on May 7, following an operation, aged 47 years.

Dr. WILLIAM W. REED of Jefferson, Wis., a graduate of the College of Physicians and Surgeons, Keokuk, Iowa, in 1863, and a member of the State Medical Society of Wisconsin and the Jefferson County Medical Society, died at his home, on May 10, aged 91 years. Dr. Reed had been a member of the State Board of Charities for twenty years, and for thirty-six years was county physician.

Dr. N. NOBLE VANCE of Bement, Ill., a graduate of the Medical College of Ohio, Cincinnati, in 1868, died at his home, after a long illness, on May 10, aged 71 years.

Dr. C. PERCIVAL BULSON of New York City, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1896, died at his home on May 18.

Dr. A. HOWARD POWERS of Boston, Mass., a graduate of the Boston University School of Medicine, Boston, in 1885, died at his home on May 13, following injuries received in an automobile accident a month before, aged 61 years. Dr. Powers was surgeon to the Massachusetts Homeopathic Hospital and the Roxbury Homeopathic Dispensary.

Dr. JOHN D. ZWETSCH of Gowanda, N. Y., a graduate of the Cleveland University of Medicine and Surgery, Cleveland, Ohio, in 1882, and cousulting physician and surgeon to the Gowanda Hospital, was killed in an automobile accident, on May 6, aged 58 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

COUNCIL FOR COMBATING VENEREAL DISEASES—L. G. B. WILL MAKE A GRANT—OBITUARY NOTES.

LONDON, April 29, 1916.

THE Local Government Board last week informed the national council for combating venereal diseases that the treasury is prepared to make a grant to carry out the Royal Commission's recommendations to provide facilities for diagnosis and treatment. This they will do by grants in aid of the local authorities to the extent of 75 per cent. of their expenditures in this matter. They will not set up special hospitals for this purpose as they consider treatment can be effectually carried out in existing institutions. The Commission looked for benefit from wide public knowledge of the great danger of neglected, untreated cases and the reasonable expectation of cure by thorough treatment at the earliest stage. This report is being criticised as an event of national importance and deserving attention even amid the stress and strain of a great war. It may in fact be doubted whether even this war when finished will have shortened a larger number of lives and decreased the "physical and mental efficiency of a larger number of persons than the venereal diseases during a single generation." If this report could be forced on the attention of the public, the statements it contains might give rise to a change in the conduct of sufferers inducing them to seek relief for the earliest symptoms, instead of postponing any application for advice, as they so frequently do, until the disease has established itself in their tissues.

Dr. John Kent Spender of Bath died on April 14. He was for many years physician to the mineral water establishment. He took the double qualification in 1852 after a curriculum at King's College and in 1868 while in practice added the M.D., Lond. As physician to the spa he saw many cases of rheumatoid arthritis and recorded in various contributions the views he entertained on its liabilities, complications, and management. Spender's spots, often observed in this disease, are named after him. His description of them is an illustration of his careful and vigilant observation and others might easily be culled from his writings.

Fleet Surgeon Charles Strickland died on March 25, aged 56, after an illness of about nine months. In early manhood he was threatened with tuberculosis and went to South Africa. On this account he began the study of medicine at a more advanced age than the majority of his fellow students. He was an earnest worker there as he was in the public service afterward. At the outbreak of the war he was in the Royal Marine Infantry in which he continued until his health failed and he was obliged to enter a sanatorium. His funeral, a naval one, took place at Southsea on March 31.

Captain Rob F. Hebbert, I.M.S., has died lately in the Persian Gulf. He qualified in 1906 and at once entered the Indian medical service. He took the Cheselden prize and some hospital distinctions at St. Thomas's.

Mr. H. S. Lyle, surgeon general to Liverpool Cancer Hospital, died on the 29th ult. after twenty-four years' earnest work. You will probably remember his name as a dermatologist of Liverpool.

Arthur G. J. Barker's name will be familiar to you as surgeon to University College Hospital and teacher of surgery for many years. He died on the 8th inst. while on active service within a month of completing his 66th year. He qualified at the two royal colleges of Ireland in 1870 and 1875, proceeded to the fellowship of the surgeons the next year and became surgeon to the City of Dublin Hospital until 1885, when he was appointed full surgeon to University College Hospital. He was Hunterian professor R. C. S. 1889, and held other important posts. His manual of surgical operations and contributions to the systems of surgery and addresses at the associations were always well received. He reported in 1886 a successful case of gastroenterostomy for cancer, and this seems to be the first in this country. He contributed other papers on abdominal surgery and some on the surgery of the joints. He was the translator of Frey's Histology, and had been a lieutenant-colonel in the R. A. M. C. and consulting surgeon to the southern command. He met his death at Salonica.

Lieut. John Wilson, R. A. M. C., was killed in action on March 9, aged 29. He graduated at Edinburgh University in 1909. When several wounded were reported to be in a trench without aid, Wilson at once volunteered to cross a most dangerous part to afford them help. He reached them, bandaged those needing it and did what he could for all. But on his way back was shot and died at once, the bullet having entered just above his heart. He is much lamented by his fellow officers and the men of his company. Only ten days before his death he had been recommended for the military cross.

Lieut. Percy H. Berry, R. A. M. C., died on March 10, aged 27. He was trying to rescue a drowning man at Barrani (Egypt). Plunging into the heavy surf with his clothes on, an enormous wave broke over him and carried him away at once out of the sight of all onlookers. Five hours afterwards his body was found. There were large wounds on the head, apparently ante mortem. He was buried with military honors on March 11 in Egypt.

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 11, 1916.

1. Methods for Testing Donors for Transfusion of Blood. George G. Minot.
2. Use of the Duodenal Tube for Diagnosis and Treatment. Franklin W. White.
3. Gastric Ulcer Experimentally Produced. Edgar C. Steinharter.
4. The Fallacies of Group Treatment. Herbert J. Cronin.

1. Methods for Testing Donors for Transfusion of Blood.—George G. Minot with regard to methods for testing donors for transfusion of blood summarizes and concludes as follows: A donor for transfusion of blood should be not only healthy, but should belong to the same iso-agglutination group as the recipient. Simple and quick methods for testing this have been described. What these tests show *in vitro* can be taken as reliable evidence as to what may happen *in vivo*, so far as agglutination and hemolysis are concerned. Even when the donor and patient belong to the same iso-agglutination group there may occur, however, after transfusion, reactions of unknown nature, which are probably of not so severe or serious a nature as hemolysis. Agglutination often does not occur *in vivo*, and if it does, does not always cause a severe reaction because of the following three factors: Interference with agglutination by an excess of non-agglutinable cells, absorption of the agglutinin by the agglutinable cells, and the degree of concentration of the agglutinin. Hemolysis does not

always occur *in vivo*, when donor and recipient belong to different iso-agglutination groups because but about 20 per cent. of sera that are agglutinable are hemolytic. Hemolysis, however, never occurs without being preceded or associated with agglutination. If hemolysis is present in the plasma of donor or recipient, or both, hemolysis may not occur, or may cause but a slight reaction *in vivo*, because of the following factors and their quantitative relation to each other: concentration of the hemolysin, concentration of the anti-hemolysin, and a certain degree of absorption of the hemolysin by the hemolyzable cells. In discussing these factors it was pointed out that in certain instances the knowledge of the strength of the anti-hemolysin might be of value.

3. Gastric Ulcer Experimentally Produced by Means of the Staphylcoccus Organism.—Edgar C. Steinharter states that the purpose of his note is to record briefly some observations relating to the production of gastric ulcers by means of the staphylococcus organism and a decinormal solution of acetic acid. The organism was obtained from a case of septicemia in man. Rabbits were used in all the experiments. Based on the study of forty injected animals, the following statements are made: 1. Typical peptic ulcers varying from one quarter of an inch in diameter were produced by injecting locally into the stomach wall the staphylococcus organism of certain grades of virulence and a weak acetic acid solution. As staphylococcus cultures would not answer the purpose, an organism of especial virulence, for instance, one freshly isolated from the appendix, was necessary to produce the lesion. (a) The injection of the organism alone usually caused the development of a small localized and firmly walled off abscess at the point of injection. Such an abscess as a rule was absorbed in the course of four to six days and never showed any involvement of the mucous or peritoneal coats. In some cases no abscess was formed. (b) The introduction of the acid alone into the stomach wall beyond causing more or less edema provoked no gross pathological change in the tissues. It certainly never caused an ulcer; but it did seem to increase the susceptibility of the area for localization of the staphylococcus injected into the general circulation. 2. The tendency of selective localization in certain organs was found to depend, among other things, upon the virulence of the organism and could be modified by cultivation in functionating tissue. For instance, a culture of the organism isolated from a joint was apt to form on intravenous injection a septico-pyemia with abscesses predominating in the skeletal and myocardial muscles, that from the appendix showed an affinity for the intestinal tract, so that at times the appendix was the only organ revealing any gross lesion. In the light of the above results, it seems possible that the staphylcoccus is responsible for certain cases of gatric ulcer in human beings. If by some means through an erosion, or trauma, etc., a hyperacid gastric juice enters the tissues of a limited area of the stomach wall and the staphylococcus of proper virulence, for example from the appendix finds lodgment there, it does seem quite probable that the necessary conditions used in producing the experimental ulcer would be duplicated.

New York Medical Journal.

May 13, 1916.

1. Carbon Dioxide Baths. Simon Baruch.
2. Mineral Bath Therapeutics at Mount Clemens. W. T. Lungerhausen.
3. The Value of the Springs at Saratoga. A. Sherman. Dewey.
4. The Oertel System of Graduated Exercise. William H. Deaderick.
5. The Waters at Paso Robles, Cal. Mark C. Myers.
6. Longitudinal Inversion of the Colon. Robert T. Morris.
7. The Five Glass Catheter Test. Abr. L. Wolbarst.
8. The Immune Response in Pulmonary Tuberculosis. Ellis Bonime.
9. Surprises for the Diagnostician Revealed by the Pathologist. Walter C. Baetz.

6. Longitudinal Inversion of the Colon.—Robert T. Morris points out that the study of focal infections is one which is to engage the attention of the medical profession more and more. In this line of observation we are to find explanation, not only for infections of the joints, and for certain obscure lesions of the vital organs, but we are to bring up the whole question of physical decadence under microbic influence. There is no question that the colon carrying an excess of bacteria of many kinds has been responsible for distant effects to an extent of which we were not cognizant in the past. The prompt relief or disappearance of certain neuroses, and even of certain psychoses as a result of some of the more severe operations of the school of Lane, will stimulate us to devising milder means for attaining the same end. Some years ago Blake devised a method for infolding the wall of the distended cecum, and it seemed to Morris that we might extend this idea to include practically the whole colon, leaving simply room enough for the passage of mucus. When we are to dispose of the colon in this way it is desirable to make a short circuit of the bowel between the cecum or lower ileum and a part of the sigmoid colon. This first step is accomplished in any one of the easiest ways. The next procedure consists in carrying a silk or linen suture in mattress form between two lines of longitudinal muscles of the colon in such a way as to invert the wall of the colon and to retain it in the folded-in position. This procedure narrows the lumen of the colon longitudinally, but we at once perceive a tendency for pouching of parts of the colon which lie between longitudinal muscle bands. They bulge and escape from the suture. In order to overcome this feature a suture is introduced which we may call the accordion suture. The accordion suture traverses two or more protruding colonic pockets and then is brought back upon itself in such a way that when the suture is tied these pockets are compressed very much as the folds of an accordion would be compressed when the instrument is closed. A series of the accordion suture introduced rapidly just beneath the peritoneum, or through the muscle coat, not only disposes of the bulging parts of the colon, but shortens the bowel very decidedly. The procedure is not practical for patients who have a fat, heavy omentum, or large masses of fat epiploic appendages. The condition, however, is one which we are not so apt to find in the class of patients who are suffering from chronic colonic toxemia. They are more apt to be of the thin nervous type. We shall sometimes find it necessary to divide one leaf of the great omentum in order to carry the suture properly, but when the omentum is thin and devoid of fat such division is not necessary. The question which arises in the mind of Morris is whether these sutures will remain permanently in place, and if the adhesions which follow suturing will maintain the bowel in its new form. We all know the natural tendency for structures to return to normal conditions. In cases in which Morris has employed this method the colon apparently has not escaped, but he has no way of determining the point.

7. The Five-Glass Catheter Test.—Abr. L. Wolbarst in the MEDICAL RECORD, April, 1906, and in *International Clinics*, 1912, described and reported a multiple glass test for the determination of the source of pus and shreds in the male urethra. The five-glass catheter test is performed as follows: The patient presents himself with a full bladder, having retained the urine several hours, the longer the better. The meatus is cleansed so as to remove adherent secretion. The anterior urethra is first irrigated with a bland solution of sterile water, the washings being collected in a clean receptacle

held between the legs. Either a hand syringe or an irrigator may be used. In the average case of chronic urethritis, from three to five ounces of irrigating fluid are usually sufficient to thoroughly empty the anterior urethra of its inflammatory contents. The washings are poured into a clean glass cylinder. One or more subsequent washings determine the fact that the urethra is absolutely clean as far backward as the cut-off muscle. The clean washings are poured into a second cylinder. A sterile catheter of fine caliber is now introduced into the bladder. This constitutes the unique feature of this test. An ounce or two of urine is now drawn off into glass 3. This is the bladder urine obtained without contact with the posterior or anterior portions of the urethra. If this urine is clear and sparkling as normal urine should be, we know beyond peradventure that the bladder and upper urinary tract are not the source of the pus or shreds. The catheter is now withdrawn and the patient voids an ounce or two of urine into glass 4. It is evident that pus or shreds passed in this urine must of necessity originate in the posterior urethra, both the bladder and the anterior urethra having been eliminated. If the prostate is normal, however, the urine passed by the patient over the cleansed anterior urethra will of necessity be as clear as that drawn from the bladder, via the catheter. A further step is to massage the prostate vigorously, and have the patient urinate in glass 5. This gives us the "massaged prostatic urine." And if we desire to proceed with further refinements we may strip each of the seminal vesicles separately, each time having the patient void his urine into glasses 6 and 7 respectively. Wolbarst does not attach much significance to the last two glasses, as a rule, because of the inherent difficulty of separating the prostatic from the vesicular secretions. We are thus enabled to obtain washings from the anterior urethra, posterior urethra, and bladder in a most unmistakable and certain manner, in addition to the urine obtained after massage of the prostate and stripping the vesicles. Wolbarst firmly believes that a more widespread knowledge and employment of the five-glass catheter test, as described above, would result in more accurate diagnosis, and consequently more satisfactory therapeutic results, in difficult and obstinate lesions involving the lower urinary tract. This applies to the determination of the source of blood as well as pus.

Journal of the American Medical Association.

May 13, 1916.

1. Investigation and Scientific Phases of the Diabetic Question: Their Probable Relations to Practical Problems of Clinical Medicine. Frederick M. Allen.
2. A Case of Diabetes of Maximum Severity with Marked Improvement: A Study of Blood, Wine and Respiratory Metabolism. H. Rawle Geyelin and Eugene F. Du Bois.
3. Umbilical Dyspepsia. Charles D. Aaron.
4. Control of Diphtheria. D. M. Lewis.
5. Observations in the Diagnosis and Treatment of Brain Injuries in Adults. William Sharpe.
6. Sex Gland Implantation: Additional Cases and Conclusions. G. Frank Lydston.
7. Intravenous Injections of Sodium Citrate with Reference to Transfusion. A. L. Garbat.
8. The Technique and Results of the Open Method of Operation on Bones and Joints. C. Hugh McKenna.
9. Multiple Acute Gastric Ulcers After Using Percy's "Cold Iron" for Inoperable Carcinoma: Preliminary Report of a Fatal Case. V. N. Leonard and A. B. Dayton.
10. Early Diagnosis of a Case of Myxedema. Fruste. J. S. Wechsler.

3. Umbilical Dyspepsia.—Charles D. Aaron explains that a defect in the abdominal parietes preventing closure of the umbilical canal results in what is known as a congenital opening. This opening may be at first very small, so small as to escape the notice of the examining physician and later assume large dimensions, but is always congenital in origin. All these patients have symptoms of nervous dyspepsia due to increased irritability of the autonomic nervous system. Appetite is apt to be capricious, while sometimes a food will agree with a patient and sometimes disagree. Complaint is made of fullness of the head, headache, inability to work, vertigo, lassitude, and depression. He may have a feeling of heaviness after eating. The patient is usually constipated and the nutrition so long as he partakes of adequate nourishment is good. Deep palpation with the ball of the finger over the umbilicus elicits severe pain. This may radiate in different directions or be referred to some distant part of the abdomen. As soon as the pressure is released the pain ceases. The diagnosis is made by the pressure pain over the umbilicus, together with the discovery of the failure of parietal union. The chemical examination of the stomach contents in all these cases shows a hyperacidity. As for treatment the principal idea is to eliminate irritation of the umbilicus. This is best accomplished by bringing the edges of this congenital opening as close together as possible with adhesive plaster, 12 inches wide and long enough to extend from 2½ to 4 inches on either side of the umbilical opening. The surface of the abdomen where this is to be applied is thoroughly cleansed with soap, water, and alcohol. One must be particularly careful that the umbilicus itself is well cleansed. If there is an excessive growth of hair on the abdomen, it is shaved off with a safety razor. The first piece of adhesive is applied in the following manner: The edges of the navel are approximated by an assistant and the strip of adhesive is applied directly over the umbilicus and drawn as tightly as possible. Without an assistant the binding can be done by applying the adhesive to one side of the abdomen and then pressing with the hand on the opposite side, and fastening the other end of the plaster to this side. The remaining two strips of plaster are fastened so as to overlap the central strip above and below. In this manner Aaron has been able to give almost immediate relief from pain and the distressing symptoms. This treatment is usually continued from four to ten weeks. The medical treatment is determined by the character of the gastric secretions. In cases of hyperchlorhydria the alkalies are given. The presence of vagatonia necessitates the use of belladonna or its alkaloid, atropin. Aaron has also found the bromids of valuable assistance in bringing about recovery, especially in cases which show symptoms of depression. The appetite may often be stimulated, if necessary, by the use of stomachics or other bitters. The diet should be composed of rich, nourishing, easily digested foods, it being advisable to increase the amount of butter, milk, eggs, cream, and other articles of a similar nature.

6. Sex Gland Implantation.—G. Frank Lydston points out that he has already shown that for hormone therapy purposes, successful total or partial heteroimplantation of human sex glands in both male and female is practicable. By "successful" implantation he means the formation of new blood supply, and a more or less prolonged existence of the gland with coincident hormone production. The prospect of success from anastomotic implantation, with resulting generative functioning, at present is not brilliant, though possibly not hopeless. Glands taken from the living subject are most desirable, though rarely obtainable. Glands taken from the healthy dead body at any time prior to the beginning of decomposition are of therapeutic value equal to that of those taken from the living, if implantation is successful. In human beings the glands of the male may be successfully implanted on the female and probably the reverse obtains. The tissues of the female apparently are more hospitable to the implanted male sex glands than are the tissues of the male. All conditions incidental to sex gland mutila-

tion in either sex afford a positive indication for sex gland implantation, the probability of benefit being inversely as the length of time that has elapsed since the mutilation, and dependent on the age at which it occurred. In properly selected cases successful implantation ought inevitably to increase physiological efficiency with all the benefits accruing therefrom. In general, all morbid conditions, in which malnutrition exists are likely to be benefited by the sex hormone, which is a powerful physiological cell stimulant and nutrient. As Lydston has already demonstrated, microscopic sections of implanted glands apparently show regeneration of the circulation and of the interstitial connective tissue which inferentially produces the so-called internal secretion. What is true of the sex glands also is true of all other glands which produce hormone. All hormone-producing glands from dead bodies are available sources of material for hormone therapy. Emulsions of glandular organs from dead bodies apparently are available sources of material for hormone therapy. Emulsions of glandular organs from dead human bodies, acting in a less degree but in a manner similar to implantation, may be of therapeutic value, and possibly superior to the so-called extracts, and to desiccated substances from the glands of the lower animals. Lydston gives some cases in which he had performed implantation from one of which he drew the following conclusions: (1) A relatively large dose of hormone is necessary to perfect development of secondary sex characteristics. (2) A very small dosage is sufficient to preserve virility. (3) Once virility is established, an extremely small dosage of sex hormone will preserve the psychosexual and physiosexual characteristics that are so essential to potency. Not only does he feel strengthened in his heretofore published impressions of the value of sex gland implantation, notably in the matter of increasing physical efficiency, but also is convinced that when technique and material are right, and the recipient properly selected, preservation of hormone production by the implanted gland for at least a prolonged period is certain. That permanent physiological and therapeutic advantageous results are equally certain, he is now strongly inclined to believe. Thus far he has observed no case in which the implanted tissue had completely disappeared, or even practically so, prior to twelve or eighteen months.

7. Intravenous Injections of Sodium Citrate.—A. L. Garbat says that before the adoption of the sodium citrate method of transfusion as developed by Lewisohn and Weil, can be more universal, two points of prime importance will have to be definitely established. (1) Is the sodium citrate *per se* harmful? Can it be repeatedly injected? (2) Is the blood when suspended in sodium citrate and transfused still viable and able to functionate? The last question will be answered by more numerous statistics than are at present available. Thus far most of the reports show encouraging results. From Garbat's experience of forty transfusions at the German Hospital, the beneficial effects compare favorably with those obtained by methods in which unmixed blood is used. In four patients not suffering from anemia who received repeated intravenous injections of a 2 per cent. solution of sodium citrate in distilled water Garbat states that by far the majority of the injections were well tolerated and were not followed by any apparent untoward symptoms. The examination of the urine showed no evidence of renal irritation. Thus it was concluded that sodium citrate per se is not harmful, even if repeatedly injected over a long period of time. These conclusions are then reached by Garbat: (1) The sodium citrate method of transfusion is not to be considered in any way dangerous because of the sodium citrate employed. (2) A 0.25 per cent. solution of sodium citrate has been found more reliable in preventing coagulation.

The Lancet.

April 22, 1916.

1. The Milroy Lectures on Infantile Mortality and the Relative Practical Value of Measures Directed to Its Prevention. Delivered before the Royal College of Physicians of London. S. G. Moore.
2. Shock and the Soldier. G. Elliot Smith.
3. The Preparation and Use of Certain Agglutinating Sera. Harriette Chick. With a Note on the Preparation of Agglutinating Serum for B. Dysenteriae Sluga. G. Jean Dalyell.
4. Intramine: A New Antisyphilitic Remedy. Harold Spence.
5. Results of Treatment of Chronic Joint Diseases by Certain Physical Measures. John J. Grace.
6. Note on a Case of Heart-Block Showing Large Auricular Waves in the Femoral Tracing. A. W. Falconer.
7. The Work of the Royal Free Hospital Unit in Serbia. James Berry.

4. Intramine: A New Antisyphilitic Remedy.—Harold Spence discusses the use of intramine, otherwise known as diorthoaminothiobenzene, in the treatment of syphilis. Intramine was introduced by Mr. J. E. R. McDonagh, and is a synthetic preparation of sulphur, and pending McDonagh's report, which will be made shortly, Spence gives a brief and non-technical summary of his views as therein expressed. Intramine is a mustard-yellow crystalline substance, soluble in alcohol, ether, and acetone, but insoluble in water. For intramuscular administration, the only manner in which it is at present employed, it is suspended in oil in the proportion of 1 gram in 10 cubic centimetres. This readily passes through an ordinary intramuscular needle, and is administered precisely as gray oil is given, the needle-hole being preferably sealed with collodion to prevent leakage, and the possible supervention of a slight dermatitis. Up to 12 grams have been given, but full therapeutic effect is obtained with 1 or 2 grams, repeated in a few days, if required. Local pain after administration is a variable symptom, some patients complaining of severe and persistent pain, while others, and especially those accustomed to intramuscular injections of mercury, may experience nothing more than slight stiffness. There seems no objection, however, to the addition of a local anesthetic, particularly with female or nervous patients, and Spence prefers quinine and urea hydrochlorid, the anesthesia from which lasts several days. Injections are best made at the point midway between the anterior superior spine of the ileum and the upper end of the natal cleft the needle being directed forward, inward and slightly upward. From 24 to 48 hours after injection a rise of temperature and some malaise may be looked for, but rarely does the thermometer reading pass 103° F. The induration at the site of injection disappears in a few days and with ordinary care there should be no sloughing. The arsenic in salvarsan and similar remedies is not parasitotropic, but acts as a catalyst, multiplying the protective power of the host. This is of a chemicophysical nature, and consists in a process of absorption between the lipoid-globulin molecules of the serum and plasma cells and those of the parasitic. For its consummation the presence of active oxygen is necessary; supplied to the body chiefly through the action of a peroxidase upon a peroxide. Arsenic as a more powerful perovidase greatly increases the natural defence. Aluminium and iron are even more potent and are nontoxic. After a time the ability of the host to produce active oxygen directly is lessened; hence it must be produced indirectly, by means of reduction, through the action of a perhydridase. The peroxidases are metallic, the perhydridases non-metallic; and in later stages of syphilis act in a manner analogous to aluminum, iron, and arsenic in early syphilis. Diorthoa-

minothiobenzene is an efficient symptomatic remedy, particularly in later secondary syphilis and its complications, and in recurrent and tertiary lesions. It has proved effective in some chronic processes non-syphilitic in character—*e.g.* lupus vulgaris and chronic leg ulcers.

6. Note on a Case of Heart-Block Showing Large Auricular Waves in the Femoral Tracing.—A. W. Falconer states that the following case was admitted into the Aberdeen Royal Infirmary on June 17, 1915, under the care of Professor A. W. Mackintosh, to whom the writer is indebted for permission to publish it. The patient, a male aged 60, had for some two months suffered from shortness of breath or exertion, but he had continued at work up to June 15. On that date he had an attack of giddiness and vomiting. On attempting to get out of bed next day he lost consciousness and came to himself on the floor with a cut on his head. On admission to hospital the patient lay in bed in any position without discomfort. His only complaint was the frequent occurrence of "queer turns," during which he frequently lost consciousness. While under observation he had numerous typical epileptiform attacks, associated with marked slowing of the pulse. The apex beat of the heart was in the fifth interspace, just inside the nipple line. There was a slight mitral systolic murmur. The ventricular beats were at times as slow as 12 a minute, and between the ventricular beats regular auricular beats could be very distinctly heard. These contractions could be heard both at the base and the apex, but were most distinctly heard over the apex. For some time after admission the pulse rate varied from 12 to 18 beats a minute. Two weeks after admission it rose to 60, but in a week it again fell to between 32 and 40. During the first two weeks the patient had numerous long ventricular pauses, many of which were accompanied by epileptiform or giddy attacks. During this period the breathing was very markedly of the Cheyne-Stokes type, but later with the diminution of the heart-block the Cheyne-Stokes respiration disappeared. For some days after admission the ventricular rate varied from 12 to 18 a minute, the auricular rate remaining constant at 78. The ventricular rate was never absolutely regular for more than a few beats, and there were frequent long ventricular pauses.

British Medical Journal.

April 22, 1916.

1. Observations on the Treatment of Gunshot Wounds of the Spine. Alfred J. Hull.
2. The Toxic Effects of Ethylhydrocuprein on the Eye. George H. Oliver.
3. Some Notes from the Battle Front in Northern France. A. Lapthorn Smith.
4. Fecal and Intestinal Vomiting and Jejunostomy. Victor Bonney.
5. A Case of Marked Temporary Aphasia After Ligature of the Common Carotid Artery for Traumatic Aneurysm. Frank Cole Madden.
6. Notes on a Fatal Case of Acute Nephritis Occurring in the Expeditionary Force. Richard C. Clarke.
7. Injury to the Internal Ear Presenting Some Unusual Features. H. Lawson Whale.
8. The Treatment of Diabetes. John Hume.
9. New Forms of Plating Dishes for the Cultivation of Bacteria. S. Delepine.

2. The Toxic Effects of Ethylhydrocuprein on the Eye.—George H. Oliver draws attention to the fact that it has been demonstrated that in certain infections induced artificially by virulent strains of the pneumococcus the microorganisms can be destroyed and the lives of the majority of the animals saved by the administration of ethylhydrocuprein. Frankel used this drug, which is a quinine derivative, in a number of cases of pneumonia, which was then epidemic in Berlin. His results were unsatisfactory as a very disagreeable complication occurred. This complication is the occurrence of ambylopia. Oliver describes a similar case to which he was called in, where disastrous results ensued from the administration of ethylhydrocuprein. The patient took in all 120 grains and had practically lost his sight in a year's time from the administration of the drug. After that time he began to improve and has continued to do so up to date. Ophthalmoscope: Both discs now quite white with no trace of color; details not discernible. Vessels seem to have increased in size a little and a few very fine branches may be seen on the discs. Vessels in left eye are smaller than in right eye, and both arteries and veins have a double outline which extends far away from the disc. Apart from these changes, the fundus is quite normal in appearance. Pupils are dilated and contract very slightly to light and still oscillate. The writer is afraid that there is little hope of this patient being able to earn his own living in the future. The conclusion is that ethylhydrocuprein is a dangerous drug and its administration is to be carefully avoided. It may happily be discovered that much smaller doses than those given heretofore will suffice to destroy the pneumococcus.

4. Fecal and Intestinal Vomiting and Jejunostomy.—Victor Bonney, in November, 1910, published a paper in the Archives of the Middlesex Hospital, entitled "Post-operative Paralytic Obstruction of the Intestine, with Special Reference to Its Treatment by Jejunostomy." Therein he pointed out the fatal result in these cases was due to toxic absorption from the upper intestinal tract brought about by an acute ascending infection by B. coli communis and other organisms of the lower intestine in a state of exalted virulence and activity. He further pointed out that in these cases the bowel may be divided into three segments, each of which is in a different condition: 1. A collapsed portion. 2. A portion above it much distended with gas and fluid matter; and 3. A portion above that distended with gas and fluid matter, the fluid being more or less faeculent in character and identical with that vomited. He showed that in these cases it was proper to open the upper fluid containing segment in order to drain the reservoir of toxicity, and useless to open the middle gas-containing segment. During the time that has elapsed his confidence in the correctness of the views then expressed has been strengthened, and he holds strongly that in all cases of paralytic intestinal obstruction, whether primary or secondary to an organic obstruction or to peritonitis, when advanced to the stage of fecal, or short of fecal, intestinal vomiting should be treated by jejunostomy. The character of the vomited matter indicates the condition of the upper part of the intestinal tract, for where the vomit is fecal or intestinal the stomach forms the highest part of the fluid containing segment. This upper segment does not necessarily reach as high in every case of intestinal obstruction when it first comes under clinical observation, nor need it at first include any part of the small intestine; for if the primary obstruction is situated low down in the large intestine, the total area of distension may not, at first, extend above the ileocecal valve. In this phase, however, the vomit is neither fecal nor intestinal, but simply the stomach contents. In all cases of obstruction, however, the stomach and jejunum will eventually be included in the fluid-containing segment, and so soon as this occurs the fact is made patent by the change in the character of the vomit, which at first becomes intestinal and finally fecal.

8. The Treatment of Diabetes.—John Hume thoroughly inspects the mouth, has any defective teeth removed, and enjoins the necessity for thoroughly cleansing the teeth and washing out the mouth frequently. The fast he begins with is generally of about

fourteen hours duration. The best time to commence is in the evening, when he allows a light meal at about 5 p. m. Two hours after he gives a dose of castor oil. The patient can rinse out the mouth with warm water, if desired, two or three times during the fast, but on no consideration must anything be swallowed, not even water, as he finds the results are not so satisfactory when water is allowed. At 9 next morning he gives a second dose of castor oil and then no food for two hours. By 11 A. M. the bowels have, as a rule, acted, and he allows the patient to have breakfast. There is, therefore, a period of absolute fasting between the two medicines. In succeeding fasts salines can be used, the object being to secure a through evacuation and to reduce the intestinal flora as far as possible. The patient can easily go through the same routine every second night, and after he has become accustomed to the treatment the duration of fasts should be prolonged by beginning earlier in the afternoon and extending them next day. At the end of two weeks a fast of twenty-four hours can easily be done two or three times a week. It is better in the earlier fasts to keep the patient in bed, as he finds they are more easily managed and it is pleasanter for themselves as they can more readily keep warm and do not have the same temptation to stop the fast as they would have if they were going about. In many cases the disappearance of the sugar is complete. He generally recommends, however, that there should be one fast of eighteen hours each week carried out in the same way. If a small quantity of sugar persists he recommends two fasts each week of about fourteen hours, and finds this quite sufficient to prevent the other symptoms of the disease from manifesting themselves and to allow the patient to attend to his duties.

Münchener medizinische Wochenschrift.

April 18, 1916.

Renal Edema.—Meyer refers primarily to edema of the kidney itself. We often find in autopsies on victims of Bright's disease that these organs are larger and heavier than natural because of serous saturation of both parenchyma and interstitial tissue. Edema occurs in both nephroses and diffuse glomerulonephritis, and in different stages of either; and it disappears after recovery, but also after cirrhosis has set in. Thus far we have known nothing clinically concerning renal edema, and of course there has been no indication for treatment. The author gives a specimen case, in a young woman with a high degree of anasarca, and other evidences of a nephrosis, as marked oliguria and hydremia. The causes could not be determined. It was necessary to puncture the limbs, since neither diet, heart stimulants or diuretics could unburden the kidneys. In the first twenty-four hours nearly 12,000 c.c. of fluid were evacuated in this manner, and on the second day over 2000 more. Diuresis now came about per se, but after five days of free secretion of urine the former state of edema and oliguria returned and necessitated further puncture. The resulting benefit was more lasting and patient now responded properly to salt-poor regimen; but has by no means recovered, as the ankles remain swollen and albuminuria persists; in fact, the kidneys are clearly the seat of a degenerative process or nephrosis. All evidence from the urine, when the affection was at its worst, pointed to a condition of dropsy of the kidneys—of edematous stasis—with production of a vicious circle. The pent-up serum must have compressed the functioning renal cells. The patient complained of headache, vertigo and vomiting, but there were no changes in the fundus oculi, and the heart and blood pressure remained normal. In theory decapsulation was indicated, but the author obtained a good result with a much safer intervention. Evidently there are two types of cases in regard to indications for the two forms of surgical relief.

Etiology and Therapy of Pruritus Vulvæ. — Heusler-Edenhuizen, a woman gynecologist, reports a number of cases of this condition concerning which, aside from the diabetic form, she does not find clean-cut views on nature and treatment. The secretory surfaces, *i.e.* those upon which secretions may stagnate, appear to be the areas of predilection (clitoris, inner side of labia minora, perineum). From these localities the affection may extend forward and backward respectively, involving the external genitals and anus. The secretions, whether urine, mucus, or leucorrhea, become pent up in certain positions, and escape when the latter are changed. Lack of cleanliness, action of microorganisms, and decomposition products are all factors. The irritating discharges cause excoriations and other secondary lesions, to which must be added effects of scratching, of menstruation, etc. Hence vicious circles are constantly at work. Practically cases fall under two heads. In one there is no fluor albus, no external lesions, and the author simply sterilizes the vulva and applies iodine tincture, 10 per cent., with powdered zinc oxide as a desiccant. There may be needed a second application of the iodine, but the pruritus usually subsides under simple cleanliness. In the second group of cases we have to deal with an eczema or dermatitis, with at time thickening and fissuring of the integument. These alterations, even when chronic, can undergo involution if the irritating secretions can be dealt with. The author keeps the vagina dry by means of a dry tamponade, but this resource can only be used at the outset because of the need of frequent change of dressings. The introduction of dry powder into the passage is the principal dependence. To allow the eczema to heal, water must not be allowed to come in contact with the altered surfaces. Oil is applied about the meatus and anus before urination and defecation. Iodine tincture is applied as in the milder cases, and much use is made of zinc-oxide powder as a desiccant.

War Psychology.—Fuchs states that the great war has passed from the status of an expedition to that of a steady occupation. God knows when it will end, and in some respects it is just beginning. How does the psyche react to such convictions? At first it did so in a sort of martial ecstasy. When the siege, the deadlock feature became confirmed, two viewpoints were manifest. One was that of resolution to go ahead with what had been begun. This stable, constant fraction was much larger than the other, which showed a decided lability, probably a reaction from initial over-optimism. Euphoria was succeeded by a state of resignation. Were this viewpoint held by a majority it would mean that the Germans were not a people of the first order. The great mass of the people, although disillusioned in some ways, remain steadfast, but firmness is now associated with scientific insight—clearness of view with clenched jaws. We recall, says Fuchs, the seven-year-long struggles of the great Frederick, which would have been seven times seven had the need arisen. As is always the case the man in the hinterland, whose life is not directly menaced, is the one who wants peace, who acts as a boding Cassandra. The warriors learn daily more of the art of war, and war is a series of adaptations. The Germans are now in a new phase of psychic development, which has brought about the pacifist schism, but ultimately it must pass into still another, with everyone active for his own existence, and then will come solidarity.

Münchener medizinische Wochenschrift.

April 11, 1916.

Sudden Death in Chloroform Narcosis.—According to Hering, cats and dogs may die at the beginning of chloroform narcosis, and the more excited they are the more suddenly death may impend. This form of death is due for the most part to overexcitation of the cardiac chambers or heart flutter. In other words, we have a secondary cardiac death. In man the same mechanism doubtless holds good, whenever all at once the action of the heart is not in evidence, although respiration persists. In these human cases excitement also plays a rôle, and if these deaths were more closely studied it would no doubt be found to coexist more frequently than we think. As extrasystole stands in some relationship with heart flutter and can even pass directly into the latter it is best to give no chloroform to any patient with extrasystole, even when the latter occurs only episodically. We also have means for determining latent extrasystole and should extend the contraindications to chloroform to this class as well. Adrenalin may be made to provoke extrasystole in a heart already affected, but not in a heart which is clinically sound. Irritation of the cervical vagus may produce not only an occasional extrasystole but at times extrasystolic tachycardia and even auricular flutter.

Anatomy and Histology of Typhus Fever.—Bauer states that Fraenkel's original discovery of the specific histological character of the typhus exanthem has now been abundantly corroborated. It is the last refinement in differentiating typhus from typhoid and other conditions. In doubtful autopsy cases in which the intestines are not involved simple microscopic examination of a section of nodule will make the diagnosis of typhus. The author here cites a case in which the viscera exhibited nothing characteristic of the latter and states that another specific lesion, to wit in the spleen, made the diagnosis of typhus. This lesion is a hyperplasia of the lymph follicles in a nearly normal spleen. It has thus far never been encountered in typhoid, malaria or other affection. The question naturally arises, is there any connection between the changes in the skin and those of the spleen? and may similar changes be found in other organs which may suffer in typhus such as the kidneys? *A priori* the likelihood of such a homogeneous find is great because in Fraenkel's lesions of the skin the arteries formed the starting point. The author now submitted to examination sections of the spleen, kidneys, stomach, intestine and thyroid and in every organ found the characteristic changes in and around the intima of the arteries. Again if we inject the blood of typhus patients into the veins of guinea-pigs, and after about three weeks choloroform the animals to death we find not only gross lesions which resemble those of typhus but also the characteristic alterations in the small arteries. These discoveries will be of the greatest importance. No longer can typhus mask itself as typhoid or influenza or cerebrospinal meningitis or under the extreme variations of type sometimes seen, for it will only be necessary to make the histological test, preferably in the corium.

Experience with Albee's Operation for Spondylitis Tuberculosa.—Vulpius, the veteran orthopedic surgeon, reports a series of thirty cases of the above association. He saw Albee operate in Germany, but the intervention is still hardly known in that country. That is to say, while the operation may be known *per se*, nothing is known of end results. Hence from the last viewpoint twenty-four cases once operated on have been re-examined, and six others have been heard from by mail. The ages of patients varied from 3 to 45 years. The technique of operation is very simple and the course of healing was smooth in all but three cases in which small sequestra had to be expelled. The intervals between operation and the last examination extend up to 2½ years. The subjective improvement was prompt and striking. Pain ceased, the patients became supple and active, on their feet most of the time. The rigidity of the spine at the site of the operation was compensated by increased mobility of the other vertebræ. The grafted bone appears eventually to undergo a certain amount of absorption. There was a single death in the series, in a child, from tuberculous meningitis. Paralysis was never seen. In summing up Vulpius commends the operation earnestly.

Intravenous Infusion in the Field.—Friedemann agrees with many of his army colleagues in pronouncing ordinary subcutaneous saline infusion a failure on the battlefield. Intravenous infusion of the continuous drip type gives much better results. The rate of infusion is from thirty to 200 drops per minute and it may be kept up for hours after the operation. Digalen, strophanthin and adrenalin may readily be exhibited in the infusion. Before operating on a severely wounded patient who is shocked, anemic, and practically pulseless, the cubital vein is at once opened with scissors; a glass cannula sutured in and connected with a piece of tubing and container for the infusion. A Martin's glass ball makes the dripping perceptible, and a screw-clamp regulates the water flow. Water is allowed to infuse until the pulse beat can be felt, and not until then is it allowed to drip at the rate of 200 drops per minute. In a given case of abdominal wound laparotomy is now performed and blood and fecal matter removed. If the pulse is beating well the rate of dropping is reduced to 100 per minute, then to sixty, then thirty. Too much water can do harm, and an attempt must be made not to exceed four or five liters in twelve to twenty hours. The indications are medical as well as surgical—cholera, dysentery and severe diarrhea, as well as shock and hemorrhage. While the rectal drip may replace the method in mild cases, it should not be used as an accessory, because useless then.

Fermentative Diarrhea in Infants.—Lewis Webb Hill discusses the carbohydrate form of fermentative diarrhea in infants. He says it must be remembered that the condition is due to one thing, a fermentation of carbohydrate in the intestine and excessive acid production, with consequent irritation of the mucosa, and increased peristalsis. Hence the stools are always acid and the one obvious and important principle in the treatment of a case of this kind is to give a food low in carbohydrate until normal conditions are restored. If at the same time this food can contain a considerable amount of protein, in a form which is easily digested, a great deal will have been gained. It is these characteristics which have made the "eiweiss" milk of Finkelstein and its various modifications valuable. The great drawback to these is their difficulty of preparation. The use of skim milk dilutions with the addition of powdered casein meets the indication, and such mixtures are infinitely more simple of preparation than any of the "eiweiss" milk preparations. The writer has treated his cases of fermentative diarrhea with a soluble form of calcium casein which he has found highly satisfactory. For babies under six months of age a mixture of skim milk and water is used with enough calcium casein to bring the protein percentage up to 2.60 per cent., giving the formula: Fats 0.25; sugar, 2.25; protein 2.60. The writer gives formula suited to different ages and weights of infants and recommends the use of malt sugar in making up the formula, as it ferments less easily than the other sugars.—*Boston Medical and Surgical Journal.*

Book Reviews.

THE PRACTITIONER'S MEDICAL DICTIONARY, containing all the words and phrases generally used in medicine and the allied sciences, with their proper pronunciation, derivation, and definition. By GEORGE M. GOULD, A.M., M.D., author of "An Illustrated Dictionary of Medicine, Biology, and Allied Sciences," "The Student's Medical Dictionary," "Pocket Medical Dictionary," etc. Third edition—revised and enlarged by R. J. E. SCOTT, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine, editor of Hughes' "Practice of Medicine," Gould and Pyle's "Cyclopedia of Medicine and Surgery," etc. Based on recent medical literature, with many tables. Price, cloth, $2.75; leather, $4.50. Philadelphia: P. Blakiston's Son & Co., 1916.

Great Scott! Where's Gould? is the involuntary exclamation of the reviewer opening this volume, which purports to be the latest of the so-called Gould series of word books. There is barely a trace of the eccentric spelling which has marred this series from its inception, and which rightly or wrongly has been attributed to the editor who gave his name to the work—the e is returned to the alkaloids and to the -ides; ph has come back to sulphur and -al to chemical; eyestrain and other ophthalmological terms are now defined, and many other improvements are evident. So now we have two dictionaries ostensibly by the same author—the "Practitioner's" with one spelling, the "Pocket Pronouncing" Dictionary with another—plainly a case of you pays your money and you takes your choice.

The present volume seems to be the former edition of "The Practitioner's Dictionary" with the addition of a large number of old words, apparently from Gould's "Illustrated Medical Dictionary," and a few words of more recent coinage. The claim is repeated in the preface of this edition that the book as regards its choice of words, is a medio-tutissimus-ibis dictionary, or in modern phrase a middle-of-the-road production; as the two editions are as unlike in this respect as two books can well be, it is difficult to see how the claim can hold for both; as a matter of fact this edition leans as far to the side of prolixity as the first did to that of incompleteness. The preface is also in other respects rather peculiar. The writers say, for example, that "if words exist and *are used*, they should be recorded," even if they are "obsolete"—that is to say if they *are not used*. They further state that more than one-third of a million copies of Gould's dictionaries are in the hands of the English-speaking practitioners of the world; as it is estimated that the English-speaking practitioners number about a quarter of a million, some 85,000 of them must be carrying a Gould dictionary in each hand. The book is well printed in clear but eyestrainingly small type and is externally quite pleasing to the eye, though the cloth binding does not look as though it would stand much hard use.

AUTOPLASTIC BONE SURGERY. By CHARLES DAVISON, M.D., Professor of Surgery and Clinical Surgery, University of Illinois, College of Medicine; Fellow of the American College of Surgeons; Surgeon to Cook County Hospital and University Hospital; and FRANKLIN D. SMITH, M.D., Clinical Pathologist to University Hospital. Price, $3.50 net. Philadelphia and New York: Lea & Febiger, 1916.

IN this book we have a comprehensive study of the principles involved in the transplantation of bone with and without periosteum; a description of the process of bone regeneration and repair, including the rôles played by the different histological elements concerned in the process; a summary of the indications for autoplastic bone surgery; a very convincing dissertation on the advantages of the autoplastic bone graft and, conversely, on the disadvantages of metal plates and screws; a description of the instruments required and the technique of bone graft surgery under varying conditions and as applied in fractures in the different parts of the body; a chapter on autoplastic immobilization in tuberculous spondylitis; chapters on autoplastic repair of congenital and acquired defects and deformities of bone; and other matter germane to the subject. Not only the results of the authors' experiments and clinical studies are included, but when the experience and theories of others have differed from theirs the authors have impartially stated these facts and the reader is thus put in a position to weigh the evidence for himself and draw his own conclusions.

In view of this evident general willingness to give credit to others, it is a surprise to find the authors so apparently loath to give credit to Albee; for although one who is unprejudiced must concede that Albee has probably done more than any other one man in developing the technique of bonegraft surgery as it is practised to-day, we find but comparatively scant reference and attention paid to his work. It is true that Albee's method of spinal fixation is detailed by name and at length on page 305 et. seq., but there are certain points in technique referred to as "the author's" which we in the East have unhesitatingly credited to Albee. Doubtless each has worked independently and certain portions of the technique which each claims as "the author's method" happen practically to coincide.

While the book is unusually well written there are occasional inaccuracies of statement or nomenclature. For example, the author frequently speaks of obtaining grafts from the "spine" of the tibia when undoubtedly "crest" is meant. The illustrations are particularly good, but unnecessarily multiplied in many instances. However, the book presents perhaps the most comprehensive résumé of the theories and principles involved, as well as the technique in this branch of surgery, that we have seen; and while the importance of the intramedullary graft may be unduly emphasized and while we utterly disagree with the author as to the best method to be employed in certain special fractures, we have no hesitation in cordially approving the book as a whole.

HARVEY'S VIEWS ON THE USE OF THE CIRCULATION OF THE BLOOD. By JOHN G. CURTIS, M.D., LL.D., Formerly Professor of Physiology in Columbia University in the City of New York. Price, $1.50 net. New York: Columbia University Press, 1915.

THIS book is based upon a lecture delivered in 1907 before the Johns Hopkins Hospital Historical Club at Baltimore and was uncompleted at the time of the author's death in 1913. The manuscript was arranged in form and the few omissions supplied by the author's successor, Professor Frederic S. Lee. Those who are familiar with the scholarly attainments of Professor Curtis will need no assurance of the depth of erudition displayed in the preparation of the book. He has discussed Harvey's writings on the subject and then shown how Harvey's ideas were developed and explained why he thought as he did. The work shows that Harvey was more a disciple of Aristotle than of Galen and was able to support his arguments creditably by his observation, limited as it was in his day by the lack of instruments of precision. To all those who are interested in the history of medicine the book will make exceedingly interesting reading and it will endure as certainly not the least of Professor Curtis' many contributions to medical literature.

NITRO BY HYPO. A Peptonized tonic for the Physician. By EDWIN P. HAWORTH, Superintendent of the Willows Maternity Sanitarium. Kansas City: The Willow Magazine Company.

THIS small book consists of some of the contributions to the Willow Magazine. They are humorous and instructive.

DIE PATHOLOGIE UND THERAPIE DES ILEUS. Von Professor W. KAUSCH, Direktor der chirurgischen Abteilung des städtischen Krankenhauses in Berlin-Schöneberg. Mit 6 Abbildungen im Text. Sammlung Albu, Band V, Heft 6. Price, M 1.40. Halle a. S.: Carl Marhold, 1915.

IN this brochure of about 50 pages Professor Kausch has given a very comprehensive discussion of the subject, starting with a differentiation of the various forms of ileus and their etiology, the pathogenesis of ileus, and so on through the symptomatology, diagnosis, differential diagnosis, prognosis, and treatment. Under this latter heading the medical treatment under certain conditions is discussed and approved; but the author takes pains to point out that a large percentage of the cases are surgical and that surgery, when indicated, should be resorted to early. About one-fifth of the article is devoted to the surgical aspects of the subject, and as a parting injunction he says: "At all events we can say this much, the earlier one afflicted with ileus, who can be cured through operation, is operated upon, so much the better are his chances; and many cases are lost because the attending physician calls in the surgeon too late."

This dissertation will well repay reading by internist and surgeon alike.

Society Reports.

CONGRESS OF AMERICAN PHYSICIANS AND SURGEONS.

Tenth Triennial Session, Held in Washington, May 9 and 10, 1916.

(Special Report to the MEDICAL RECORD.)

(*Concluded from page* 931.)

Wednesday, May 10—Second Day.

THE PRESIDENT, DR. WILLIAM S. THAYER, IN THE CHAIR.

THE subject for discussion at this session was "Immunization and Its Practical Applications."

The Underlying Problems of Immunization. — Dr. THEOBALD SMITH of Princeton presented this communication, in which he said that the underlying principles of immunization were twofold. We had, in the first place, the plain practical problem to prevent or to check disease by applying the methods copied from nature and improving upon them in the interest of man, if possible. Secondly, we had before us the problem of discovering the *modus operandi* of resistance to disease, the sequence of events which were associated with recovery on the one hand and with complete resistance on the other. The object of immunization was to raise the resistance of the body from a lower to a higher level. The remarkable effectiveness of smallpox vaccination had left the impression that immunization against any disease always meant complete protection from that disease. We missed here the quantitative concept which was involved in all life processes. We must accept the fact that no kind of vaccination would be invariably and completely protective. We might, however, hope to convert a fatal into a non-fatal attack, a mild attack into one so mild as to remain unrecognized, or into complete protection. As long as the susceptibility of individuals varied toward the same infecting agent we could not expect the same treatment to bring all to the same level of resistance. Nor was it possible with the same treatment to protect equally well against agents of high and low virulence. To neglect the quantitative side of immunization was to bring the process into discredit, because our claims could not be justified. One of the problems bearing on this phase of the subject was a better study of spontaneous mild disease as a result of exposure in the vaccinated individual and of attacks which might not be recognized by older clinical methods and which even the patients themselves might overlook. For our present conception of acquired immunity we tacitly assumed that after every exposure there was some, however slight, multiplication of the virus necessary to wake up the immunizing mechanism. In working out such problems of immunity the essential factor to be kept in mind was to raise such resistance with the least injury to the subject. The direction which immunization was to take depended upon the etiological factors involved. There were primary and secondary infectious agents in most diseases. It was generally conceded that if we protected against the primary agent the others were thereby kept suppressed. The assumption underlying this view was that the secondary agents played no part in giving the primary agent an opportunity to infect, but that the reverse was true. This, however, had not been proved. When it came to an actual outbreak of diseases the situation was changed; the main or primary disease would run its course satisfactorily if the complications could be kept away. The question then at issue became a choice of vaccines toward possible secondary invaders. The general rule that a single attack of a disease protected for life was subject to many limitations. All acquired immunity was a perishable commodity. This question was complicated by several factors, among which were the following: (*a*) The human body became more resistant to infection with age; (*b*) there was a possibility of reinfection without clinical signs which would maintain and strengthen any immunity obtained in infancy and childhood. There was a clearly marked distinction between groups of microorganisms as to the capacity of the host to be immunized experimentally. With some the attempt was much more readily successful than with others. Those bacteria which acted only through their toxins were most easily kept in check by immunization. Next came the group of acute septicemic diseases, such as those due to bacteria which were quite perishable, including the group of pneumococci and bi-polar bacteria. Bacteria-producing diseases of longer duration appeared difficult to suppress in proportion to the chronicity of the affection. To these general rules there were, of course, exceptions. Endemic disease led to relatively heightened resistance. Since most of the diseases in question were due to parasites which survived and might persist in the blood during a lifetime—which, in other words, were able to subsist in an immune host—the most rational explanation of this immunity was that based on the transmission of immune bodies to the offspring. Among the established facts in immunology was the greater efficacy of living virus over any other; the practical application of this fact, however, encountered many obstacles. There was the degree of permanency of the attenuation, which must be carefully considered. Besides the attenuation of homologous viruses, the finding of naturally attenuated strains was a possibility to be considered. The preconception that strains of low virulence could not immunize toward highly virulent strains should not stand in the way of actual trials. Next to living virus, the bodies of bacteria killed by heat seemed to have the best chance of producing immunity. The success or failure of this method would depend theoretically on what was the important antigen. If the aggressive activity or virulence of microorganisms was rapidly lost after isolation from the tissues, the effectiveness of cultures killed by heat, or otherwise, would naturally depend upon the total age of the cultures used, provided the factor of virulence was not completely destroyed when the bacteria was killed. The evident success of this method in preventing an attack of typhoid fever was encouraging for this method of vaccination. The relative efficiency of sensitized vaccines probably depended upon a quantitative relationship between the antiserum and the bacilli. For diphtheria toxin and antitoxin this could be definitely controlled. It was difficult to see just how a similar accurate titration of immune serum and bacteria could be made in terms of any assignable units at present. The only way open was to inject series of mixtures of variously sensitized bacteria and await results. The explanation for the very effective immunizing power of sensitized toxins depended upon the greater penetrating power of such mixtures. The toxin appeared to travel farther in combination with the antitoxin than when free. Perhaps the last word in immunizing methods was the use not of living or dead virus but of distinctive parts thereof. Theoretically, the attempt to find the chief antigen of a microorganism and exclude all others as either unimportant or harmful was just as justifiable as the attempt to immunize the body toward the chief or primary infection, letting the secondary infection alone. Of a series of antigens there might be one which represented the primary, and therefore the most important, aggressive or protective agency of the virus, and which if introduced in abundance might produce that degree of resistance which later would interfere with the beginning of the infective process. The study of partial antigens opened up a wide field for speculation as well as for difficult and painstaking work. The recent developments in immunological research indicated that medical science was moving away from the doctrine that the toxins or poisons of bacteria were the chief substances against which immunization was to be directed. That they were responsible for most of the injury inflicted must be granted, but the inquiry might be a side issue not in line with the main events. The object of immunizaton was to suppress the invader; the problem underlying was to find the precise aggressive weapons which permitted the invader to multiply. The capacity of microorganisms to enter and multiply in the tissues of the host might or might not be due to the direct action of the toxins. If not, it would be useless to immunize them. However, when we came to treat disease in actual progress the neutralization of toxins might be a very important step.

Vaccine Treatment. — Dr. LUDWIG HEKTOEN of Chicago discussed the more recent developments in connection with vaccine treatment. He said that curative vaccine treatment was a direct outgrowth of the increasingly successful prevention of various infectious diseases by means of artificial immunization, and might be said to be a culmination of the efforts to combat infection with its own weapons, as it rested primarily on the assumption that under certain conditions the production of specific antibodies by the infected organism could be increased with curative results on injection of special preparations of the virus of the bacteria which caused the infection. Whether the practical results of vaccine treatment for curative purposes supported the

hypothesis as to the mode of infection on which it was based was even now a debatable question. Various practices had been introduced which were not in harmony either with the conditions demanded by the primary hypothesis or with the teachings of bacteriology and immunology, and which before long reduced vaccine treatment as generally practiced from a carefully controlled, essentially scientific procedure to one of guesswork and routine. The first departure from the course of safety and conservatism was the uncontrolled delegation of the making of vaccines to commercial concerns. According to fundamental principles, every consideration except that of expediency demanded that therapeutic vaccines should be composed of bacteria as little different and as little removed as possible from the strains causing the infections against which the vaccines were to be used. It was evident that in preparing vaccines on a large scale this condition could not be met, because the changes in virulence and affinities which took place in bacteria under artificial cultivation could not be avoided. Indeed, there was danger that with time the specific element on which the desired antigenic effect depended might be lost altogether. There was the further difficulty that the antibodies evoked might not act on the other strains of the same species. That this was not placing undue importance on some remote possibility was shown conclusively by the regular occurrence of fixed varieties according to immunogenic properties in certain species of pathogenic bacteria as illustrated by the pneumococcus. So far as was now known there were no all-inclusive strains of bacteria causing human infections which might be used to overcome this narrow specificity of immunizing action. In recognition of this drawback the polyvalent vaccine was evolved. This was an unsatisfactory substitute for the fresh autogenous vaccine which, it would seem, offered the best hope that the indication of each case at all times would be met in the most direct way. The principle of using autogenous vaccines, as a rule, had the further and great advantage that to secure it the definite etiology of the infection must be established. A true etiological diagnosis must be made and there was an end of guesswork. Undoubtedly the good results obtained by careful scientific physicians who used autogenous vaccines were due in no small degree to the careful study of the patient, whereby was disclosed not only the nature of the outstanding infection but in many cases also hidden bacterial foci that often perhaps were the primary source of the evident localizations and hence required removal before permanent cure could be established. As to the cultural filtrates, no reason could be found to warrant their use as vaccines; and their immune values had not yet been determined. At the same time the commercial vaccines contained no autogenous elements, and there was the further evident objection that there existed no such constancy of bacterial association in mixed infections as would permit the use of ready-made mixtures under the principles of specific vaccine treatment. Why not follow the simple and rational plan of mixing vaccines at the time of injection or of injecting them separately? With the readily available stock vaccines the vaccine treatment was extended to all forms of infection and even to conditions clearly not infectious in nature, regardless of whether there was any good reason to believe that benefit would result from efforts to stimulate the output of specific antibodies under all these circumstances. As would be expected, the interpretation of results often had lacked the discrimination and questioning which accompanied the efforts of critical intelligence. The simple fact was that we had no reliable evidence to show that vaccines, as commonly used, had the uniformly prompt and specific curative effects proclaimed by optimistic enthusiasts. While uncertainty and disappointment had developed in regard to the usefulness of vaccines, this must be ascribed rather more to the fault of exploitation than to the fault of the thing exploited. The original theory of vaccine treatment really furnished no basis for the application of vaccines to acute infectious diseases, and when, nevertheless, reports were made of good effects from vaccines in acute diseases, such as typhoid fever and pneumonia, we had no preconceived or readily available explanation to offer for the unexpected results. This brought us to the consideration of the remarkable development during the last year or two of the vaccine treatment of typhoid fever. After reviewing the history of the use of the vaccine treatment in typhoid fever, the essayist stated that at present it seemed to be the opinion of almost all who had used the intravenous method of injection that by it the course might be modified and shortened and in a considerable number of cases a cure by crisis might be produced. The occurrence of recovery by crisis in from 30 to 40 per cent. after intravenous injection certainly could not be ascribed to any chance spontaneous cure. The subsequent course of the disease might be a permanent return to normal temperature and prompt recovery, or a rise of temperature to the previous level and then a gradual fall to normal in a few days; or the attack might be resumed, running an apparently unmodified course, or a milder course than before the injection. When the attack was resumed reinjections after a few days might cut it short. Crisis had also been produced in typhoid fever by the injection of colon vaccine, mouse typhoid vaccine, of meningococcus vaccine and even albumose. In infections other than typhoid, nonspecific products injected intravenously might cause acute reactions also; as, for example, typhoid vaccines in paratyphoid fever, colon vaccines in puerperal sepsis, etc. In short, it might be said that the injection of protein substances might produce a reaction which, at least in some respects, closely resembles the chill and fever which occurred naturally in the course of various infections. In subacute and chronic localized infections the results appeared to indicate that specific vaccines properly and skillfully used had value, most likely because they increased the production of specific antibodies, as demanded by the theory, but probably also because they stimulated leucocytic and other activities. In typhoid fever, and possibly in other infection diseases, the intravenous injection of specific vaccines and also of other substances might induce crisis and appeared to hasten recovery. The mechanism of this effect was not fully understood; but as it involved something more than, and different from, specific stimulation of the production of antibodies, it could not be interpreted wholly in terms of the current conception of the action of vaccines. It appeared that we were entering a new and interesting development in the study and treatment of infectious diseases.

Serum Therapy.—Dr. WILLIAM H. PARK of New York presented this paper. He said the advisability of using sera in any particular disease was influenced by a number of considerations. The primary one was whether a serum had been obtained and was available which contained antibodies of suitable kind and amount to neutralize the toxins or aid the body cells or ferments in destroying the microorganisms. Others almost equally important were whether the infections could be identified from clinical signs alone, or only after additional laboratory examinations, and whether the sera could be brought into contact with the toxin or organisms at the essential points, in the necessary concentration, and within the required time. In the light of these considerations he first considered pneumonia, reviewing the work of Dr. Rufus I. Cole, who, judging from the examinations he had made, believed 75 per cent. of all lobar pneumonia cases were caused by pneumococci of three strains, which he had called Type I, Type II, and Type III, and that the remaining 25 per cent were caused by a multitude of strains so numerous that in a moderate number of cases no repetition of the same type was likely to be encountered. About 30 per cent. of the cases of pneumonia and about one-third of the total deaths were caused by infections with Type I. At the present time the results of serum injection seemed favorable in Type I, doubtful in Type II, and absolutely negative in Type III and Type IV. In Type I large intravenous injections of specific serum in about 30 per cent. of the cases were followed by an almost immediate chill, with a considerable rise in temperature, which lasted for a short period. This occurred after the first but sometimes after later serum injections. If the blood contained pneumococcus they disappeared within twelve hours after the injection. The temperature usually rapidly fell after the initial rise to a point lower than before the rise, and the symptoms, as a rule, improved sooner than the average untreated case of equal severity. The mortality up to the present time had been much less than in the untreated cases. Serum sickness occurred in about 50 per cent. of the cases, and while very annoying was not dangerous. The serum should be standardized so that 0.2 c.c. of a recent serum would protect against 100,000 f.d. of a very virulent type of pneumococcus, and no serum should be put out that contained less than half that strength. Cole advised 80 c.c. of serum diluted with 80 c.c. of salt solution injected intravenously and repeated about every twelve hours until permanent improvement was noted.

Usually he gave three to five doses. Cole recommended that the serum be given only after the bacteriological test had shown the type, while Dr. Park said he believed in a severe case a first dose of Type I serum should be given as soon as possible and the later injections only after a bacteriological report. The treatment of cases should be considered from two points, one the good of the patient, the other the advance of knowledge. The severe cases that received an injection of Type I serum were considered only from the first standpoint. With the antistreptococcic sera the same reasoning applied as with the pneumococcic sera and the same dosage and method of administration. If it was suspected that the infection was with the hemolytic type we could rightly give this type of serum with the hope of some good results. If we suspected the viridans type a polyvalent serum of this type might be given with slightly less prospect of help. Before giving further injections the organisms should be identified. In epidemic meningitis the spinal fluid from every case should be examined microscopically, for in this way only could a correct diagnosis be made. Here, too, the strains differed; they had group relationships, and intravenous injection of suitably selected strains caused the horse to produce a serum capable of affecting almost all strains. The reports from England of failure to get good results under the serum treatment of meningitis might be explained by the great demand for the serum which led to the attempt to replenish the stock of serum by a too frequent bleeding of the horses; this resulted in a serum which was found at a later date to be poor in antibody content. Dr. Park then referred to the favorable results obtained in the treatment of early toxic cases of scarlet fever with convalescent serum or whole convalescent blood, and stated that 100 to 300 c.c. of fresh whole blood injected intramuscularly could also be used in acute and chronic exhausting diseases where the nutritive and bactericidal value of homologous protein was distinctly indicated. He then described the Schick reaction, and discussed the dosage of antitoxin in diphtheria. A single large dose of antitoxin had been shown to be more effective than a larger amount of antitoxin administered in several successive doses. If it were not for the disadvantages inherent in the intravenous method there would be no question that it would be the method of choice. It was necessary to weigh the indication for and against the method. There was no doubt that in cases that had been sick for twenty-four to seventy-two hours, and which showed a great extent of disease and symptoms of toxic absorption, 3,000 to 10,000 units of antitoxin intravenously was imperative. On the other hand, the mild or moderate cases might better be treated by a subcutaneous or, better, intramuscular injection. In discussing the methods of administering tetanus antitoxin Dr. Park stated that animal experiments had been conducted by Dr. Nicoll to determine the relative advantages of the intraspinal and intravenous methods. The results of these experiments demonstrated conclusively the superiority of the intraspinal method. Only those animals receiving the antitoxin in the spine were able to survive. This result was the more striking since the amount of antitoxin given them was only a fractional part of that given in the circulation. An attempt had been made to give the antitoxin intraneurally in four animals, but they lived no longer than those receiving the injections subcutaneously.

Dr. Frank Billings of Chicago said he would not discuss any of the problems brought up except those in connection with vaccines; he would not attempt to discuss provocative vaccination, since that was practically settled and proven, nor would he say much with reference to the employment of vaccines in acute disorders, but would speak of his experience with vaccines in chronic and local diseases. In the work they were doing they had the advantage of the guidance and criticism of such men as Dr. Hektoen, Dr. Rosenow, Dr. Davis, and others. They had used the autogenous vaccines along the lines laid dwn by immunologists in such conditions as chronic infectious arthritis, furunculosis, alveolar abscesses, pyelitis, cystitis, etc. They had tried to study the results on the basis of the opsonic index and the phagocytic index, and to study the local, focal, or constitutional reactions. They had tried, by injecting animals with the various strains of bacteria from man, to find where those strains would localize in the animals, to study their selective action with respect to the different tissues of the body; they had immunized horses with polyvalent strains of streptococci and had used the resulting vaccines to raise the defenses of the individual. They had kept very careful records of all the work. They had used these vaccines on some 500 cases of chronic infective arthritis and chronic infective endocarditis, and had tried to draw conclusions from these. They had observed the same class of patients without vaccines so that they might have controls. As a result of it all there was much doubt in his mind as to the beneficial influence of vaccines in these chronic processes. When one considered how large a part starvation, fatigue, age, and many other factors played in the regeneration of tissues, it was a question how much of the improvement attributed to vaccines might be attributed to hygienic factors. It seemed quite evident that if these hygienic factors were not given due attention one did not accomplish much with the vaccines. Furthermore, many times a few minutes of history were worth more than months of vaccine treatment because by it one might be able to relieve a local process. It was a question whether the vaccines gained access to some local processes, as, for instance, an abscess at the bottom of the socket of a tooth. Dr. Billings said that in his experience the benefits to be derivel from vaccines in both local and general chronic processes was so limited that they did not justify the labor and laboratory equipment necessary to carry on that form of treatment. Vaccines might be useful in acute diseases, but the reaction was often so alarming that a physician hesitated to use them. The way to determine their value in acute infectious diseases would be to make properly controlled observations. For instance, in typhoid fever in a hospital where one had perfect control of the patients, one might treat a group in one ward with a specific antigen, a second group in a second ward with an antigen that was not specific, and in a third ward a group might be treated by ordinary methods. By such a procedure one might come to a definite conclusion as to the value of vaccines in typhoid fever. In closing Dr. Billings commented on the widespread use of commercial vaccines, and considered their employment a disgrace to the medical profession.

Dr. Rufus I. Cole of New York said he believed that the way to arrive at a solution of the problems of immunity was to take one disease and study that by applying to it the principles of immunity. This he had done with pneumonia. As to the production of immunity in acute infections, the recent work of Gay and Jobling justified further investigations, but as clinicians we should go slow in making practical application of newly discovered principles and make sure that we were on firm ground. It was quite justifiable for certain observers to carry out these tests on the patient, but for the general practitioner or the consultant to use them when they were not in a position to draw conclusions was wrong. Dr. Cole said that from his study of the literature and from what he knew of immunity there was no justification in acute lobar pneumonia in trying to produce active immunity when in animals they could not produce it in six or seven days. He took exception to Dr. Park's statement that a patient with pneumonia should be given a dose of serum of Type I before the type of bacillus present had been isolated. Under favorable circumstances such as they had at Rockefeller Institute, and in every good hospital in the country, it was not difficult to make a differentiation of the type of organism within twenty-four or forty-eight hours after the patient came into the hospital. The greatest danger was that serum would be applied indiscriminately in all cases of pneumonia and the type of organism would not be determined. The serum therapy of pneumonia should be applied with caution and care, and all the details should be carried out with attention to the principles concerned. Personally he felt that the use of the serum in Type I of pneumonia was efficacious. While he would not say much as to the clinical results, he had found that the organisms disappeared from the blood after the serum was given. The differences between the various types of pneumococci were as great as the difference between the typhoid and paratyphoid bacilli.

Dr. Thomas W. Hastings of New York also expressed the opinion that specific therapy had been abused in this country, and said that sufficient care was not taken to determine the specific factor involved. This was the important point in both serum and vaccine therapy. This could be said more particularly of streptococcus infections. There were differences in strains of streptococci, as there were in those of pneumococci. It was useless to employ specific therapy when a surgeon was needed. In chronic infections, even when vaccines were employed carefully and judicially

it was difficult to say whether good results were brought about by the specific therapy or by other factors. He did not think the physician should resort to serum therapy when he could get results with other measures known to be reliable, since the practical application of serum and vaccine therapy were extremely complicated and required a large amount of knowledge, caution, and judgment. The problems involved were at present beyond the comprehension of the average physician. The use of polyvalent vaccines should be absolutely discontinued.

Dr. THEODORE C. JANEWAY of Baltimore said there were just four points to make after this discussion. The first was that progress came from conflict and not by agreement. We needed both the enthusiast and the critic. It was even better to be both enthusiast and critic, to be able, after having used a method of treatment for a number of years, to have the courage to say that there was nothing in it. From the debauch of the indiscriminate use of vaccines through which we had passed good would come because of the stimulation of criticism to further work on these problems. The second point we might learn was that what one put into his premises he would get out afterwards, but that was not necessarily a scientific fact. If one made a culture from the tonsils or teeth, in some disorder of as yet obscure origin, got an organism, made vaccines, and after injecting them got improvement, and then thought that with that one procedure he has demonstrated the cause of the disease and provided the remedy, he was not advancing the cause of scientific medicine. The third point was with reference to the specificity and non-specificity of the vaccine or serum. When one was confronted by a reaction which he believed to be due to a specific agent he must be able to demonstrate that it would not be possible to produce the same reaction by some other non-specific agent. The fourth point to be emphasized was the importance, in cases of acute sepsis, of making a search for the primary focus of infection and of metastatic foci and, having found them, making an immediate surgical evacuation.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16-18, 1916.

(Special Report to the MEDICAL RECORD.)

(*Continued from page* 934.)

HOUSE OF DELEGATES.

THE PRESIDENT, DR. D. W. STANTON GLEASON OF NEWBURGH, IN THE CHAIR.

Report of Committee as to What Constitutes Eligibility to Membership.—The committee appointed by President Wende to prepare an exact and clear definition of what should constitute eligibility to membership in the Medical Society of the State of New York, presented the following as an amendment to Chapter X of the By-Laws, Section 3: "All legally qualified graduates in medicine, licensed to practice in the State of New York in conformity with the law and the requirements of the Board of Regents, are eligible to membership, except those admitted by special enactment of the Legislature, with evasion of the educational requirements either preliminary or professional."

Report of the Counsel.—Dr. JAMES TAYLOR LEWIS, counsel of the Medical Society of the State of New York, presented this report. He reviewed the list of cases that had been conducted during the year calling special attention to two cases of more than ordinary interest. There was continuing and increasing application to the counsel for advice on various subjects by members throughout the State. Opinions had been written and the law examined on various topics connected with the practice of medicine, demonstrating the great influence of this malpractice defence on collateral matters. The influence of the State Society was broadening in many directions. State societies were organizing malpractice defence plans by various methods, either exactly as their defence was conducted in New York State, or upon some plan fundamentally like it with modifications which would make it more adaptable to a particular locality.

Report of Committee on Constitutional Convention.—This Committee reported that its efforts put forth in the securing of a recognition of a State Department of Health in the proposed new constitution, and the preventing of unfavorable amendments affecting the interests of the medical profession of the State of New York, were highly successful, as would appear in referring to the text of the new constitution.

Reports of District Branches.—The various district branches presented reports, all of which were adopted by the House of Delegates.

New Business: Amendment to Public Health Law.—Dr. NATHAN E. BRILL of New York stated that inasmuch as only 85 per cent. of the graduates of medical schools in this State obtained hospital interneships, and that whereas no graduate of a medical school was fit to practise medicine without clinical experience, he wished to propose an amendment to the Public Health Law for presentation at the next session of the Legislature. This amendment required twelve months satisfactory clinical work in a hospital having an average of not less than 30 patients daily and not less than 50 beds, including a medical and surgical service, and maintaining the recognized clinical and laboratory standards.

Resolution for Medical Preparedness. — Dr. HAROLD HAYES of New York presented a resolution similar to those recently adopted by the New York Academy of Medicine recommending that in the plans for National preparedness proper provision should be made for the care of the health and lives of those who offered themselves in the service of their country. These resolutions stated that it was the sense of this Society that in its plans Congress should make provision for the appointment of seven medical officers per 1,000 men in times of peace, this number to be increased to ten in event of war and that this should apply equally to the Army and the Navy. The resolutions further provided that copies of these resolutions be sent to the Surgeon-General, the House of Representatives, and the Senate.

Resolutions Favoring Forest Preservation.—The Erie County Medical Society presented resolutions putting the Society on record as interested in and favoring all efforts to further forestry and forest preservation and recommending that this resolution be presented to the American Medical Association at its next meeting.

Invitation to American Medical Association. — Dr. FLOYD M. CRANDALL read resolutions which had been framed by the Comitia Minora of the Medical Society of the County of New York stating that the question of inviting the American Medical Association to meet in New York had been considered, and it had been decided to ask the State Society to join in invitation with the Medical Society of the County of New York to hold the meeting in 1917 in New York City.

SECTION ON MEDICINE.

Tuesday, May 16—*First Day.*

THE CHAIRMAN, DR. JOHN L. HEFFRON OF SYRACUSE IN THE CHAIR.

THIS was a joint meeting with the Sections on Public Health and Pediatrics.

Vision of the School Child. — Dr. F. PARK LEWIS of Buffalo said that increased deficiency of the individual was one of the most important features in the problem of preparedness. A physical defect such as imperfect sight or defective eyes might be a sufficient handicap to place those who would otherwise be self-supporting in the dependent class. For the protection of the State the citizen must be raised to the highest efficiency. This would be found to be economically profitable. In order that individual data might be secured the eyes of every school child should be properly examined. To do this standardized methods were essential. Where it was impossible for the individual to pay for the relief of difficulties that impeded his usefulness the assistance of the State must be required. All preliminary examinations should be made in the schools and by the teachers. Boards of Health should have on them those trained in ophthalmology. To these should be assigned the examination and the relief of corrigible defects. To meet these requirements place and time must be given in the schools themselves. The cooperation must be secured of both the teachers and the parents. This could be done by giving illustrative lectures in the schools on the nature of the defects, the importance of their correction, and those responsible for the correction should be urged to see that this was done. Such records might have great value in the case that compensation was claimed for injury to sight. If it then could be shown that defects

existed while the claimant was still a child, or if it could be shown that good vision was present, which the defendant denied, these school records, which should be available, would aid in securing more equitable results. Graphic illustrations were shown by lantern slides of the way objects appear to those having myopia of different degrees, astigmia, corneal scars, tubular sight, color blindness, etc.

Some Practical Experiences in Medical Inspection in Rural Sections.—Dr. WILLIAM A. HOWE of Albany said that during the first year of the administration of the medical inspection law, many impressive and varied experiences have arisen throughout the State. Those to which he wished to call attention were taken from the rural sections where many of their most difficult problems in this phase of the work were to be found. Many grateful parents had written the Department of the wonderful relief extended to their children. Thousands of children had been placed on a higher plane of physical fitness, thus enabling them to make normal progress in school. While most of these cases belonged to those commonly seen, many had been most impressive and a report of several such cases was presented. In conclusion and in view of such experiences as well as many others which might be given, he offered the following suggestions: That, only physicians interested or willing to take an interest in the work be utilizedd as medical inspectors; that, the utmost care be exercised in all examinations and that definite care should be shown in giving information to parents regarding the nature of the defects found; that, physicians should receive a fee commensurate with the services rendered, which on all occasions should be his best; that, physician, teacher, parent, pupil, and nurse should cooperate in the entire system of school inspection; that, the real success of school inspection would be measured by the thoroughness with which the examinations were made and the results accomplished.

Dr. JOHN HEFFRON of Syracuse said the question asked in regard to Hutchinson's teeth was important. These cases came under his observation frequently and he felt that the condition found in these children that resembled the sign known as Hutchinson's teeth was sometimes due to a delay in the eruption of the teeth. He had not been able to discover that onyone had made accurate observations on this point.

Dr. HOWE said he just wished to say that the State Department of Health stood ready to make the Wassermann tests. They had found a reasonable number of children with syphilis and treated them in a very satisfactory manner.

Dr. WHITBECK said that in reference to the examination of the teeth, the importance of such examination was very evident. In orthopedic work all cases of arthritis were examined by the *x*-ray to find the condition of the teeth. Where a focus of infection was found in the mouth or the sockets of the teeth the patient was put under treatment until this condition was cleared up. A goodly percentage of cases with acute arthritis, if the focus of infection was not removed, developed into chronic rheumatism. Frequently when there was an abscess at the root of a tooth the dentist wanted to save the tooth. In such cases it was better to pull out the tooth since if the source of infection was not thoroughly removed the condition might progress and lead to permanent disability.

Dr. L. DUNCAN BULKLEY of New York said nothing had been said as to the importance of thorough mastication. Mothers should be instructed to teach children to chew their food properly and should insist on their staying at the table for fifteen or twenty minutes, or even half an hour. Some device as aluminum or celluloid balls or a cardboard cuff fastened on the upper arm might be used so that the child could not get its thumb to its mouth.

Scope of Practical Examination in Routine School Medical Inspection.—Dr. CLINTON P. MCCORD of Albany, N. Y., read this paper. The most essential thing to determine in a given district was the size of the working staff. Any district with 3,000 children should employ its school medical inspector for "full time." The working unit was one doctor and two nurses for each 3,000 children. An examination of the character indicated in the health certificate referred to in the New York State law was practicable only in a physician's office and could not be properly accomplished in less than a half hour. In most school buildings the only examining room available was the kindergarten in the afternoon or the principal's office. Under such conditions the removal of the clothing was not practicable and besides, a competent examiner would be able to ascertain all facts required for purposes of school medical inspection without removing any clothing except in a relatively small number of cases. This last group included the poorly nourished children, those with cervical nodes that showed a tendency to break down, those with chronic coughs or digestive disturbances, those that were extremely nervous or those that suffered from dizziness and shortness of breath. In considering routine examination they must consider the question of school medical inspection records. Some difference of opinion here existed. Discussion fell under two possibilities: (1) A suggested standard card plus supplementary cards for various records, etc., or (2), suggested data essential for scientific work, leaving the actual form of the cards to the local executives. A card system should include the following: physical record card; parental notification card; miscellaneous care card; report of sanitary survey; medical inspector's report blank; school nurse's report; dental record cards; physical training card; open air school records; and special class records. In most places to-day the working unit was too small to give all the children adequate care. Proper standardization of the working staff and scope of the work should be their first thought. It was of little good to require an examination involving a chest examination when one "part time" man was appointed to 4,000 or 5,000 children. Where conditions were such that a "part time" man had more than 1,000 children a chest examination should not be considered except in the case of the relatively few anemic, nervous children and those with suspicious lymph nodes, or those that brought to them evident signs and symptoms of organic heart disease. Working two hours a day, five days weekly, for thirty-six weeks, an inspector might examine approximately 1,000 children. Working one hour a day for the school year he would examine approximately 450 children. Certain standards should be suggested to govern the reporting of defects. An analysis of examinations of several thousand children by 167 different general practitioners showed a wide range in standards of judgments as to the existence of physical defects. The routine examination should cover the following. *Eyes.* The Snellen card test plus a card for near vision and astigmatic chart in some cases. These tests must be given with an appreciation of the possibilities of error in handling children. *Ears.* The watch test is perhaps the most practicable. There was considerable variation in the response of children at different ages. Discharging ears were serious. *Tonsils.* Enlarged and cryptic tonsils with a history of frequent sore throat were perhaps pathologic. *Nose.* The medical inspector diagnosed nasal obstruction, leaving it to the family physician to determine the cause of the obstruction. *Teeth.* The decay of the "six year" molars was the most important thing to look for. It was poor economy to employ a dentist to inspect mouths of school children; he had better be employed in the actual treatment of the most urgent cases. *Nutrition.* The judgment of nutrition was based on pinched, pallid features, arrested development, the lack of spontaneous activity, weak and flabby tissues and the signs of nervous exhaustion. *Skin and Glandular.* The enlarged cervical nodes associated with poor nutrition, those that became acutely inflamed and those that underwent softening were the ones that merited attention. *Eczemas* and any contagious or parasitic skin disorder should also be looked for. Simple home treatment for pediculosis was indicated. *Orthopedic and Nervous.* Stoop shoulders and flat chest, lateral curvature, "general nervousness," chorea, psychic disturbances of adolescence, epilepsy, mental deficiency, etc., should be kept in mind under this heading. *Acute Contagious Diseases.* This was a very important though relatively small part of the work of school medical inspection. The highest co-operation should exist between the inspector and the local health officer. Physicians new to the work of medical inspection and desirous of obtaining good results frequently asked for direction. They should read a few good books on the subject. They should visit some city where a system of recognized efficiency was in operation and observe the actual routine work. They should keep in touch with the expert examiner of school children for some months. They should be familiar with the latest advancements in educational hygiene. They should keep an open mind. The medical profession as well as the parents should be awakened to the wisdom of health supervision prior to the school age. School health

work was more than putting glasses on children who could not see well, removing adenoids, tonsils and filling decayed teeth; it involved a wide understanding of the various social, educational and economic problems that were closely bound up with the physical condition of the children.

The Neuropathic Child.—Dr. EDWARD B. ANGELL of Rochester presented this contribution. He said he thought the best description of the neuropathic child was that given by Dr. Francis Warner of London who had examined 100,000 school children. That authority described the characteristic manifestations of the neuropathic condition as headache, difficulty in getting to sleep, grinding of the teeth, delicate physical condition without actual disease, lack of appetite, and tendency to be easily fatigued. These children were generally well made in body and had good heads; they had well cut features, fine skins and usually light complexions. There was a weakness and an overspontaneity. There were uncontrolled movements without co-ordination yet they early gave pleasure to the babe. Later impressionability and imitativeness showed that the child's mind was impressed by what it saw. With growth de veloped the power to arrest the motor concept and to modify or even deny its inhibition. Thus developed a control over the senses by which the mind gradually acquired desire and volition, the relative value of sensory impressions and motor action. Another quality developed was retentiveness and co-ordination action which was the result of many past impressions, desires and resulting movements. The normally constructed brain of the healthy child in its motor action presented well balanced muscular movements. The relationship between the muscle activity and the brain activity was very direct. Basing his test on these facts, Dr. Warner had found that requiring the child to raise his arms and hold them straight out in front in a horizontal position was a test of the nervous condition and the degree of fatigue. If the latter were present the child did not hold both arms parallel, or dropped one arm, or one hand but in the very neurotic the knuckles of the hand were pointed directly backward. The normally constructed brain of the healthy child in its motor action presented well balanced muscular movements. The relationship between muscle activity and brain activity was very direct. Hence it was that military training not only developed the muscles but the brain as well, while the habit of instant obedience did much to establish healthy brain activity and normal self-control. Self-control could not be too thoroughly established for the growing child, since without self-control there was an unstable equilibrium which later gave rise to the vagaries of neurasthenia and hysteria. If one studied the nervous child he would find that his position might be one of erectness, of assurance or defiance, or it might be drooping and self-conscious, or one of weariness, or fatigue, the latter being more common in girls. Another habit easily acquired by the nervous child was that of introspection and this led later to unstable equlibrium and self-consciousness to the detriment of efficient mental activity. Dr. Angell said he had observed 75 or 80 cases of typical nervous children and had found that alcoholism and insanity had entered in as factors in about one-third of the cases, while the arthritic diathesis was present in about 30 per cent. In only one case did he find tuberculosis in the family, but tuberculosis probably played a more important part than this indicated in the transmission of an unstable nervous constitution. In about 25 per cent of these cases the condition could be traced to abnormalities in pregnancy or delivery. Faulty metabolism, such as constipation, headaches, mental depression, irritability and a poor circulation were characteristic evidences of disturbed nutrition. There was defective nutrition in about two-thirds of the cases and nearly one-third were the victims of night terrors. He believed that protein entered too much into the diet. Fresh air was a most important factor in the treatment of this type of child. The Boy Scout movement was an excellent thing in developing the correlation of muscular and physical activities, teaching the boy self-control and how to adjust himself to life.

The Open Air School Child as a Type.—Dr. EDWARD DURNEY of Buffalo presented this paper. He said there was a type of children that were being segregated and were regarded as suitable for treatment in fresh air schools. They were the children that were living under wrong conditions of life, the children with a heredity of alcoholism or epilepsy, those who were the subjects of faulty nutrition, children of abnormal nervous activities, who thus dissipated their powers. Next in importance to the nutritional defects were the distinctly nervous conditions. Some of these children were the spoiled children of the so-called better families. The nervous conditions in these children ranged anywhere from chorea to partial recovery from infantile paralysis. The defects brought out by present methods of school inspection, such as defects of vision, adenoids, enlarged tonsils, etc., must be corrected if the children were to receive the full benefit of the fresh air treatment. The attitude of the children themselves toward these schools was the best argument in their favor. Records of the weight of these children had been kept and the gain in weight that had been shown was a positive index of the improvement in their condition. The change from the ordinary school to the fresh air school was frequently accompanied by an increased interest in both work and play. There was often a mental deficiency accompanying the physical defects, and with the methods used in the open air schools these defects were sometimes benefited or removed. Among the children that would be improved by the open air school might be included a large number of children in the ordinary schools.

The Effect of Malformation and Infection of the Oral Cavity of the Child upon Its Future Health.—STEPHEN PALMER, D.D.S., of Poughkeepsie read this paper by invitation. He said that the fact that a man belonging to the dental profession had been asked to address this society was very significant of the change that had come to pass. It meant a recognition of the vital relationship of medicine and dentistry. He quoted from the writings of Victor C. Vaughan to show the relations existing between mouth infections and various constitutional conditions. These made it evident that nothing was so important as the hygiene of the mouth of our boys and girls for upon that depended the health of the men and women of to-morrow. Evidence in support of this statement might be brought forward from many authorities. Medicine to-day recognized the importance of prophylaxis and in dentistry it found the prophylaxis of many conditions that had been puzzling to the physician. Malformations were of the utmost importance and were so common that one rarely saw a normal conformation of the mouth and teeth. This he attributed to the mixing of the races and the fact that enough time had not elapsed to evolve a definite type. To the proper moulding of the human face a full complement of teeth was requisite. Where there was malformation, there was malocclusion, and this latter condition was the rule rather than the exception. The anatomy of the mouth and teeth was such that the loss of one tooth ultimately disturbed the balance of the whole. Therefore one cause of dental deformity was the loss of one tooth. Thumb, lip and tongue sucking were another cause of deformity causing malocclusion and a narrowing of the palatal arch, and nasal obstruction. It was therefore important for the rhinologist to work with the dental surgeon when it came to the treatment of mouth deformities involving the palatal arch, for such deformities retarded the function of the tongue, lips, and nasal passages. Mayo and Hunter had emphasized the importance of oral sepsis as a source of infection. In the demonstration of alveolar abscesses the x-ray had been a great help to the dentist as it had to the physician. The value of oral prophylaxis had been amply proved by the establishment of dental dispensaries and in every city and town there should be a dental clinic. Pyorrhea alveolaris was not a disease of childhood, but with proper prophylaxis and the correction of malocclusions it could be prevented. One might put it down as an axiom that a clean tooth never decayed, that teeth in good occlusion were easy to keep clean, and therefore teeth in good occlusion never decayed. The value of oral prophylaxis had been amply demonstrated in the German army. Attention had been given to this matter among the school children of Germany and as a consequence few of the German soldiers required dental care, while on the other hand such prophylactic work had not been carried on to the same extent in England and there was a great deal of dental work to be done among the soldiers of the English army. In September there would be a legalization of dental hygienists, which would make it possible to have a trained corps of dental assistants who would bring the importance of dental hygiene before the public. By the concerted action of physicians and dentists the coming generation would be healthier than the present one.

Economic Foundations for Health.—BENJAMIN C. MARSH, Executive Secretary of the New York Con-

gestion Committee, presented this paper in which he cited statistics showing that the wealth of the country had gradually been accumulated in the hands of a few. Two-thirds of the population were earning less than $750 per year and almost one-third less than $500. This was below the standard of decent subsistence. Among this class of the population 30 per cent. of the families took boarders or lodgers, and the statistics of infant mortality showed that 256 infants out of every 1000 born died during the first year of life. On the other hand, it had been shown that among families in which the father earned over $125 per month the infant mortality was 84 per 1000. We looked with horror on the loss of life in the European war, yet in this country 300,000 lives were lost annually from preventable diseases. Land monopoly was largely responsible for shifting the burden of taxation upon the consumer. The wealthy were taxed to not more than 14 per cent. of their incomes, while the poor bore a tax equal to one-third to one-seventh of their earnings. The remedy, he believed, was in taxing all vacant land and exempting all improved property. Such a system of taxation was approved by the American Federation of Labor, the New York State Federation of Labor and two federations in New York City. He then made a plea for the municipal control of public utilities, such as transit facilities, gas and electric light. Private corporations were making annual dividends of from 16 to 20 per cent., which were paid by the poor and went into the hands of the land owners, who constituted only a small proportion of the people. This was then an ethical as well as a health question and as such should be of interest to all physicians.

Dr. JOHN L. HEFFRON of Syracuse said it might be of interest to Dr. Lewis and some others to know how they were taking care of refraction work in their town. The work was done by a volunteer staff of dispensary doctors. This year the Department of Education of the city had undertaken to employ these doctors from the dispensary at the nominal salary of part time medical inspectors to care for the eyes of the school children. These men had had good training in the dispensary and as a consequence the school board got good service.

Dr. KASCHNER of New York said he was glad that Dr. Angell had called attention to the neuropathic child. As a rule the general practitioner gave this type of child scant attention. When the mother brought such a child to him complaining of night terrors, bed-wetting, and nervous symptoms, he usually prescribed bromides and Fowler's solution and let it go at that. In this class of children one often had a greater problem to solve than in actual organic disease. The many details of environment and economics must be taken into consideration. These were the children that later filled the asylums, homes for epileptics and reformatories, and their treatment should be regarded as an important and serious problem.

Dr. B. W. WHITBECK of New York said that with reference to the examination of children there was one point that he would like to bring out at this time and that was the importance of the influence of flat foot upon the general condition of the child. The records of the New York schools showed that about 60 per cent. of the children presented a condition of weak or flat feet, and it was his opinion that 75 per cent. would be more nearly correct. He had inquired at Washington as to the disabling effects of flat foot in the United States Army and Navy and found that they were throwing out many candidates because of this defect. Children with this defect were often backward in school, tired, would not play or eat. They were placed on tonics, sent to the oculist because of headaches, when it was a correction of the flat foot that was required. Dr. Whitbeck cited such a case. The boy was finally sent to his family physician, who found he had a hollow back and flat feet. The boy was treated with proper orthopedic appliances and his general condition improved and he took off his glasses. Unless one had seen these cases it was hard to believe that such a defect could have such far-reaching results.

Dr. WILLIAM A. HOWE of Albany asked Dr. Whitbeck what he considered the cause of flat feet, and asked if he would recommend that school children be examined for flat foot.

Dr. WHITBECK replied that he believed it was one of the conditions incident to civilization, probably standing with the toes out had something to do with it. Some children never had good feet, they were flat-footed from babyhood, but the condition was frequently not noticed until the child grew older and suffered pain. It was not merely a question of whether the feet were flat, but of whether they were functioning; not so much a question as to whether they were flat as it was whether they were weak. Many persons had flat feet and yet went through life without symptoms; it all depended upon whether the feet functioned or not.

Dr. FRANK OVERTON of Patchogue said in hearing the papers he had been interested in the references to instances in which private physicians failed to detect the defects of school children. He said in his town there was efficient cooperation between the private physicians and the school inspectors. This was true in many towns, but he understood that there were places where there was not this cooperation. It was one of the functions of this medical society to bring about such cooperation, and be believed it was doing this more and more.

Dr. EDWARD B. ANGELL of Rochester said he wished to go on record as being in accord with what Dr. Karschner had said. One should call the attention of the general practitioner to these cases. There were many conditions that he had not referred to in his paper, and one was dementia praecox. It was sometimes very difficult to tell whether one was dealing with a neurasthenia or a dementia praecox. He had had a case of dispituitarism, in a boy who presented feminine characteristics and an utter lack of any sense of responsibility. In this case treatment with pituitary extract had brought about great improvement both physically and mentally. Such cases showed that something could be done by a careful study of these cases in youth. The points brought out as to the relation between flat foot and hollow back and their effect on the general health were very important. Dr. Warner of London, to whom reference was made in the speaker's paper, stated that he had found many cases of hollow back and had observed that it bore some relation to flat foot but he had not attempted to explain it.

Dr. T. DE WITT SHERMAN of Buffalo said that those who had had experience with fresh air schools had observed that infections, especially influenza, were spread less rapidly in fresh air schools. They had had experience with whooping cough and chicken pox and had found that the fresh air school did not seem to have any influence in delaying or preventing the spread of these infections. He said he had not seen this point referred to before, and wondered whether others had had the same experience.

Dr. SCHILLER of Amsterdam said it seemed to him that they were just drifting in medicine and surgery. Many eloquent papers had been read, and they showed that physicians knew what should be done for these children, but they were unable to do the things that ought to be done because they did not have the means. The medical inspector knew the children in his schools that needed glasses or needed to have other defects corrected, but the parents did not have the means to have the work done. They could not do much until basic economic conditions in the home were improved.

Dr. A. P. SQUIRE of Rotterdam said he was interested in the significance of Hutchinson's teeth. He asked if anyone had tested for the Wassermann reaction in children having Hutchinson's teeth, and if any one had found out just what this sign signified in school children.

Dr. HOWE said no one had called attention to the effect of coffee and tea drinking in relation to the nervous conditions that had been discussed. In his work he had found that a very large proportion of children were given tea and coffee even in families that were fairly intelligent.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON MEDICINE.

Stated Meeting, Held April 18, 1916.

DR. NELLIS B. FOSTER IN THE CHAIR.

The Retention of Nitrogenous Waste Products in the Blood and Tissues in Nephritis.—Dr. V. C. MYERS said the nitrogenous waste products, urea, creatinine, and uric acid, were quite uniformly distributed in the fluids and tissues of the body, both normally and in conditions of retention, this being especially true in the case of urea. The degree of retention of the various waste products, as indicated by the examination of the blood, afforded an excellent index of the severity of the condition, and probably a fair index of the extent of the retention in the later stages of the disease. By comparing the concentration of the uric acid, urea and

creatinine in blood and urine, it would be observed that the kidney was able to concentrate the creatinine 100 times, the urea 80 times, but the uric acid only 20 times. In other words, it would appear that, normally, creatinine was the most readily and uric acid the least readily eliminated by the kidney, with urea standing in an intermediate position. From this it was logical to expect that the excretion of uric acid would be the first to be impaired. In nephritis our blood studies appeared to indicate that a retention of uric acid was generally the first to become evident. In harmony with this hypothesis they should next expect a retention of urea and lastly that of creatinine. Many early cases of nephritis, probably of the interstitial type, gave blood pictures in which the essential feature was the high uric acid. The urea and creatinine were frequently normal, though sometimes appreciably increased. As the condition of the cases of this type became more severe, the retention of urea increased until they had high values for urea as well as uric acid. If improvement took place, the concentration of urea gradually fell until the picture was that of the preceding group. If, on the other hand, the case went on to a fatal termination, the retention of uric acid and urea was followed by that of creatinine, the concentration of which might reach twenty times the normal.

The Relation of Gout to Nephritis.—Dr. MORRIS S. FINE said the blood picture, high uric acid, normal urea and creatinine, hitherto regarded as characteristic of gout, had been frequently found in early interstitial nephritis as well. This raised the much debated question as to the relation between gout and nephritis, and the practical problem as to how far a diagnosis of gout might be based upon a high concentration of blood uric acid in the absence of the typical symptoms of this disease.

Acidosis of Nephritis.—Dr. EDWARD QUINTARD and Dr. MORRIS S. FINE presented this communication. As a measure of the approach to the condition of acidosis they now had available Van Slyke's ingenuously devised apparatus for determining the CO_2-combining power of the blood plasma. The apparatus had been in almost continuous use in their laboratory for over eight months and they were glad of an opportunity to express their appreciation to Dr. Van Slyke and Dr. Cullen for their suggestions and advice freely given concerning the method. In their studies on nephritis they had endeavored to determine (1) the common variations in the CO_2-combining power of the plasma; (2) the possibility of determining the dyspnea due to acidosis by the lowering of the CO_2-combining power; and (3) the efficiency of treatment in the acidosis of nephritis. They had found, in agreement with Van Slyke, that the CO_2-combining power normally varied from 53 to 77 c.c. per 100 c.c. of plasma. In nephritis this was generally 40 to 50, and might fall to as low as 25 shortly preceding death. A lowered CO_2-combining power was found to be a valuable index for detecting the dyspnea due to nephritis. The determination proved useful also as a measure of the efficacy of treatment of the acidosis of nephritis.

Practical Application of the Newer Laboratory Tests in Nephritis with Special Reference to Blood Chemistry.—Dr. A. F. CHACE said that although considerable attention had been given by a number of workers to the urea and non-protein nitrogen of the blood in nephritis, scant consideration had been accorded the uric acid and creatinine. It was true that the greater part of the waste nitrogen was eliminated in the form of urea, but it did not necessarily follow from this that data on uric acid and creatinine were unimportant and uninteresting. The scheme of blood analysis now employed in the medical wards at the Post-Graduate entailed the determination of the uric acid, urea, creatinine, and blood sugar as a routine, with estimation of the CO_2-combining power in cases where this appeared to be indicated. The determination of the blood urea was regarded of more value than the non-protein nitrogen for the reason that it represented the retention of a definite compound and, further, was more easily and accurately determined. Where good laboratory facilities were available, the chemical examination of the blood required less of the physician's time and gave him more definite information than the quantitative work on urine. The rise in the concentration of the uric acid of the blood appeared to be an excellent early diagnostic sign of incipient interstitial nephritis. The blood creatinine had been found of very great prognostic value. In severe cases it was superior to the phthalein test, since changes in the patient's condition were clearly shown, while the phathalein test was continuously negative. All cases which had been followed for any length of time, with over 5 mg. creatinine to 100 c.c. of blood, had died.

An Unusual Case of Chronic Interstitial Nephritis with Findings in Blood and Urine.—Dr. R. H. HALSEY reported this case which occurred in a man, 39 years of age, whose previous history was negative and whose health had always been good until the beginning of his present illness. This began in March, 1915, when he consulted an oculist because he noticed that his vision was becoming dim. In June, 1915, his family physician diagnosed Bright's disease, and prescribed a diet free from meat and salt and two grains of nitrite three times a day. Upon the advice of his physician, he started to spend the winter in Florida, but stopped to consult the writer on November 30, 1915, at which time his symptoms were so slight as not to impress him that he was seriously ill. At this time the arteriosclerosis, retinal changes, and high blood pressure were extreme; there was only the slightest physical evidence of hypertrophy of the heart. The deep reflexes were greatly exaggerated and a fine tremor of the muscles could be felt when the extremities were held. The blood examination revealed a secondary anemia. The urine excreted in 24 hours was 2200 c.c with specific gravity 1.010, no albumin and no casts. The percentage of chloride and nitrogen was not determined. The chemical examination of the blood revealed a retention of the nitrogen constituents; urea nitrogen, 97, uric acid, 6.6, and creatinine, 17.5. Because of these findings the patient was continued on a protein-free diet. Subsequent blood examinations showed that the nitrogen and blood sugar retention increased progressively while the carbon dioxide combining power of the blood plasma decreased. There was complete absence of phenolsulphonephthalein excretion. On December 23, two days before death, a profuse epistaxis occurred and was followed by edema of the uvula and palate, and the development of fibrinous pericarditis. Respirations were usually 18 to 20, except during the periods of sleep, when they rose to 30 to 36, and were accompanied by vigorous twitching of the legs and arms, but at no time was there Cheyne-Stokes phenomena. It was of particular interest to note that during the time the patient was on a nitrogen poor diet, the creatinine jumped from the figure 17.5 to 21.5, and remained at that figure for six days, subsequent to which it made a further increase to 28.9, at which point it remained until the day before death. The same temporary cessation of retention was shown in the urea figures, which for a week subsequent to the nitrogen-free diet remained almost stationary, but subsequently increased very rapidly, reaching the high point of 200 the day before death. The ratio between the urea in the blood and the urea in the urine, as suggested by Ambard, gave a figure of 1.58, while with McLean's index the figure of 0.27 was obtained, both showing very strikingly the impaired secretory power of the kidney. Dr. Halsey concluded that the phenolsulphonephthalein excretion test was of value to indicate the present status of the patient, but the amount of urea and creatinine in the blood, particularly the latter, gave a definite clew to the progress and prognosis.

Practical Application of the Newer Laboratory Tests in Nephritis.—Dr. ARTHUR F. CHACE said that the introduction of the phenolsulphonephthalein kidney test by Rowntree and Geraghty in 1910, not only supplied them with a most valuable diagnostic and prognostic test but furnished the impetus in this country to numerous investigations on the functional activity of the kidney. With the introduction, three years later, of simple methods of blood analysis, especially at the hands of Folin and his co-workers, the possibilities of these new methods as practical diagnostic tests were quickly appreciated. In some quarters the non-protein or incoagulable nitrogen alone had been employed as a test of kidney activity, while in others the urea had been utilized. McLean, in particular, had emphasized the value of a comparison of the urea of both the blood and urine, somewhat after the method employed by Ambard. So far as he was aware, in institutions other than their own, the uric acid had been used chiefly in connection with the diagnosis of gout. Although considerable attention had been given to the urea and non-protein nitrogen of the blood in nephritis, scant consideration had been accorded the uric acid and creatinine. It was true that the greater part of the waste nitrogen was eliminated in the form of urea, but it did not necessarily follow from this that data on uric acid

and creatinine were unimportant and uninteresting. In fact, from what had already been said, it would appear that the reverse might be true. They did not believe that it was possible to make entirely satisfactory deductions regarding nitrogen retention from the urea or non-protein terminations alone. The scheme they now employed entailed the determination of the uric acid, urea, creatinine, and blood sugar as a routine, with estimation of the CO_2-combining power in cases where this appeared to be indicated. They originally determined the non-protein nitrogen and creatine, but had discontinued these tests for diagnostic purposes. The determination of the urea concentration of the blood was, they believed, of more value than that of the non-protein nitrogen for the reason that it represented the retention of a definite compound, and, further, was more easily and accurately determined. The phenol-sulphonephthalein test was so far superior to any other general functional kidney tests that one scarcely need mention any other test in a brief discussion. In comparison with the chemical examination of the blood, it was believed that the latter method gave much more definite information in many cases. In their own work, however, they had almost invariably employed the phthalein test, either previous to or in conjunction with the blood examination. Another very important element in favor of the chemical examination of the blood, compared with the urine, was the difficulty and time required in the collection of urine specimens. It was their opinion that the chemical examination of the blood, when good laboratory facilities were available, required less of the physician's time and gave him more definite information than the quantitative work on urine. As had already been pointed out, the rise in the concentration of the uric acid of the blood appeared to be an excellent early diagnostic sign of chronic interstitial nephritis. The value of the uric acid in comparison with other tests was well brought out in a chart which was shown. The blood creatinine had been found of very great prognostic value. It was superior to the phthalein test, since changes in the patient's condition were clearly shown, while the phthalein test was continuously negative. All the cases which they had been able to follow for any length of time, with over 5 mgs. creatinine to 100 c.c. of blood, had died. The observations which had been made in these cases were shown in tabular form.

Remarks on the Correlation of Nephritis to the Digestive System.—Dr. LUDWIG KAST analyzed the relation of the different symptoms of indigestion to nephritis and emphasized the fact that they were in most cases toxic manifestations, through irritations of the brain centers, particularly the vagus. He stated that indefinite attacks of indigestion had a value as premonitory symptoms of uremia. Investigations on patients with chronic nephritis and uric acid retention, as well as creatinine retention, showed a very suggestive parallelism between abnormal blood chemistry and the occurrence of indigestion. The fact that patients might have uncontrolled vomiting without any other or very little disturbance, and might die within a short time with an attack of uremia, was perhaps not sufficiently appreciated in general practice, since one often heard of such patients having succumbed to an attack of indigestion. An interesting group of cases were those with high blood pressure and gastric ulcer symptoms in which apparently the changed tone and motility of the stomach produced ulcer symptoms which were dependent upon the retention of urotoxic substances in the blood. This group of cases did not respond to ulcer treatment but did respond to treatment of the vascular hypertension. The effect of nephritis upon the intestines showed itself often in severe forms of diarrhea with ulcerative enteritis and also in the occurrence of meteorism apparently of a toxic nature. In some instances patients who had suffered in early years with migraine showed a recurrence of the headaches in the more atypical form with a good deal of indigestion. In a large number of these cases it was possible to demonstrate a latent nephritis as the cause of the toxemia.

Dr. WILDER TILESTON, of New Haven, said the very interesting and important papers which had been presented showed the great and growing importance of blood analysis in clinical medicine, and what great care was necessary in the interpretation of results. At first they were told that a marked increase of uric acid in the blood meant gout, if a few rare conditions like leucemia could be excluded. Dr. Myers had shown that the same degree of increase could be found in the early stages of nephritis, in the absence of gout. Again, in the case of non-protein nitrogen, a very marked increase was supposed to be indicative of uremia with severe disease of the kidneys, but he had found just as great an increase in some cases of acute intestinal obstruction, and in a case of hemolytic anemia. In the diagnosis of uremia the newer methods of blood analysis had proved of the greatest value, a marked increase in the non-protein nitrogen, urea, or, as Dr. Myers had shown, the creatinine, indicating, with certain exceptions, a more or less corresponding impairment of renal function.

While it had long been known that uremia was practically never encountered without a well-marked hypertension, it was not until the recent methods of blood analysis were introduced that the separation of cases of hypertension into two types became possible, viz., (1) those with normal or nearly normal nitrogenous waste products in the blood, and (2) those with retention of these substances. This distinction was of the greatest practical importance, for the patients in the first group stood in no danger of uremia and did not need very active treatment; they were more likely to succumb to cardiac decompensation or cerebral hemorrhage. Those with a marked increase of nitrogenous waste products, or azotemia as Widal had very aptly called it, required, on the other hand, restriction of the protein intake and eliminative measures. The patients in the group of hypertension without azotemia were usually well past middle life, were subjects of arteriosclerosis and complained chiefly of symptoms of hypertension and circulatory failure, viz., dizziness, headache, and shortness of breath. The subject of hypertension with azotemia also suffered from headache, but in addition there was usually nausea and vomiting, loss of appetite and failing weight and strength. The patient with simple hypertension, however, not infrequently suffered from digestive disturbances, acute or chronic, and here blood analysis gave them very precious information. The presence of a *high* degree of albuminuric retinitis had been in his experience always associated with retention, and was therefore of bad prognosis, at least in chronic nephritis. But he had seen *mild* grades of retinitis without azotemia. With regard to the prognosis of chronic nephritis, cases showing 100 mg. or more non-protein nitrogen seldom lived more than a month or two. But a high degree of azotemia, if transitory, was not inconsistent with recovery. Thus in acute intestinal obstruction without nephritis, he had found as much as 150 mg. in a case terminating favorably. In closing, he repeated the words of Widal concerning the prognosis of nephritis: "If I had to choose, I had rather know the results of the blood analysis than those of the examination of the urine."

Dr. FENTON B. TURCK said that the excellent report made on the chemical findings in the blood in nephritis was of very great diagnostic value especially in the late manifestations. The determination of the etiological factors, of course, would be of greater diagnostic scientific and practical importance. Some form of infection was now regarded as the cause in most cases of nephritis and the alimentary tract as the principal foci was becoming more apparent especially in the light of experimental research.

In their experiments of feeding animals with intestinal bacteria, lesions of the kidney were produced showing various stages of nephritis with changes in the blood that seemed to parallel the observations made in man. Reduction in the alkalinity of the blood was noted, and of special interest were the studies in metabolism during the feeding experiments with certain strains of colon bacilli. They found that bacteria migrated into the intestinal wall and the bacteria passed between the cells into the submucosa where bacteriolysis occurred and indicated that the "Split products" of the disintegrated bacteria were significant in causing the toxic effect upon the kidney. The escape of intestinal bacteria by diffusion through the tissue and filtering through the kidneys was so subtle as to pass unnoticed because of the absence of acute and violent reactions. The pathological process appeared as an autolysis of the tissue cells with secondary replacement of connective tissue cells in chronic conditions. By similar feeding experiments Ashford fed animals with cultures of *Monilia* taken from patients suffering from sprue producing in the animals kidney and other lesions found in sprue. A study of the condition of the intestinal tract was of paramount importance in the early diagnosis of kidney disease, and such a study would lead to prophylactic measures and cure in the earlier stages of nephritis.

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Original Articles.

IMMUNITY, NATURAL AND ACQUIRED.*

BY WILLIAM H. PORTER, M.D.,

NEW YORK.

PROFESSOR EMERITUS IN PATHOLOGY AND GENERAL MEDICINE AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL, ETC.

IN the short time at my disposal it is impossible to consider in full all the theoretic and practical details connected with immunity. All that can be done is to call attention very briefly to some of the more conspicuous facts.

Throughout the many centuries that have passed, the medical mind has been cognizant of certain facts connected with this important subject. *First*, that certain diseases were transferrable, directly or indirectly, from one individual to another. *Second*, that as the result of a specific infection, coupled with nature's efforts to combat and expel the poison, a definite train of symptoms followed, thus giving rise to the differently named diseases. *Third*, that the natural tendency of these phenomena was, in a large percentage of the cases, to terminate in complete recovery; in a smaller percentage, in death; while in some instances, neither recovery nor death resulted, but a more or less prolonged or chronic train of symptoms ensued. *Fourth*, that in a large percentage of the cases where recovery occurred, the individual was in large measure safeguarded against a second attack of the same disease, the animal organism being so changed that it is said to be immune to that specific poison.

In the early centuries the pest and smallpox were highly destructive to human life. The frequently recurring epidemics of the latter destroying many lives and badly disfiguring many who were fortunate enough to recover from the much dreaded disease.

Acting upon these facts, Mithradates the VI (120 B. C.) was known to take daily small quantities of certain poisons in order to render himself immune. In like manner, the hunters in some wild tribes inoculated themselves with snake venom in order to guard against snake bites. Long before the above facts were known, the Chinese were in the habit of placing the smallpox virus in the nasal cavities of healthy individuals, thus inducing smallpox in the individual who might be and was highly resistant to the infection. When this was the case, the disease pursued a much milder course, but it did not prevent the spread of the disease from those so inoculated, and often in a highly virulent form. The Persians were more scientific in their use of the same principle, vaccinating much as we now do with the cowpox virus.

*Read before the New York Medico-Surgical Society, March 18, 1916.

The first real scientific attempt to control and limit the spread of disease was at the suggestion of Dr. Mead of London, in 1719, who was instrumental in having a law passed by parliament by which cases of the pest could be moved from their homes and isolated. Two years later, in 1721, Lady Montague returned to England from Constantinople and introduced the Eastern custom of direct inoculation with the smallpox virus. This, as in the East, decreased the intensity of the disease in the person inoculated. It did not, however, control the spread of the disease nor modify the virulence in those who had the misfortune to contract the disease from those so inoculated. On the contrary, it spread rather than decreased the number of cases. For this reason the practice was prohibited by law.

Thus matters stood until the illustrious Jenner in 1796 inoculated a boy with the virus of cowpox, and later with the virus of smallpox, and proved him to be absolutely immune to the latter. Two years later he gave his wonderful discovery to the world and proved beyond a question of doubt that nature has an absolute law of immunity, so complete in this particular instance that if pushed to the full scientific limit it would result in the complete eradication of smallpox.

Immunity is defined as the power on the part of the animal economy to resist, destroy, and expel from the system the toxic effects of microorganisms and their products or other foreign proteins, after which the system in many instances is not liable to react again to the same poison. The ability to react naturally presupposes susceptibility, for if it were possible to maintain continuously the highest grade of nutritive activity the effects of any antigen would stimulate the formation of antibodies to such an extent that no profound symptoms could be produced and universal immunity would be established.

With smallpox this has been accomplished, the antigen, in all probability, being a foreign protein. This being the case, immunity is largely the play of the protein molecule, the same as it is in normal metabolism; therefore, a clear conception of the rôle played by the protein compound in normal metabolism will aid in the elucidation of its part in producing immunity.

The starches, sugars, and fats are directly oxidized into carbon dioxide and water, yielding heat with which to energize the animal economy; hence the constructive and recuperative work falls entirely upon the protein substances and the inorganic elements with which they combine—the latter, however, playing simply a mechanical part. Hence, the great question is: what changes may occur in the protein molecule?

The pure proteins, as we all know, are derived from both the vegetable and the animal kingdoms. After the proteins from either kingdom are reduced to albuminoses and peptones in the alimentary canal

they are drawn into the protoplasm of the epithelial cells lining this canal (Fig. 1). From the protoplasm of these cells lining the intestinal tract the proteins are discharged into the enterohepatic blood stream. As a rule, however, they do not enter the blood stream as albuminoses or peptones, for the blood normally contains neither of these substances; in fact, the latter is a highly toxic form of protein.

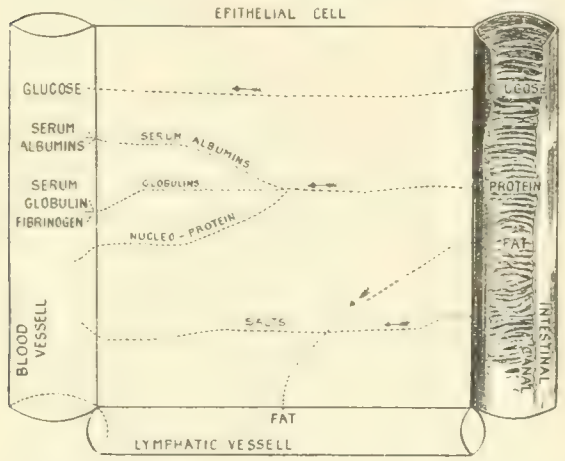

FIG. 1.—Schematic drawing of highly magnified intestinal epithelial cell; open intestinal canal on one side with glucose, protein, fat, and salts passing from the lumen into the cell. Glucose passing through the cell to the blood stream. Protein splitting into three well-known types. Globulins splitting into serum, globulin, and fibrinogen. Fats passing to lymphatics. Salts passing to the blood. (From the Reference Handbook of the Medical Sciences, Vol. VI.)

In view of these two facts—its ready absorbability and toxicity—nature provided by some transmuting process in these cells, either by isomerism or by decomposition, oxidation reduction, and resynthesis, a process by which the peptone loses its identity. The protein, represented by the easily absorbable peptone, on the one side of the cell, appears on the other, as it drops into the bloodstream, under several distinct forms, recognized by all physiologists—certainly four, if we include hemoglobin and lecithin producers. In fact, there may be many more. One is already known to be composed of three distinct subdivisions. The three which are commonly mentioned, however, are: (1) Serum albumins; (2) globulins; (3) nucleoproteins, or proteins. Serum albumin is not a single substance, but is the one known to be composed of two or more allied proteins, three having already been isolated. In like manner, the globulins yield serum globulin and fibrinogen (See Fig. 1).

Regarding the exact method by which metabolism and the biotic processes of the animal economy are effected, there have been almost endless speculation, theorization, and experimental research work, to enter into the pros and cons of which is beyond the scope of this paper. The process may be one of isomeric transmutation and mechanical multiplication of molecules, which are ultimately split into less complex substances; or it may be by a process of cleavage oxidation reduction and resynthesis of simple molecules—amino bodies—which are built up into more complex ones which constitute the various structures, with a final reduction into less complex substances.

Whatever the process, the important point to be kept in mind is that the proteins are the essential factors; that the main function of animal life is to utilize these complex bodies and reduce them to simpler forms, and that it can be accomplished most easily and with the least strain upon the digestion and assimilative forces when the animal proteins are used.

The proteins, like sugars and fats, have a heat-producing power, each gram requiring for its complete combustion 1.3786 grams of oxygen, and each gram so consumed yielding 4.1 large calories. Thus we find that the heat energy or caloric force for the maintenance of animal life is produced by all three of these essential compounds.

The most pronounced function of the protein substances, however, is to enter into the composition, construction, maintenance, and repair of all the fluids and structures of the animal economy. For this reason, in the study of metabolism and its disturbances, they must be considered chiefly as constructive elements and for the maintenance of the nitrogen elements or nitrogen balance, rather than for their caloric value. The same is true in their relation to immunity. The amount required to maintain this daily balance is variously estimated and must necessarily vary under varying conditions.

Table I gives the main catabolic elements containing nitrogen, and the average amount excreted normally during twenty-four hours, and Table II indicates the route by which it leaves the body.

TABLE I.—SUBSTANCES ELIMINATED AND AMOUNT OF NITROGEN IN EACH.

	Grams of Nitrogen
35.00 grams of urea contain	16.331
2.18 grams of urates contain	0.642
0.80 grams of uric acid contain	0.266
1.00 grams of keratin contain	0.871
0.35 grams of hippuric acid contain	0.024
73.12 grams of sodium taurocholate contain	2.088
18.28 grams of sodium glycocholate contain	0.446
14.60 grams of bilirubin contain	1.267
14.60 grams of biliverdin contain	1.430
900.00 grams of perspiration contain	0.360
0.02 grams NH_3 or respiration contain	0.016
In desquamated epithelium, ferments, etc., contain	0.779
1059.95	24.000

Upon analyzing this table of composition a little more closely it is clearly apparent that a large part of the nitrogen is excreted through the kidneys and a considerable amount through the liver, while the balance escapes through the desquamated epithelium, through the mucus secreted by the various mucous membranes, and in the unorganized ferments secreted by the various digestive organs. In this manner the total amount of nitrogen—24 grams—is eliminated from the system and is distributed as follows:

TABLE II.—ILLUSTRATING ROUTE BY WHICH NITROGEN IS ELIMINATED.

	Grams		Per Cent
Through the kidneys	17.634	or	73.475
Through the liver	5.241	or	21.837
By perspiration and respiration	346	or	1.441
By other organs and membranes	779	or	3.245
	24.000		99.998

To produce this amount of nitrogen in the excreta, it is absolutely necessary to take into the system through the food ingested not less than 150 grams of protein daily. Not only must this amount be absorbed into the circulation, but it must be utilized perfectly if the animal economy is to be maintained at its full and normal working capacity.

With a clear understanding of the form in which foods are introduced into the system, and the known excretory products, we are in a position to speculate with considerable accuracy as to how and where these oxidation reductions occur.

At one time they were supposed to take place in the blood and fluids of the body. This theory has long since been abandoned, with the introduction of the cellular theory and the knowledge of the fact that a very small percentage of any of the catabolins are ever found in the blood, these chemical

transformations were transferred to the protoplasm constituting the cellular structures. Some are inclined to place these transmutations largely in the muscular structures; while others place them almost exclusively in the cells of the secretory and excretory glands. The latter seems to accord more accurately with known facts. This includes the action of the ductless glands, which unquestionably play a large part in protein utilization.

The excretory products, however, are always abundant on what may be called the outside of the glands or in the ducts leading therefrom—that is, when speaking of glands having ducts, while those products are found in very limited amounts only on the opposite or internal side, or that in direct contact with the blood vessels, or in the blood. Some are not found there at all under normal conditions. Therefore, it seems logical to assume that the proteins are transmuted in the cells into the various types and forms of proteins that enter into the construction and function of the animal economy.

That the enzymes that go to make up the various digestive ferments thus become both secretory and excretory products—secretory in the fact that they have a physiological function to perform after leaving the cell structures; excretory, in the fact that they carry nitrogen out of the body just as much as urea does.

The same holds true for the pure catabolins, for they are found abundantly on the outside, or duct side, of the cell, and in very minute quantities, if

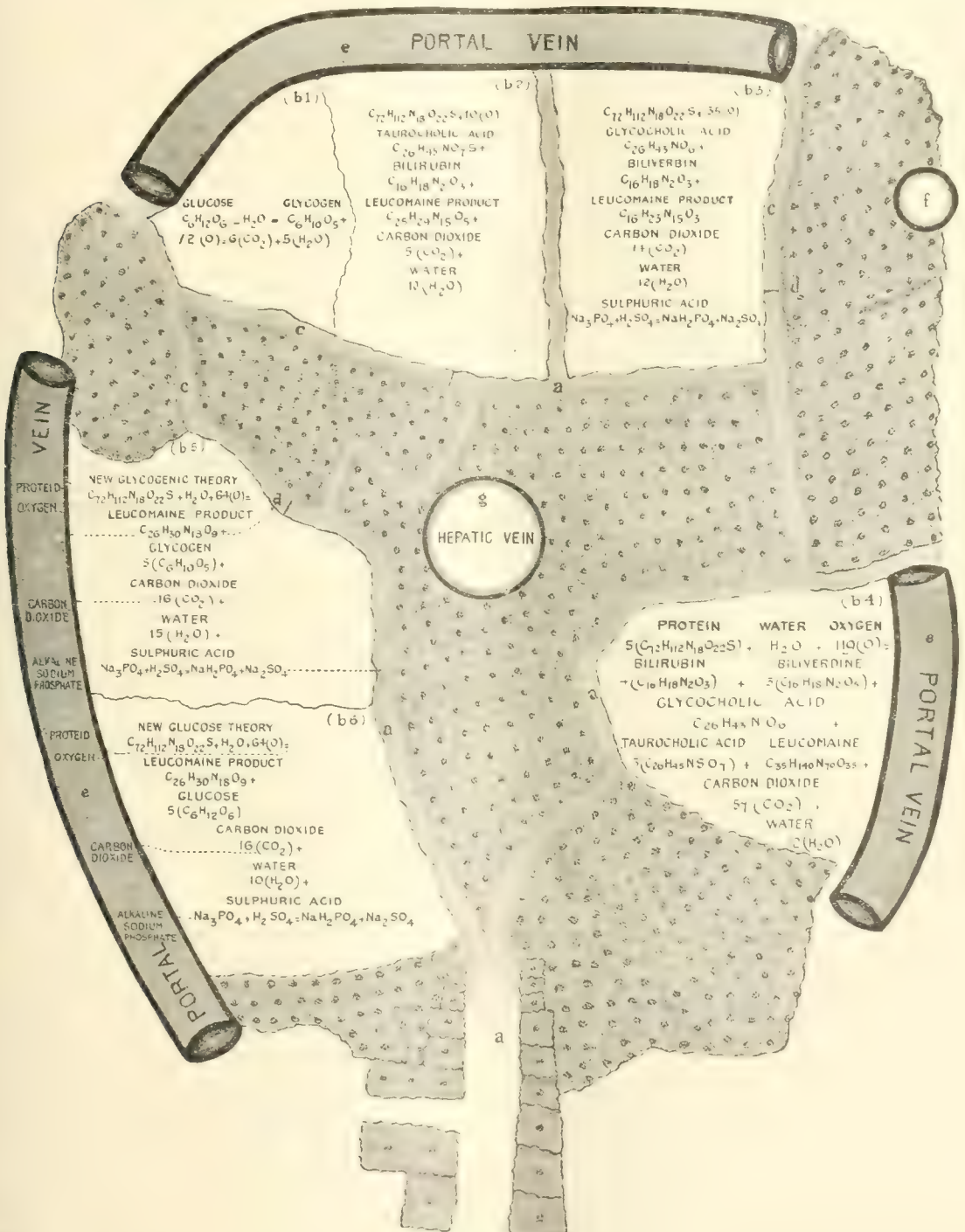

FIG. 2.—Schematic drawing of normal liver, highly magnified. *a*, Lumen of bile ducts and radicals; b^1 to b^6, hepatic cells very highly magnified, illustrating chemical transmutations within them; *c*, lumen of lymphatic channels; *d*, basement substance between bile radicals and lymphatic spaces; *e*, blood vessels of the portal system; *f*, hepatic artery; *g*, hepatic vein. (From the Reference Hand Book of the Medical Sciences, Vol. VI.)

at all, upon the opposite side or in the blood. The leucomaine product out of which some of the catabolins are produced must be contained in the blood, but not necessarily the finished product.

This naturally brings up the question: What changes may occur in the protein molecule in connection with the hepatic cells? It certainly undergoes a much more complex transmutation than occurs in connection with the glucose or glycogen-like molecule, yet both yield heat and energy.

But out of the protein substances, in their passage through the liver, there must be produced normally the bile acids and pigments, and possibly some, if not all, of the glycogen. To produce the bile acids, pigments, etc., as found in the bile, the protein substance must undergo oxidation reduction. The protein and the oxygen must meet in the cell, coming, as they both do, from the portal blood adjacent to the hepatic cells. Within these cells, some of which have the special function of effecting certain reductions, the various catabolins found in the bile as a secretion and as an excretion are produced.

With each form of transmutation a given quantity of oxygen is required, and a certain amount of heat is produced for each gram so transmuted.

In Fig. 2 are shown a few hepatic cells of the acinus very highly magnified, in which are found chemical equations representing some of the normal oxidation reduction processes. It graphically illustrates how and where these reductions are effected. It shows also that the protein bodies can be split up in various manners, with similar end products resulting therefrom. Certain of these mutations are what occur when the system is working normally, while when less perfectly transformed they represent disturbances in metabolism.

In cell b^1, for instance, we find the glucose-like molecule losing by cleavage one molecule of water, with the formation of glycogen, in accord with the older glycogenic theory of the liver—or it may be then and there completely oxidized, as noted.

In cell b^2 we find the protein element splitting into taurocholic acid, bilirubin, a leucomaine product, carbon dioxide, and water. In this instance the sulphur atom of the protein is eliminated in the taurocholic acid, which acid usually appears in the bile under normal conditions as a soda salt of this acid.

In cell b^3 we find the protein body splitting into glycocholic acid, bilirubin, a leucomaine product, carbon dioxide, and water. In this instance, the sulphur atom has to be eliminated, theoretically, as sulphuric acid, the acid, however, joining with soda to form a sulphate, which is the form in which it is found in the secretions and excretions.

In cell b^4 we find the protein body splitting into bilirubin, biliverdin, taurocholic, and glycocholic acid, a leucomaine product, carbon dioxide, and water. In this instance the sulphur atom, as in cell b^2, is eliminated in the taurocholic acid, and there is no resulting sulphate.

In cell b^5 we find illustrated what may be called the new glycogen theory. Here we find the protein body splitting up into a leucomaine product, glycogen, carbon dioxide, water, and sulphuric acid, ultimately eliminated as a sulphate.

In cell b^6 we have illustrated what may be called the new glucose theory. Here we find the protein body splitting into a leucomaine product, a glucose element, carbon dioxide, water, and the theoretic sulphuric acid. In both these instances (cells b^6 and b^6) the sulphur atom is accounted for as in cell b^3.

Thus we find that this schematic drawing well illustrates the formation of both glycogen and glucose-like elements out of the protein substances; the former representing a normal process, while the latter is probably an abnormal one. It shows how the constituents of the bile are formed. As some of these substances are essential to a perfect digestion, these products found in the bile are both secretory and excretory. It is not until the bile has served its full purpose in the digestive act that its constituents can be classed as excretory. The presumption is that the leucomaine products so formed normally pass into the lymphatic or blood channels, and finally reach the renal cells, from which they are

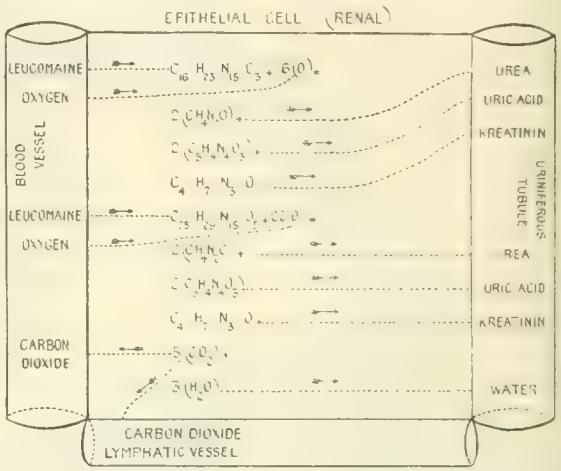

FIG. 3.—Schematic drawing of a highly enlarged renal epithelial cell showing leucomaine products and oxygen passing from the blood stream into the protoplasm of the cell to be split into urea, creatinine, uric acid, carbon dioxide, and water; the urea, creatinine, uric acid, and water passing out of the cell into the lumen of the uriniferous tubules; the carbon dioxide and some of the water passing back from the cell into the blood and lymph stream. (From the Reference Hand Book of the Medical Sciences, Vol. VI.)

discharged into the lumen of the urinferous tubules as urea, creatinine, uric acid, carbon dioxide, and water, as illustrated in Fig. 3, thus accounting for the so-called urea-nitrogen, or urea of hepatic origin—coming from the liver, however, as a lecomaine product rather than as fully formed urea, uric acid, etc.

What part this leucomaine product may play, if any, in the processes of metabolism, is one of the unsettled questions. As only 21.8 per cent. of the nitrogen is eliminated from the system by these chemical mutations in the hepatic cells, while 73.4 per cent. escape through the kidneys, it seems like a very small amount of work to be accomplished by so large a glandular organ, besides being an organ that has the power or function of reproducing itself.

The presumption, however, is that this large organ and its multitude of cells is very largely concerned in partially transmuting all the protein food elements, so that they become more available for nutritive purposes, and are made more easily reducible when they have served their full purpose throughout the body and reach the kidneys for final oxidation reduction and elimination.

We know that peptone is transmuted by the action of the hepatic cells from a toxic to a non-toxic condition. In like manner many other toxic substances are so transmuted. We take advantage of this fact in the management of metabolism and its disturbances when we administer toxic medicinal substances, substances which when they reach the

hepatic cells are taken up by the protoplasm and oxidized in the cell or excreted with the bile, thus protecting the system in general from their toxic effects, yet at the same time stimulating sluggish and inactive protoplasm to increased activity. By the intelligent application of these principles much can be accomplished in the management of all forms of metabolic disturbances.

Viewed in this light, we find the hepatic gland one of the most important in the animal economy; one that cannot be neglected if we hope to succeed fully in the management of metabolism and its disturbances. One reason for introducing this hepatic problem into the discussion is the fact that when nature acts without artificial aid in producing immunity, the explanation must be in keeping with the utilization and transmutations of the protein substance under normal circumstances. Whatever the antigen may be, it must excite, through the activity of the hepatic cells the chemical mutations of the protein substances, thus forming the various antibodies, such as agglutinins, lysins, opsonins, precipitins, etc., etc., the continued activity of which finally brings about the destruction and liquefaction of the bacteria and their toxins.

It seems highly probable, from what normally occurs in this great organ, the liver, that, either directly or indirectly, its cells are largely concerned in the production of the innumerable substances that are said to enter into the production of immunity, active or passive, substances that not only destroy the microorganism and its toxins but also stimulate the phagocytes to increased activity and finally bring all the foreign substances to the various excretory glands for their final elimination from the system. When all this has occurred, the integral body is so changed that it is in large measure safeguarded from the effects of the same infection. Thus immunity may be acquired by inoculation with virulent living bacteria, by attenuated or relatively virulent microorganisms, by the use of dead bacteria, and by excreted bacterial products.

When the antibodies are produced within the animal, or intrinsically, it constitutes active immunity. When they are introduced by injection from another animal in which they were produced, it constitutes the passive type.

The second reason for introducing this hepatic problem is the well-known clinical fact that when the functional activity of the liver is kept at its highest point, in connection with all infectious diseases, the symptoms are the least intense, their duration shortened, and recovery made more certain.

16 West Eighty-third Street.

THE DIETETIC TREATMENT OF DIABETES COMPLICATED BY NEPHRITIS.*

By HENRY S. STARK, A.M., M.D.,

NEW YORK.

The question of the dietetic treatment of persons suffering simultaneously from diabetes and nephritis has always been a matter of deep concern to the clinician. So far as intensive practical study is concerned, this class of patients has been so wofully neglected that we cannot point to any definite plan which would govern the physician in the choice of a diet. Texts have been a closed book, while the subject itself has been a sort of *nole me tangere.*

*Read at a meeting of the Harlem Medical Society, April, 1916.

While the literature of diabetes has grown to enormous proportions, it remains a conspicuous fact that little has been devoted to that phase of it which forms the subject of this paper. It would be difficult, indeed, to account for this lack of concentration of the medical mind on a topic which from its frequency alone should invite constant investigation. Were the physician to adhere religiously to the teachings of his elders, or to tradition, such patients would be consigned, *ipso facto*, to a slow process of starvation. For carbohydrates would be eschewed on account of the diabetes, proteins on account of the nephritis, and fats because they might provoke a ketonuria. He would thus be left in a sea of speculation as to the probable method of treatment of this large and growing class of patients. I say growing class for the reason that diabetes has trebled itself in frequency within thirty years, while its death rate is steadily increasing.

Chronic nephritis occurs as a complication of diabetes in a large but undetermined proportion of cases. My records in both public and private practice make it appear that after the fifth year of frank diabetes nephritis occurs in about 35 per cent. to 40 per cent. I know that some observers place the figure lower. It occurs also as an antecedent or as a terminal factor. Whichever sequence prevails the diet problem always stands in the foreground, for we now have a factor introduced which more seriously influences the prognosis. This complication of diseases usually means a grave prognosis, and this gravity is estimated in terms of the albuminuria, the quantity of casts, and the hyperglycemia, the patients standing midway between the Scylla of death from diabetic coma or gangrene and the Charybdis of death from uremia, apoplexy, or cardiovascular conditions.

Some authors actually believe that the kidneys of a confirmed diabetic are never normal and that this abnormality is a consequence of a hyperfunctioning of the kidneys, causing disturbances of their excreting powers, or that this abnormality was to be assigned to the almost constant presence of fugitive toxic acids in the tissues, or to the glucose in the blood; in both instances giving rise to a toxic nephritis. While such nephritides frequently accompany diabetes, I could not personally subscribe to so sweeping a statement that the kidneys of a confirmed diabetic are always involved.

These authors probably base their observations on the ill-founded conception that aluminuria always means nephritis, when as a matter of fact there may be no anatomical basis in the kidneys for this symptom. Conversely, we may meet with diabetics who have a nephritis, usually the chronic interstitial variety, with a temporary absence of an albuminuria. I have under treatment many diabetics for years who have never given any evidences clinically or objectively of a complicating nephritis. It becomes, therefore, apparent that the observer who wishes to estimate the frequency of nephritis as a complication of diabetes will fall into error if he looks upon an albuminuria as the cardinal diagnostic feature.

In dealing with chronic nephritis as a complication of diabetes, of course, I refer to true nephritis, in contradistinction to certain kidney lesions which we frequently find concurrently with diabetes, namely, fatty degeneration, hypertrophy, or persistent hyperemia or disturbed permeability of the kidneys, all of which are really different expressions of the hyperfunctioning of the kidneys or are evi-

dences of the constant presence in the circulation of such toxic elements as glucose or urea. Of course, in many instances, these renal disturbances eventually are precursors of chronic renal changes.

The advent of a complicating nephritis is usually unheralded, for the reason that its presence contributes few new subjective symptoms to the original clinical picture of the diabetes. The patient is usually past middle life, with weakened functions and organs, due to long-standing disturbances of metabolism. Along with this state of impaired health go a variety of symptoms which can be variously interpreted, such as headaches, pale countenance, loss of energy, and tired feeling after slight exertion. In fact, were it not for the objective urinary findings, the clinical picture of the complicating disease would ofttimes be so masked as to escape detection.

The sequence of these diseases is interesting. Either there is no relationship of cause and effect between them or else the diabetes is the cause of the nephritis. There seems to be at times a reciprocal or alternating effect manifested between thse diseases. That is to say, the renal disease seems occasionally to exercise a benign influence upon the diabetes to such a degree that the glucose disappears from the urine for a period covering months and sometimes I've seen it remain away two years, while the albuminuria persisted. These are the cases which have passed as cured diabetes, a claim which, of course, is open to criticism. In a previous article[1] I offered a possible explanation for the disappearance of a primary disease upon the appearance of another of a different type. The explanation I offered was that there existed a well-defined pathological antagonism between certain diseases to such an extent that the pathological effects of a secondary disease may completely neutralize the pathological effects of a parent disease.

This brief survey of the intimate association of diabetes and chronic nephritis must impress one with the conviction that in the treatment of this particular combination of diseases the question of diet transcends that of drugs. In the selection of a diet to suit the various exigencies that arise in the course in these diseases we must bear in mind these salient facts, namely, that diabetes means a defective carbohydrate metabolism, while nephritis means a defective protein metabolism; secondly, that diabetes means a tendency to general emaciation and debility, to coma or gangrene, while nephritis means the probability of an arteriosclerosis, cardiac involvment, uremia, and apoplexy; thirdly, that diabetes means a glycosuria which is crippling several organs, while nephritis means an albuminuria which is constantly weakening the patient and making him less capable of performing muscular work. And we must bear in mind that both diseases mean chronicity, the danger of dietary errors, the loss of energy, and of the power to repair loss of flesh. It is natural, therefore, to expect that such marked contrasts as exist between these diseases must call for various and diverse measures of dietetic treatment.

The general dietetic principles involved are the following on the part of the diabetes to suppress the excretion of glucose and acetones, to maintain weight and conserve strength; on the part of the nephritis to prevent loss of flesh to ward off edema, to arrest or control arteriosclerosis and the high blood pressure that accompanies it, to effect the elimination of urea and other end products of protein metabolism. Here we should bear in mind that while these diseases differ so materially in their degree of severity, it is yet quite possible to group patients into classes for purposes of treatment. Thus one class of patients will suffer severely from both diseases, another class will suffer mildly from both diseases, in a third class one or other disease predominates in severity, and, finally, a set of cases in which the advent of one disease exerts a benign influence upon the primary disorder. Naturally the dietary measure must vary to suit the requirements of each group.

The prognosis of this combination of diseases is estimated in various terms. For example, it will depend, on the part of the diabetes, on age, upon the degree of tolerance for carbohydrates, the presence of an acidosis, evidences of malnutrition, the presence of bacterial infections or intoxications, and the state of the vascular system; while the prognosis on the part of the nephritis must depend upon, firstly, how far the renal lesion is advanced, the permeability of the renal epithelium, the state of the vascular system, the integrity of the general renal functions, the presence of arteriosclerosis and hypertention, and the degree of cardiac hypertrophy. From the facts here set forth it is easy to understand that the dietetic treatment of these diseases calls for study and individualization. For, while the radical cure of these patients is beyond hope, their alleviation is often entirely within our reach. If we can prevent an acidosis or cause its disappearance, can reduce the hyperglycemia, control blood pressure, conserve cardiac compensation, and preserve the functions of the kidneys, we are doing a great deal to lengthen the patients tenure of life and to make him comfortable. As one writer aptly put it, we must treat the man, not the disease, for the latter is incurable. The intelligent management of these cases calls for a measure of technical knowledge. I can think of no other diseases which approach the ones under consideration in this particular. The following data is essential, a qualitative analysis of the urinary excretions, a knowledge of the physiological functions of the elements of nutrition, a familiarity with the nutritive values of the common foods, a knowledge of the carbohydrate, fat, and protein content of special articles of diet, a knowledge of the patient's power of assimilation, not only of the carbohydrates but of fats and proteins, and finally a knowledge of the renal function. Without such a mental equipment it is out of the question to construct, with any hope of success, a ration which shall meet the requirements of individual cases.

In prescribing a diet, we must bear in mind that there are clear limitations to dietotherapy beyond which it is not safe to venture. Among such the following stand out prominently:

1. The danger involved in a continuous one-sided diet.

2. The natural requirements and cravings of the economy for all proximate food elements, not excepting water and salts.

3. The danger of a strictly starch-free diet, continued over long periods.

4. The menace involved in strictly scientific feeding based upon ingenious and partisan theories.

A due regard for these limitations will go a long way to simplify the problem of diet and make it possible to standardize various methods of treatment.

Dangers of a One-Sided Diet.—I refer to the fre-

quency with which an acidosis or coma can follow in the wake of a long starch-free diet, or to the symptoms of intestinal intoxication which often follows a continuous protein diet. How often we find diabetics whose symptoms are referable to over-indulgence in animal foods rather than a failure to burn up sugars. These patients display a marked susceptibility to proteins forming sugar more liberally from the latter than from starches. It may be stated as an aphorism that a diabetic who assimilates meat poorly is worse off than one who assimilates starches poorly. His vicarious metabolism shows that a number of his organs are crippled to the verge of complete loss of function. Uusually this class of patients will run low sugar percentages and show marked symptoms of prostration, muscular weakness, especially in the calves, and evidences of intestinal disturbances. Such patients require at once physiological rest for their protein-digesting organs besides an exhibition of sugars to the point of tolerance. The proteins should be reduced by one-half beginning with the animal kind, while cheese, milk, and eggs should form their only protein food, if it be deemed advisable to allow proteins at all. Flesh, fish, and fowl should be barred.

The error involved in an over-indulgence in fats must not be overlooked. Many diabetics suffering from nephritis are swamped with foods containing fats, fatty acids, butter, cream, nuts, and cheese, with a view of balancing loss of weight. Soon it is found that these patients do not increase in weight, that emaciation progresses, toxic fatty acids appear in the urine and fats in the stool, while intestinal symptoms due to this faulty fatty metabolism become marked. It is soon realized that it is not a question of how much is eaten, but how much is digested or assimilated, and that an excessive indulgence in fats may become a serious menace to health.

The Natural Cravings of the Human Economy, etc.—In a state of health there is a normal craving for all food elements. There may be individual and natural predilections, varying between total abstinence from one of the food elements, as seen in vegetarians and fructucarians, to the insatiable appetite for sweets or the carnivorous longings seen in others. Hence, a mixed or so-called balanced ration has been found to furnish all natural food requirements. Directly we depart from such a ration for any reason, disturbances of metabolism eventually arise. That is why an acidosis follows in the wake of an exacting starch-free diet, and that is why a prolonged protein diet often leads to disaster. There is also a pathological craving, which may be so strong as to frequently tempt patients to deviate from the straight and narrow diabetic path and indulge their appetites in sweets.

The influence of age upon a choice of diet and upon food requirements, is of importance here. For in a sense the latter are directly proportionate to our bodily activities. Infancy, manhood, middle age, and old age each has its own level of food necessities; persons engaged in sedentary occupations have food requirements quite apart from those employed at manual labor, likewise males differ very materially from females in this respect.

The influence of salts, as an element of nutrition, upon diabetonephritis is of considerable importance in the light of recent investigations. Taking into consideration the fact that diabetics consume large quantities of mineral salts and water, we have before us a problem which presses with double weight when a true nephritis is associated with the diabetes. It is acknowledged that sodium chloride has a baneful influence on the metabolism of water, which becomes very pronounced after a long administration of sodium bicarbonate, which latter is given for the purpose of warding off coma. A number of investigators, Staubli and Blum,[2] have furnished clinical evidence of this phenomenon that mineral salts can cause a chloride retention and, as a sequela, a marked or a masked edema. This sequence of pathological events is not uncommon in the wake of diabetes. We have all met with diabetics, who appear to take on flesh and weight, following a long administration of sodium bicarbonate, who on a more critical examination are found to be suffering from a water retention or marked edema. The lesson derived from this observation teaches that we cannot, with immunity, allow salts *ad libitum* in diabetes associated with nephritis, and that it is incumbent that the administration of such salts should be so regulated that there is not placed too much strain on the organs involved in nutrition. Therefore, directly signs of edema appear in this group of cases or the urine becomes diminished or the chlorides disappear, we must assume that these patients are being crowded with foods too rich in extractives, *e.g.* certain fruits, vegetables, meats, etc. Such offensive foods should at once be restricted, and milk, potatoes, cereals, yolks of eggs, butter, and other articles with low salt contents substituted. The presence of an albuminuria with casts pointing to a true nephritis is always an admonition that proteins and mineral salts must be allowed in measured quantities and their elimination carefully guarded.

The Dangers of a Strictly Starch-Free Diet.—In the group of cases under consideration the matter of the glycosuria is often of secondary importance, especially is this true of old persons in whom starchy foods, even slightly beyond the point of toleration, do little harm, always provided that a marked acidosis be prevented. We are on the wrong track, if we allow ourselves to believe that a glycemia is the greatest source of danger, or that the gravity of a given case can be measured in terms of sugar excreted. Many diabetics with high sugar percentages remain in better condition than do those with low percentages. It was formerly the rule to regulate the quantity of starch-free food by the degree of glycemia or the glycosuria and to estimate the progress of the disease by their amount, but to-day we believe that the amount of sugar excreted is a deceptive guide in passing judgment upon these cases. The tolerance for carbohydrates is a very variable term; it fluctuates within wide ranges in the same individual. Likewise the degree of tolerance for different carbohydrates is a relative term. Some diabetics have a greater tolerance for oatmeal, others for starch, or rice, or potatoes. In persons suffering from diabetes and nephritis it is necessary to establish this index of tolerance, for there may come a time, depending upon the state of the renal or cardiac functions, when proteins must be discarded to a certain extent in favor of starches. When such patients show evidence of cardiac decompensation or of edema or cerebral symptoms, it is time that most animal foods be abandoned, and milk and cereals substituted.

A method that I frequently adopt, especially if the edema be marked and be an expression of a

chronic interstitial nephritis, is to place the patient upon the so-called Karell treatment. This method of treatment has been employed for many years for the relief of edema due to renal or circulatory disturbances. It consists in the exclusive administration of milk in small quantities daily, for a number of weeks, say two hundred c.c. four times daily. The principle involved in this treatment is the reduction of all foods with a view of bringing about a draining or dehydration of the system. I usually modify Karell's method in order to satify the want of the patient, by allowing two or three eggs each day. This is also an ideal method of treatment where the blood pressure continues high and uremic symptoms are manifest. For such a diet allows just enough proteins necessary for the repair of tissues, for the conservation of energy, and the performance of muscular work, besides which it takes away the strain on kidney, heart, and arteries, at the same time promoting the elimination of toxic elements from the blood.

The danger of a strictly starch-free diet as an element in the production of acidosis has already been alluded to. A question of much interest in this connection is, How long may a patient safely continue on a starch-free diet? I should say about four weeks. Often at the end of this period, both the albuminuria and glycosuria will have disappeared, or perhaps one will alternate with the other. Another question that may arise is, How much carbohydrate food may a patient have? The answer to this is, as much as he can assimilate. Usually it will be whole milk a pint a day, two or three potatoes daily, two or three slices of ordinary wheat bread. This, of course, is in addition to the quantity of protein food allowable by reason of his nephritis.

The Theory Involved in Strictly Scientific Feeding and in Partisan Theories.—There are few diseases whose treatment has gone through so many vicissitudes as has diabetes. Ever since this disease was recognized as a disorder of metabolism, one dietetic method after another has had a "try-out." Each of these methods in its day was hopefully received by a gullible profession, had a meteoric run, and then was relegated to the category of therapeutic failures. It seems to be the acknowledged order of things in medicine that new methods of treatment are always hailed with enthusiasm, and, of course, furnish wonderful results. But often there comes a period of doubt and suspicion, and then the new method shares the fate of many others that have gone before it. Many of them seemed plausible enough at the time, and had the merit of being ingenious as far as the dietetic necessities of the patient were concerned, for they were constructed upon theories based on chemical formula and equations and other physiological data derived from laboratory studies, but unfortunately for the patient clinical experience did not bear out these theories nor harmonize with the chemical formula. Scientific feeding based on laboratory findings has in many instances proven to be a therapeutic fallacy. It has not solved the problem of diet for the sick, for the reason that the laws of nature are quite apart from the laws of the laboratory. That is why caloric feeding has not netted satisfactory results in the individual, although it has proven useful among large bodies of men, as in camps, hospitals, and prisons. The stomach refuses to act as a test tube, while human metabolism is itself so complex a phenomenon as not to permit of generalization of food values nor to admit of the framing of positive rules of food disposal.

Recently a dietetic method, which has been widely heralded and favorably received as a great advance in treatment, has come into vogue, and is known as the prolonged fasting or starvation treatment of Allen. Fasting as a dietetic measure has been advocated and practised under various guises by Falta, Magnus-Levy, von Noorden, and Guelpa, each of whom in his day reported flattering results as far as his efforts to make the urine sugar and acid free were concerned. And yet, with the exception of von Norden's oatmeal and vegetable régime none of these fasting methods had inspired confidence enough on the medical mind to survive the test of time and experience. The fundamentals of Allen's[2] method may be briefly summarized in the following three postulates: (1) Diabetes is the weakness of a metabolic function; (2) increase of weight and metabolism increase the strain on pancreatic function; (3) patients should be kept under weight and under reduced metabolism. This conception of the nature of diabetes is fortified at length by Allen with clinical and experimental studies of great value. My own experience with this treatment is limited to twelve cases of the classical type, of which five were complicated by nephritis; although my patients were not institutional but home ones, nevertheless I was enabled with their intelligent cooperation to conduct the treatment with due regard for details as advocated by Allen. Of course, I am aware that on the basis of such a limited experience, generalizations and deductions as to the value of this method are barely possible, and I do not hesitate to make this acknowledgment. The record of my dozen cases show that seven cases became sugar free at the end of an initial fast of four to seven days; the others resisted all efforts in this direction. Nine of these cases showed well-marked acidoses, of which six became acid free after the initial fast: in the other three, the acidosis persisted to my chagrin with the same intensity. Of the cases improved, that is the seven that became sugar free, five lapsed into their former state of glycosuria. A point of interest here is that a number of cases cited above had been sugar free temporarily, under other dietetic measures and several became sugar free even under reduced feeding and rest in bed. From a study of these cases we may reasonably infer that there is an honest difference of opinion as to the permanent value of this method.

Allen lays great stress on the factor that diabetes is the simple weakening of a metabolic function, which can by proper training be strengthened. This conception is open to the serious objection that we cannot logically devise a line of treatment purely on the basis of a disturbed physiological function; we must go one step further and find a pathological basis. This is the elementary principle of rational treatment. If unfortunately, as is the case with diabetes, we cannot point to any acknowledged pathology, but one that vacillates with each decade, we must expect that treatment will do the same. Human metabolism is one complex system of checks and balances, involving different and distant organs, and chains of organs, and this complex incidence makes it impossible to localize this metabolic disturbance, nor can we dignify any organ, the pancreas not excepted, as the one uniformly involved in diabetes. Hyperchlorhydria is a weakening also of a metabolic function in a sense, but we do not treat this disturbance by constantly re-

stricting acid foods, or endeavor by dietetic measures to strengthen it; the logical procedure is to look for a pathological basis on the principle, that this gastric symptom must proceed from the operation of a diseased organ. We are advised that diabetes is due to a disturbance of carbohydrate metabolism, which is true, but how can we reconcile with this statement the recent discovery that glycosuria often is produced from amino-acids, which are the end-products of protein metabolism. This opens up the question, Is the fasting treatment applicable to this type of diabetes?

We are told this treatment causes the glycosuria and acetonuria to disappear in a few days, but we are not advised as to the *modus operandi* by which these changes are effected. I believe it is natural to expect that fasting will make the urine sugar and acid free; fasting probably has the same effect on other foreign elements found in the urine during disease, *e. g.*, peptones, albumoses indican, fats, glycourinates, and ethereal sulphates. During the process of fasting, whether voluntary or therapeutic, the body is self-consuming to such a degree that it sheds itself, so to speak, of much extraneous matter, supporting itself meanwhile on its own protein and fats. As an illustration of this, I cite the fact that several of my cases showed complete absence of albuminuria after the initial fast. But though the albumin disappeared from the urine, I could not convince myself that the chronic nephritis had come to an end. And so it is with the glucose, though we may succeed in eliminating it, the pathological factors that produced it are still in operation, and the patient still has diabetes.

Regarding the aim of Allen to keep the patient below weight and under reduced metabolism, it would appear that this effect is automatically accomplished by the natural ravages of the disease itself, without subjecting the patient to the heroic treatment of fasting. My experience has been, that a confirmed diabetic before he comes under treatment will lose weight at a rapid pace, and while he may improve materially under observation he rarely reaches the level of weight that marked his era of health. This rapid emaciation and failure to regain his original highest weight admonishes us that there is a real danger in under feeding patients who are naturally disposed to emaciation and denutrition. The inclination of diabetics to overfeed and thus to overload their digestive organs and overcharge their organs of metabolism must be combatted. Feeding is not so much a question how much is ingested, but how much is digested.

The suggestion that increase of weight and of metabolism increase the strain of the function of the pancreas presupposes that this organ is the real pathological site of diabetes; this, however, is a question which still lacks full confirmation, for we know that diabetes occurs without evidence of pancreatic disease, and conversely pancreatic disease occurs without diabetes. Pathology has not yet solved this discrepancy. Efforts have recently been made to place the pancreatic origin of diabetes in the background and to ascribe its etiology to disease of one or more of the ductless glands.

The influence of diet upon this association of diseases is very changeable. The renal and cardiac function require constant watching. The amount of urine voided is no longer a reliable index, since the natural course of the nephritis may produce a diminished amount, which will be masked by the increased amount due to the diabetes. In the same way the specific gravity is unreliable. The blood-pressure curve is valuable in determining the relative importance of the two diseases. When a diabetic voids less than he usually did, has headaches or is drowsy, has an increasing blood-pressure, an accentuated aortic second, an increasing albuminuria, his nephritis will require more attention than the glycosuria. On the contrary, if the patient show no steady rise of blood-pressure, no cardiac hypertrophy, no evidence of arteriosclerosis, the glycosuria will require attention. The ideal to be sought in this form of cases is avoidance of a ketonuria. In a patient advanced in years, in whom an acidosis can be kept in abeyance, the glycosuria need not be regarded seriously.

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1309 MADISON AVENUE.

THE *X*-RAY TREATMENT OF UTERINE MYOMATA.

A WARNING BASED ON A STUDY OF THE LITERATURE.

BY ARTHUR STEIN, M.D., F.A.C.S.,

NEW YORK.

ADJUNCT VISITING GYNECOLOGIST, GERMAN HOSPITAL; ADJUNCT VISITING OBSTETRICIAN, HARLEM HOSPITAL.

THE announcement that *x*-ray treatment had been so unusually successful in cases of myoma of the uterus aroused the interest of all the men who had been relying on the knife only in these cases. A new and powerful method seemed to be waiting for a trial. Certainly the first reports were astonishing, to say the least, and even now, when the first enthusiasm has subsided, we hear of excellent results. However, I feel that this is a good time to look over the field and to see just what good and what harm lies in the treatment, the more so as I had the opportunity to observe and finally operate in a case for a supposed myoma of the uterus where the *x*-ray treatment was considered, but for some reason or other fortunately not adopted. The case was that of a young unmarried girl, 27 years of age, where I performed a total extirpation for multiple myoma weighing about 16 pounds. Microscopical examination of sections taken from the various portions of the tumor (made by Dr. Humphreys, chief of the German Hospital laboratory) showed it to be a fibromyoma undergoing sarcomatous changes. This young woman could be discharged cured less than three weeks after the operation, and it is somewhat painful to reflect on what might have been her fate had she been subjected to *x*-ray treatment. The risk is too serious, for surely no gynecologist will claim an ability to recognize the malignant degeneration of a myoma in the uterus.

As one cannot draw conclusions from one case (which did not even receive *x*-ray treatment) I looked through the literature and herewith present the following cases which substantiate my claim.

In the treatment of uterine myoma the most important consideration of all is probably that of sarcomatous degeneration. In view of the danger of delay in the presence of malignancy the enthusi-

astic claims in favor of *x*-ray treatment of these cases call for very close investigation of the actual facts. The question has been raised among leading gynecologists whether the operative treatment of myoma has not been rendered superfluous by *x*-ray treatment. After making careful inquiry as to the remote results in radiated patients it will be realized that much harm may be done to the patient through irreparable loss of time and also to the surgeon who finds himself confronted in certain cases with a condition that has become inoperable. It is very instructive to learn of Klein's[1] experience with malignant degeneration of uterine myoma established by microscopical examination, for his findings show that at a conservative estimate the figure of 7.7 per cent. represents the minimum of malignancy. (Among 491 operative cases of myoma 38, or 7.7 per cent., showed malignant degeneration or a combination with cancer or sarcoma.) While opinions vary as to the liability of myoma to sarcomatous change, discretion is indicated in the avoidance of the extreme attitude that sarcoma never develops in a radiated uterus.

The difficulty of the early diagnosis of malignant tumors, especially sarcoma, is generally admitted, but there seems to be some danger of underestimating it in this particular connection. In view of the notorious fallacy of statistics there is a deplorable tendency to minimize the incidence of malignant degeneration in untreated tumors. Nor have we the right at the present state of radiological knowledge to take it for granted that the *x*-rays may not set up proliferative changes of a degenerative character in those cell areas of a radiated myoma which are not destroyed by the treatment. Although young women in the child-bearing age are not usually considered fit candidates for *x*-ray treatment, it is well to point out in this connection the possible danger to later offspring through changes of the germ-plasm brought about by exposure of the maternal tissue to *x*-rays. Stunted and malformed young have been noted in the litters of animals which had served for *x*-ray experimentation. As pointed out by Fiessler,[2] gynecological *x*-ray treatment affects all the germinal cells which may still become fertilized and develop in the lifetime of the individual. The question naturally arises if a radiated germ cell will recover so as to be in the same state as before the radiation or if the cell is irreparably damaged and able to produce only a low-grade fetus. Singer[3] believes that *x*-ray treatment, aside from many other dangers, may induce miscarriage in subsequent pregnancies. Fraenkel[4] cautions against the radiation of functionating ovaries, as we do not know whether or not the ova and germinal tissue may be permanently damaged. In this connection it is of interest to note that in the opinion of v. Herff[5] the effect of *x*-ray radiation upon the retrogression of myomas is exclusively indirect and due to damage to the ovaries. Destruction of ovarian tissue through the *x*-rays is unjustifiable in the treatment of uterine myoma in young women—aside from the possible effects upon the offspring—on account of the detrimental influence upon the general metabolism through the loss of an important internal secretion. In addition, the *x*-ray treatment of myoma patients involves the danger of very profuse hemorrhage which may actually threaten life. In a case reported by Weisswange[6] timely operation was prevented by the long-continued *x*-ray radiations, and the patient became so weak through profuse hemorrhage that operation came too late. Sometimes the *x*-ray exerts an action opposite to the desired effect of reducing the myoma. An illustrative case in which the myoma greatly increased in size under the influence of *x*-ray radiations was reported by Rübsamen and Kehrer.[7] In the experience of Füth,[8] with eleven cases of myoma, two patients with large tumors had to be operated upon finally after *x*-ray treatment had failed. In one of these cases the tumor (size of child's head), after twenty separate radiations, applied in the course of five months, not only had failed to decrease in size, but was actually a little larger than before, while the very profuse hemorrhage still persisted. The other patient's tumor likewise increased in size under *x*-ray treatment, but here general condition fortunately improved so as to permit the surgical interference which should have been resorted to in the first place.

Doederlein,[9] at a recent meeting of the Munich Gynecological Society, presented a myomatous uterus which had not ceased to bleed in spite of *x*-ray radiation and insertion of mesothorium. An operation was performed and the microscopical examination of the specimen showed a large cellular sarcoma. The inquiry was raised in the assembly as to the medico-legal aspect of the matter, and Doederlein stated that in his opinion a physician is justified in declining radiotherapy altogether in the treatment of myoma.

A very instructive case was reported by Lacaille[10] concerning a patient who refused operation, although the tumor had recently grown so rapidly and her general condition had deteriorated so markedly as to suggest sarcoma. Under radiotherapy her general condition improved, and the tumor diminished in size, rendering operative interference possible: The myoma was found to have undergone sarcomatous degeneration. An equally serious revelation was furnished by the late operation in Strassman's[11] case, illustrating the great responsibility incurred with long-continued radiation treatment. The patient was a woman, 53 years of age, with a large myoma which had previously been radiated and then had given rise to pressure symptoms. Laparotomy was performed and showed the presence of a large parovarian cystoma, a myomatous uterus, and malignant degeneration of both ovaries.

Halban's case adds its weight to the unreliability of *x*-ray treatment when the condition is not positively known to be an uncomplicated myoma. He demonstrated before the Vienna Obsteric and Gynecological Society, in January, 1914, a carcinoma of the lowest coil of the small intestine which was adherent to the myomatous uterus. The patient, a woman 35 years of age, who menstruated regularly, was to receive *x*-ray treatment, but fortunately an operation was performed instead, and the true condition was discovered.

The difficulty of selecting suitable cases for radiotherapy is shown very strikingly in Kaufmann's[12] case of interstitial pregnancy and uterine hemorrhage in a woman of 30 years with a tumor (the size of a plum) of the fundus, apparently a myoma, but shown on operation to be a fetal sac containing a fetus 1 cm. in length. As the diagnosis was uterine myoma, the choice between radiation and operation had been left to the patient, who fortunately decided in favor of the latter. Other than operative treatment might have resulted in her death through rupture of the interstitial pregnancy, whereas instead she made an uninterrupted recovery.

The *x*-ray treatment of myoma is not universally regarded as a progress, and this fact, resting as it does on the experience of authorities, must be emphasized again and again in view of the wave of injudicious enthusiasm which threatens to sweep away in untimely death a number of cases originally amenable to surgical measures. The exaggerated and undiscriminating employment of radiation was, for example, criticized by Kaiser,[13] who confirmed his views by the demonstration of two fresh specimens, one a submucous myoma which could not be diagnosed as such, the other a myomatous uterus with malignant degeneration of the endometrium. Upon the basis of a wide experience Bretschneider[14] is not convinced of the superiority of *x*-ray treatment of uterine myoma, especially in view of the fact that his 108 cases include no less than eight cases of malignant degeneration. The danger of radiating an unrecognized malignant tumor, notably a sarcoma, cannot be entirely eliminated in any case, and the possibility of a connection between the formation of a malignant tumor and exposure to *x*-rays can hardly be denied in the following observation of Hedinger.[15] The patient, a woman 55 years of age, was treated with prolonged and intense *x*-ray radiations for myoma of the uterus the size of a fist. Two years later she began to suffer from profuse hemorrhages, requiring operative interference at the end of a few months. Hysterectomy was performed and the corpus uteri was found to contain a partly ulcerated nodule, measuring 2 to 3 cm. Microscopically this was shown to be in part a round and spindle cell sarcoma and in part pure cylinder cell sarcoma. Myomatous tissue was no longer demonstrable. A very interesting and instructive counterpart to this observation was recently reported by Shoemaker,[16] whose patient gave a complete and readily verified history of *x*-ray treatment for a large fibroma of the uterus. The patient, at the time of the report a woman 56 years of age, developed sarcoma in her fibroid tumor about seven years after Roentgen-ray treatment was begun and five years after it was discontinued. The comparatively brief past of *x*-ray treatment of uterine myoma is emphasized by Shoemaker, who points out that it will be many years yet before the final outcome of these treated cases can be known. Carcinoma was demonstrated after two and a half months' *x*-ray treatment in a case reported by Haenisch.[17] In two patients radiation proved useless, and an operation became necessary. Repeatedly profuse hemorrhage followed upon the first radiation requiring surgical interference. Malignant degeneration of uterine myoma was found in 7 per cent. in a material of over five hundred myoma cases by Klein,[18] who emphasizes that the indications and contraindications for the radiation of uterine myoma cannot yet be positively outlined. All *x*-ray treatment is tentative, and must be followed by operation if necessary. The frequently observed *x*-ray peritonitis, with acute swelling, redness, and even deposits on the peritoneum, is probably due to exacerbation of chronic inflammatory processes. Operative treatment of myoma, in his opinion, is still in part justified, in part necessary, in suspected malignant changes of the myoma, or in myoma combined with malignant degeneration of the uterine mucosa, in necrotic and gangrenous myoma as well as in submucous tumors with profuse hemorrhage, and in polypoid myoma; finally in cases with a doubtful diagnosis of the existing tumor, or where there is reason to suspect a combination of myoma with some other more dangerous tumor, such as malignant neoplasm of the ovary. Among 491 myoma patients who were operated upon 38 showed malignant degeneration, or combination with malignant tumors, including 13 sarco-myomata, 16 carcinoma of the corpus uteri, 9 carcinoma of the cervix. In Klein's experience 6 supposed cases of myoma which were unsuccessfully radiated proved to be solid ovarian tumors requiring operation. Among 418 operative cases observed by Mackenrodt[19] a combination with carcinoma was noted in 6 per cent., with sarcoma in 4 per cent., with ovarian tumor in 20.8 per cent., with suppurative oophoritis and pyosalpinx in 4.3 per cent. In addition there was one case of combination with tuberculosis, four with appendicitis, two with pyometra and suppuration. There remained only twenty-one cases which after careful examination entered into consideration for *x*-ray treatment with prospects of a fairly successful outcome.

Radiotherapy, although only recently inaugurated, already has a mortality which is due not only to accidental factors, such as embolism, but principally to inaccurate and faulty diagnosis. In view of the difficulty of recognizing the complications of myoma, if present, *x*-ray treatment is not indicated in all cases.

Opitz[20] speaks of severe disturbances due to loss of internal secretions of the ovary, as well as disturbances of the bowel and peritoneum. He disposes of a consecutive series of 83 myoma operations, mostly total abdominal extirpations, without a death, and thinks that surgical interference should be advocated in many cases, especially as the primary and permanent curative results leave nothing to be desired. The effects of surgical myoma therapy are among the most brilliant achievements of the operating gynecologist. The frequency of sarcomatous degeneration and the occurrence of carcinoma in a myomatous uterus are regarded as contraindications against *x*-ray treatment by Koblanck.[21] Kuntzoch[22] reports three cases, in one of which the *x*-ray treatment led to the patient's death, and in the two others would inevitably have caused death if it had been employed. The first case concerned a mistaken diagnosis in a case of ovarian cancer; in the second case the myoma was found to contain in its interior a cancer the size of an apple; in the third case torsion of the pedicle, necrotic changes and adhesions had occurred, and considerable peritonitis was present without clinical evidence. Among twenty myoma cases which were operated upon on account of rapid growth of the tumor, Walthard[23] observed five which had not been previously recognized as sarcomata. The diagnosis was confirmed through recurrence of the tumor and death of three of these patients. v. Franqué assumes a percentage of 3.6 per cent. of sarcomatous denegeration of uterine myoma, and is inclined to question the alleged clinical harmlessness of myoma in the menopause, also in the artificial menopause through radiation. The difficulty of diagnosis in not so very rare cases of myoma combined with carcinoma of the corpus mucosa is emphasized by Küstner,[24] together with the scantiness of available information concerning the effect of the *x*-rays upon the myoma tissue.

On account of the overwhelming importance and ever-present danger of malignant degeneration, the liability to aggravated bleeding and loss of strength in consequence of *x*-ray treatment in certain myoma cases is often regarded as relatively insignificant. However, such patients may be seriously weakened by the recurrent hemorrhages, sometimes with

actual danger to their lives. A myomatous uterus of this type which had been unsuccessfully treated with *x*-rays and was finally removed for vital indications was demonstrated by Flatau at a meeting of the Nuremberg Medical Society, April 18, 1912, and Falk, at a meeting of the Berlin Medical Society, February 28, 1912, showed three cases of uterine myoma in which the *x*-ray treatment had to2 be stopped and an operation performed on account of increased bleeding after the first radiation. In the experience of Bégouin[25] weekly radiations of about twenty to thirty minutes in two patients of 56 years were followed in the fourth week of the treatment by general unfavorable manifestations, anemia, emaciation, rise of temperature, abdominal pains, a slimy discharge, and edema of the legs. One of these two patients died six days after the fourth radiation, the other's life was saved through arrest of radiation and rest. Five of six cases treated with *x*-rays reported by Zoellner[26] became worse after a brief primary improvement, and the hemorrhages were seriously aggravated. The initial congestion of the genital organs at the beginning of the radiations may cause a reversal of the effect of the *x*-rays so that the bleeding is increased instead of diminished. Moreover, in spite of the undeniable influence of the *x*-rays, the source of the hemorrhage is not apparently always reached. More general causes, such as hemophilia or leucemia are sometimes responsible for uterine hemorrhage. No matter what the ultimate reason in a given case may be profuse hemorrhage has been repeatedly observed in connection with the first radiation, requiring surgical interference.

Injuries directly due to *x*-ray treatment are practically unavoidable, even with the present improved technic. From the surgeon's viewpoint the newly formed adhesions are a very important obstacle in the performance of subsequently needed operations. Abel[4] noted extensive adhesions in operating upon patients who had received large doses of *x*-rays. Multiple peritoneal adhesions were found by v. Haberer[4] at the time of extirpation of a carcinoma of the abdominal skin which had originated after three weeks of *x*-ray treatment. Deep ulcers of the abdominal skin are by no means rare in obese radiated patients on account of poor nutritional conditions, and these ulcers heal very slowly. (Desplats.[27]) Well marked reaction on the part of the skin, and even dermatitis is frequently mentioned. (Haenisch.[17]) A sclerotic change of the pelvic connective tissue is described by Henkel as an undesirable associated phenomenon after *x*-ray radiation.

The absence of reaction is not a guarantee against subsequent damage, which is occasionally delayed for a considerable time, up to eighteen months, according to Iselin,[4] who calls attention to the cumulation of *x*-ray effects even with conscientious dosage and filtration. The cause is presumably a primary damage of the cutaneous blood vessels. The onset of deep, very obstinate, and extremely painful ulcers of the abdominal skin six to ten months after beginning of *x*-ray treatment is mentioned as a late reaction by Klymens.[28]

The occurrence of intestinal lesions in particular seems to have been definitely established as a sequel of radiation. As pointed out by Bumm,[29] who observed a case of progressive emaciation with uncontrollable diarrhea due to *x*-ray treatment, there is no reason why, if the uterus and hard tumors like myomas are directly influenced, the ganglion cells of the abdomen in the vicinity of the radiated zone should not be equally influenced and exposed to serious damage. Irritative conditions on the part of the bowel and bladder are mentioned among the associated phenomena of radiation by Eymer and Menge.[30] Haendly[31] observed loss of weight amounting in one case to eleven pounds, and uncontrollable diarrhea in two others. Mackenrodt[19] described a case of progressive emaciation in spite of all remedies not arrested after vaginal extirpation of the uterus, suggesting a possible obliteration of the intestinal glands. The necessity of care in radiations of the abdomen for the avoidance of injury to the digestive tract is emphasized by Wetterer.[32] The intestine in some cases reacts very strongly to the radiation and symptoms such as nausea, vomiting, diarrhea, mucoid discharges and pain often persist for several days, suggesting intestinal lesions through the *x*-ray treatment. A number of French investigators[33] produced intestinal lesions through radiations in experiments upon dogs whose gastrointestinal mucosa closely resembles the human digestive tract. Rapid damage resulted, especially well marked in the villi of the small intestine, the glands of Lieberkühn and the lymphoid elements of the mucosa. Large doses of *x*-rays were found capable of causing the entire disappearance of the glands of Lieberkühn within a few days, the glandular elements undergoing destruction through the necrotic changes and absorption of the epithelial cells. Moderate and even weak doses caused a diminution in the size of these glands through destruction of part of the cells and reduction in volume of the remaining cells. Perforation is apt to occur in the most seriously damaged portions of the intestine.

As a sequel of long-continued *x*-ray treatment, atrophy of the gastrointestinal glands is therefore not an uncommon occurrence and these atrophic changes may moreover extend to the blood-forming organs so that caution is recommended by Albers-Schönberg.[34] Radiation, in the opinion of Matthei,[35] gives rise to considerable leucocytosis, causing an alteration in the blood. The grave damage done to the heart and the circulatory apparatus must not be underestimated. At the end of years remote changes may still appear suggesting very insidious damage of the blood vessels.

The fact that *x*-ray treatment is not a panacea, as some are inclined to believe, was emphasized by Runge[4] at the Sixth International Congress for Obstetrics and Gynecology. By parallel experimentation, moreover, Wetterer[32] was enabled to show that the rapid sterilization of women suffering from myoma and metrorrhagia is not desirable because the symptoms of lost function are much more marked than in those cases in which the artificial climacteric is induced more gradually.

Summarizing the contraindications of *x*-ray treatment of uterine myoma, de Bovis[36] enumerates the development of carcinoma or sarcoma, gangrene, submucous seat of the tumor, grave anemia after profuse hemorrhage, complications with inflammatory conditions of the adnexa. Aside from the actual dangers of this mode of treatment it also involves the disadvantages of long duration and considerable expense. The limitations of *x*-ray treatment are emphasized by Mackenrodt[19] as follows. The radiation acts through the obliteration of the ovaries; where this is not desired such treatment can never be indicated. In many cases

radiation does not arrest the development of the myoma but merely improves some symptoms. Not only are errors unavoidable in the selection of the cases, but radiation is probably always associated with more or less undesirable side effects. By Matthei,[35] *x*-ray treatment is advocated exclusively for climacteric and preclimacteric hemorrhages of known benign character as shown by exploratory curettage. In young women, recurrences of radiated and apparently cured myomas are not uncommon, an additional reason why *x*-ray treatment is contraindicated in these cases. It must also be kept in mind that the persistence of a myoma in the uterus is undesirable even in the absence of hemorrhage.

In a recent contribution to the *x*-ray treatment of myoma by Birdsall[37] the following paragraph appears: "The question of subsequent malignant degeneration of the fibroid has been raised. The answer to date is that no such sequel has as yet been reported. The percentage of cases undergoing malignant degeneration with no treatment at all is but from 1 to 2 per cent., thus giving another good reason for the selection of the Roentgen treatment."

The facts arraigned above are so eloquent as to render superfluous any further comments on the contraindications of *x*-ray treatment for uterine myoma. Judiciously restrained, its indications are very limited, including besides the myoma patients who have reached the climacteric, those suffering in addition from diabetes, obesity, advanced arteriosclerosis or hemephilia, in whom surgical interference involves danger to life.

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11 EAST SIXTY-EIGHTH STREET.

NITROUS OXIDE ANALGESIA IN OBSTETRICS.

BY N. SPROAT HEANEY, M.D.,

CHICAGO.

THE use of nitrous oxide in obstetrics is not new. Klikowitz of Petrograd in 1880 gave a mixture of 80 parts of nitrous oxide and 20 parts of oxygen in a series of twenty-five labor cases with gratifying results. He began the administration early and continued its use intermittently throughout the entire labor. He gave only sufficient to allay pain, but not enough to obliterate consciousness. He reported that the contractions were frequently increased in intensity, but never diminished, and that the fetal and maternal pulse were not much altered.

In 1881 von Winckel used nitrous oxide and oxygen analgesia in fifty cases, and in his textbook of midwifery (translated by Edgar in 1890) makes the following statement: "Narcosis by means of laughing gas is not dangerous, and may be discontinued at the will of the parturient woman; it mitigates the pain in proportion to the intelligence of the person, as stupid persons often withstand its influence for a long time before its favorable effect is felt. In most persons its inhalation produces a state of intoxication for a short time with a tendency to laughter. Women to whom it is not administered until the stage of expulsion can seldom be induced to inhale in quietly, while when it is administered in the first stage of labor its beneficial action is at once felt, and extends to the second stage. It is especially useful in primiparæ."

In speaking of the clinical results Winckel says: "The pulse of the parturient woman is usually slowed considerably by laughing gas, but finally reaches its original rate again. The child's pulse is also slower in 8 per cent, but usually it seems to be more frequent. The woman's temperature rises often several tenths of a degree. At first the pupils are somewhat contracted. The pains are not the same in strength or duration, but are often more frequent and stronger, and existing vomiting frequently ceases. Klikowitz and I have both observed aphasia, and once in fifty cases a hysteroepileptic attack was caused, and in one a real epileptic seizure followed its use, but otherwise no bad effects were observed, either as regards the mother or the child. The oxygen of the blood remains in normal combination, while the nitrous oxid probably circulates in much looser chemical combination in the blood, absorbed by the plasma. (Doederlein.) These researches should be supplemented by the observations of others, and were by no means thought conclusive by us, as Doederlein believes. It seems to me most practical to get the mixture from the apothecary, as was formerly the

case, and that he should be provided with rubber bags, which he may fill and furnish the physician when needed. In this manner the gas might be introduced into private practice and would not be monopolized by the clinics. A number of interesting problems attach to its use, but we refrain from discussing them. The apparatus, which consists of a rubber bag like a pillow, is inconvenient, it must be confessed, but this is entirely subordinate; in abnormally painful labor it is at any rate an extremely important remedy."

Since nitrous oxide is so extensively used in surgery, it is but natural to believe that many obstetricians since Klikowitz and von Winckel must have made use of it in the conduct of labor cases.

The routine use of nitrous oxide and oxygen in normal labor is, however, of rather recent origin, and dates from the time of perfected gas machines and pure nitrous oxide, which permitted accurate dosage, safe and cheap administration. While in 1913 and 1914 in Chicago nitrous oxide and oxygen analgesia was being employed as a regular means of relieving the pains of labor only in the Presbyterian Hospital, it is now used extensively in every Chicago hospital, with possibly one exception, and in several is administered as a routine to every case which can pay for the gas used.

With a proper machine nitrous oxide may be so given that a patient is oblivious to pain yet maintains consciousness and coordination. The quantity of gas necessary to produce this state varies with the individual; some require much, others quickly pass from the equilibrium of analgesia into anesthesia. In order to produce a more stable equilibrium, oxygen is mixed with the gas so that the concentration of the nitrous oxide may be varied to suit the individual as well as the changing character of her pains. The more susceptible the individual, the more apt she is to become cyanotic and unconscious, the greater the percentage of oxygen necessary in the mixture.

A few pains will show what mixture is best for a given case. When the mixture is right, two to three quick inhalations at the beginning of a contraction are sufficient to prevent the contraction being felt, and the patient's normal color and consciousness are preserved; she can bear down when directed and can follow every command of the attending physician. If the mixture is too rich, the patient becomes cyanotic or anesthetized and has confusing dreams. No physical harm results from slight excursions into anesthesia except that if the expulsive stage is on, the patient cannot give the very necessary help which is so characteristic of the proper stage of analgesia. When giving gas for the first time, the tendency is to give more than necessary; with familiarity, much less gas is used.

The administration may be begun at any time. Usually this is left to the inclination of the patient. As soon as she feels inconvenienced by the strength of her pains she makes the fact known, and the analgesia is started. It is rarely asked for before the first stage is well advanced; oftentimes not until dilatation is complete. The A. C. Clark Company has placed a trigger valve next to the inhaler, and since their gas machine is equipped with automatic regulators controlling the gas pressure, the patient may administer her own analgesia during the early stages of labor, the indicators being set for a constant mixture of gas and oxygen. In the event that she should pass beyond the analgesic zone the hand relaxes and the valve closes. With the approach of her next pain she applies the inhaler, presses down the valve, inhales, and the gas flow is started again. As labor advances it is necessary that the physician be in attendance.

Normally the uterus begins to contract several seconds before the patient perceives pain. If, when the attendant palpates the approaching uterine contraction, he places the inhaler in position and directs the patient to take the necessary number of inhalations determined as necessary in her case, she is well within the analgesic zone by the time the contraction would ordinarily be producing pain. If the labor is in the second stage, the patient is then directed to hold her breath and to bear down, and to pull upon the straps provided for the purpose. After the maximum effort is expended, she is directed to take another deep breath or two and to again bear down. The usual second-degree pain is such that it is divided into three or four expulsive efforts. The first inhalations are usually pure nitrous oxide, while each subsequent inhalation is of a more diluted mixture, the degree of dilution varying in each case and at different periods during the same labor. When the uterus is felt in beginning relaxation, the mask is removed, and the hand is placed upon the abdomen to anticipate the next pain. If the administration of the gas is delayed each time until the patient herself feels the pain, the result will be decreased pain instead of painlessness.

High-strung individuals with keen perceptive qualities sometimes suffer pain before the attendant can detect that the uterus is contracting. In such cases occasionally we have to administer a light continuous analgesia, if the patient is in the second stage, or administer a dose of chloral, if in the first stage, to decrease the keenness of perception.

Nitrous oxide analgesia does not lessen the frequency or the intensity of the uterine contractions, so that if for any reason it is deemed that the birth is advancing too rapidly, ether may be mixed with the gas or substituted for it. When the pains are again satisfactory, the ether is stopped and nitrous oxide resumed. As the head passes over the perineum occasionally the gas must be administered to the anesthetic degree, though usually analgesia is entirely sufficient.

The heart tones of the mother and child are unaltered by nitrous oxide analgesia, so that the criteria to the well being of the child are uninfluenced by the fact that the mother is receiving nitrous oxide.

The child cries immediately upon birth, since its dose of gas is as evanescent in its action as is the mother's. The mother is in full control of her faculties within a minute or two after delivery, and suffers no inconvenience from her analgesia.

There is no relaxation of the uterus, and, providing ether has not been used, the third stage terminates as promptly and as satisfactorily as when no anesthetic is given. The perineum may be repaired under analgesia or in a deeper stage of anesthesia, as the occasion demands.

The course of labor is followed by rectal examination. In this way the physician can administer the analgesia himself until it is necessary for him to prepare for delivery, after which time it may be given under his guidance by someone else, not necessarily skilled in its administration. Should vaginal examinations be necessary, these are made while the patient is analgesic. The whole hand may, when necessary, be introduced into the vagina,

and at that time, if advisable, the cervix may be manually dilated, or a malposition may be converted, not only without pain, but without stopping the progress of labor as is usually the case when these manipulations are performed under the influence of ether.

In hospital use the gases are secured in large cylinders, which markedly reduces the cost. With gas-saving appliances, careful administration, and large cylinders we can give the analgesia at a cost of from fifty cents to one dollar an hour. With a portable apparatus and small cylinders the cost is increased, but not beyond the desire of the patient to pay for its use rather than to do without it.

The percentage of entirely successful administrations is very high. When the pains are natural in character, *i.e.*, where the normal interval exists between the beginning of a uterine contraction and the perception of the pain by the patient, we can with a great deal of assurance promise a painless labor. In abnormal pains, such as are more liable to be found in abnormal presentations the first part of the pain may be felt unless chloral is given in the first stage or a continuous analgesia in the second stage. Even in such cases the pains are reduced by the ordinary analgesia alone to a minimum that is satisfactory to the patient; though such a one may complain of her suffering at the time she afterward expresses herself as satisfied with the experience.

In order to determine whether we were securing for our patients anything in addition to painlessness Dr. C. H. Davis of our staff, in September last, studied a series of 104 consecutive cases delivered in our wards within a certain period and learned the following facts:

A group of 44 primiparæ who had nitrous oxide analgesia had an average labor of 13.5 hours, while 18 primiparæ, who had nothing, or a little ether during the last few pains, had an average labor of 17.9 hours, *i.e.*, 4½ hours longer, even though the average of their babies was 5 ounces less. The 15 multiparæ who had analgesia had an average labor of 7.3 hours, while the 27 multiparæ who had nothing or a little ether had an average labor of 10 hours, *i.e.* 2.7 hours longer, yet their babies averaged 10 ounces less than those in the first group. Those who took gas were able to leave the hospital on an average of 1½ days earlier than those who did not; not being so fatigued by labor their convalescence was more rapid.

The babies of the nitrous oxide primiparæ lost 4 per cent less of their body weight than did the babies of the unaided primiparæ. This difference is so slight as to prove nothing except that nitrous oxide certainly does not interfere with milk production. There were no cases of hemorrhage among the nitrous oxide patients, while there was one case in the group receiving no nitrous oxide. There were many other interesting particulars learned to the advantage of nitrous oxide in this study.

Though this series is small yet the same parallelism is found in a larger group reported by Davis in his recent booklet, "Painless Childbirth, Eutocia and Nitrous Oxide—Oxygen Analgesia." Though we have carefully observed, we have not been able to ascertain a single danger to mother or child in nitrous-oxide analgesia. We have during the last few months received many communications from all parts of the country and have yet to receive word from a physician who has tried analgesia and does not get pleasing results.

We believe that nitrous oxide analgesia is an efficient means of relieving the pain of childbirth; that its use makes more efficient the expulsive powers during the second stage and thereby shortens the labor; that by decreasing fatigue it hastens the convalescence in the puerperium; that it is devoid of all demonstrable danger to both mother and child, and that the gas can be given efficiently in the home and is within the reach of even those of limited means.

920 Monroe Building.

CONTROLLING THE SPREAD OF SPUTUM.*

TESTS AND SUGGESTIONS.

By WALLACE A. MANHEIMER, Ph.D.,

NEW YORK.

The recent campaign in New York City against spitting in public places undoubtedly had the effect of reducing, to some extent, this pernicious practice. The cooperation of the police, who arrested several hundred people, was likewise salutary in its effect. It must be admitted, however, that campaigns of this kind have only temporary results, and that when vigilance relaxes, as relax it must, the former conditions rapidly return.

Far better results could be obtained by controlling the spitting habit, than by making the futile attempt to suppress it. It appears to the writer, furthermore, that the legal definition of spitting should be somewhat amplified. The delicatessen store clerk who moistens his finger with saliva to pick up the piece of paper in which to wrap the butter, is spitting on the paper and therefore on the butter; the street car conductor who wets his fingers and then gives you a transfer is spitting on the transfer and therefore on your hand, etc. A general campaign against spitting, thus broadly conceived, would undoubtedly result in a reduction of disease from this source.

In passing it might be well to state that the discharges from the mouth are responsible for almost as many diseases as are contracted from all other sources put together. Tubercle bacilli transmitted in wet saliva are far more virulent than when dried and blown in the air. Wet or fresh sputum, when we consider the frequency with which it is spread about, represents the most dangerous material discharged by human beings. The pneumococcus, the diphtheria bacillus, the germs of measles, scarlet fever, smallpox, whooping cough, epidemic meningitis, mumps, influenza, common colds, and others are more frequently transmitted through fresh sputum than in any other way. A recent case of syphilis contracted through counting paper money with fingers wetted with saliva, emphasizes the caution which should be observed from this source of infection.

Some very simple steps could be taken which would have a far more important educational and controlling value than the attempted suppression of such pernicious habits through the police power.

Non-spore-bearing Bacteria on Envelopes.—The common habit of moistening the gum of stamps and envelopes with saliva, has suggested the possibility of the transmission of disease through letters infected in that way. The recent work of Zinsser and Hopkins on the viability of *Spirochæta pallida* showed that the organism of syphilis can survive

*The bacteriological tests were conducted at the Research Laboratory of the New York Department of Health, through the courtesy of Dr. Park.

under laboratory conditions for a period in excess of twenty-four hours. It is commonly accepted, though by no means proved, that dried tubercle bacilli in sputum retain sufficient virulence to produce tuberculosis. The evident contamination of letters while sealing them, and while sticking on the stamp, and the frequent spreading of the saliva by the fingers and hand to other parts of the envelope suggest the importance of determining what the danger from this source really is.

Letters are handled by the carriers and postal clerks almost immediately after mailing, and are delivered to the addresses sometimes within a few hours and often within twelve to eighteen hours after posting.

Immediate contact of the hands with saliva and the subsequent introduction of the fingers into the mouth, represents a much more dangerous mode of infection than, for example, the inhalation of dried sputum. An attempt was made in the following experiment to estimate the danger from infection through bacteria dried in sputum.

Experiments.—Five c.c. of a culture of colon bacilli were mixed with saliva and water, making a bulk of 25 c.c. Quantities of 0.2 c.c. were spread over equal areas on each of eight envelopes, and allowed to dry. In order to determine the number of bacteria added at the beginning of the experiment, two envelopes were tested immediately after drying. Two were placed in a glass closet, and thus subjected to diffuse light at laboratory temperature and four were sent through the mail. The envelopes were tested sixteen hours later.

Envelope No.	Remarks	Colon Bacilli Count	Averages
A. 1	Tested immediately after drying	300,000	
2		300,000	300,000
B. 3	Left over night in glass closet	10,240	
4		9,600	9,900
C. 5	Sent through mail	11,500	
6		12,800	
7		25,000	
8		12,000	15,300

A. It is evident from the data that immediate contact with the letters would result in contact with active living germs. The letter-carriers and postal-clerks are subjected to just such contact.

B. Only 3 per cent. of the germs that were originally added to the letter kept in the laboratory remained alive. The warm temperature in the laboratory and the diffuse light probably assisted in the destruction. Enough bacteria were alive (over 9,000) after sixteen hours, however, to constitute a danger, had they been pathogenic.

C. Of the bacteria sent through the mail, 5 per cent. remained alive. The night the letters were mailed was one of the coldest of the winter (February 18, 1916), and this condition being favorable to the viability of the organism probably explains the somewhat larger number of bacteria remaining alive here as compared with those left in the laboratory.

Diphtheria Tests.—In addition to the above experiments, an attempt was made to isolate diphtheria bacilli from envelopes upon which saliva of diphtheria patients was allowed to dry. Five convalescents, still having positive throat cultures, were selected to lick two envelopes apiece. One envelope from each case was tested immediately, the other being enclosed in an additional envelope, so as to preclude infection, and sent through the mail.

So far no diphtheria bacilli have been isolated from any of the envelopes. There are a number of difficulties met with in an experiment of this kind which make positive results difficult to obtain. A sufficient number of trials on a number of patients would undoubtedly produce some positive results. The well known resistence of diphtheria bacilli to drying, cold, etc., would indicate a possible danger from this source, which this experiment surely does not rule out.

The conclusions to be drawn from these experiments are very simple:

1. Post-office employees who handle letters should be cautioned to wash their hands before eating, and to avoid putting the fingers into the mouth. They should be particularly careful not to moisten their fingers to facilitate the handling of letters.

2. The Post-office Department should provide all stations and sub-stations with wet sponges so that the gum on stamps and envelopes could be moistened without the use of saliva. Probably a weak antiseptic solution could be used in connection with this. On the container holding the sponge some statement should be made such as this: "Wet your stamps and envelopes here; don't send your sputum through the mail." This would encourage the use of water instead of saliva even in the home. In fact, an ordinance concerning this would have educational value. Stationers could easily manufacture and sell a small and inexpensive device for the desk, containing a wet sponge for this purpose.

Additional Suggestions.—1. Places should be selected in busy thoroughfares where people may spit.

While efforts might be continued to abate the spitting nuisance, the writer believes that such efforts are futile. Even during the height of the recent campaign, the busy streets of New York were dotted with sputum, suggesting, therefore, the importance of other methods of control.

If definite spaces around sewer inlets were designated for spitting and signs placed there stating, "Spit here and nowhere else," many people who now spit on the sidewalks and crosswalks would refrain from so doing. Lime could be placed over such areas, and at definite times washed together with the sputum, into the sewers. The street-cleaner would then be doing a greater public health service than in the removal of manure, or in the cleaning up of refuse, although neither of these should be neglected.

In the subway the road-bed in front of station platforms should be thickly sprinkled with heavy lime. While spitting onto the road-bed is comparatively harmless, the lime would direct attention to the proper place to spit.

Large receptacles for sputum containing lime, to be placed where occasion demands, are far more important than receptacles for refuse. Of course, we need both. It would probably be less costly and of far more educational value to place such receptacles about, than to arrest hundreds of citizens yearly during such transitory campaigns.

2. Street car conductors should be provided with rubber covers for the index finger so that saliva will not be used for separating transfers.

3. If no ordinance exists at the present time controlling the habit of moistening the finger with saliva when picking up wrapping paper for food and other kinds of merchandise, such an ordinance

should be enacted and given wide publicity. This habit is quite prevalent among store keepers, and a little publicity and other pressure would have a very salutary effect.

No attempt has been made here to cover all the ways by means of which sputum is transmitted from person to person. Many other methods of transfer will undoubtedly occur to the reader, all worthy of control. In fact very valuable work has already been done. The posters against unguarded coughing and sneezing sent out by the Association to Improve Condition of the Poor, and the recent article in the Weekly Bulletin of the Department of Health against common cigar-cutters are very commendable movements in this direction. The campaign, however, should be broadened until even blowing into a bag and blowing into cigar wrappers to open them will come under the ban. Who knows, we may eventually adopt the European form of kissing both cheeks, instead of continuing our American way of swapping sputum.

The marked reduction in intestinal diseases which resulted from proper disposal of sewage and from safeguarding the water supply should encourage a campaign for controlling the spread of sputum. If one fiftieth of the amount of money spent for sewage disposal were spent on sputum disposal, marked reduction in diseases from this source could be expected.

Sputum is universally recognized as a most dangerous human discharge and serious efforts to control its spread should be one of the next steps in Public Health.

THE EPIFASCIAL METHOD OF INJECTING MERCURY AND SALVARSAN DERIVATIVES.

By ABR. L. WOLBARST, M.D.,

NEW YORK.

In July, 1914, while in Berlin, I had the opportunity of observing the epifascial method of injection as practised by Prof. Wilhelm Wechselmann at the Rudolf Virchow Krankenhaus. At that time Wechselmann had already administered some fifteen hundred epifascial injections of neosalvarsan and was just beginning his experimental work with salvarsannatrium (sodium salvarsan), the last of Ehrlich's salvarsan products.

This method of administration was of special interest to me in view of the possibility which it afforded of diminishing the painfulness while retaining the greater effectiveness of the intramuscular injection, as compared with the intravenous. I am still of the opinion previously expressed,[1] and held also by Ehrlich and Wechselmann, that the intramuscular injection of salvarsan or its successors, is by far the more effective of the two methods of administration. Unfortunately, we are not yet possessed of the technique by which pain may be eliminated entirely, and until this is discovered, we must content ourselves with the painless, but less effective intravenous method.

It was my observation, however, that many of Wechselmann's patients suffered little if any pain after a large dose of neosalvarsan administered by his new method; some of them evidently suffered considerable pain, nothwithstanding Wechselmann's doubts that such was the case. Some patients left the injection table smiling and apparently unconcerned, while others writhed and moaned with pain. Wechselmann himself at that time felt that he had at last devised a painless injection technique. Perhaps 50 per cent. of his patients differed with him, more or less, on that score.

In the two years that have elapsed, I have had the opportunity of using the epifascial method of injection in several hundred cases, in the administration both of neosalvarsan and of mercury. Owing to the scarcity and the high price of neosalvarsan, I have given but fifteen epifascial injections experimentally, as against a little over two hundred injections of the various salts of mercury. I am therefore hardly able to express any definite opinion as to the merits of the method as regards neosalvarsan, though Wechselmann in several interesting papers[2, 3] speaks of it in enthusiastic terms.

As regards the epifascial injection of mercury, it is my belief that this method has a distinct field of usefulness and is a decided improvement over the purely intramuscular method of administration. First, as regards absorption: It would appear that the solution or suspension (depending on which form of mercury is being used) is absorbed with the same readiness in this method, as in the intramuscular injection. If there has been any failure of absorption resulting in encapsulation and infiltration, I have not observed a single evidence of that occurrence. In not a single instance has infiltration or necrosis developed, nor has there been any evidence of localized inflammation at any time.

From the standpoint of pain, the matter cannot be dismissed so readily, for the personal equation enters so largely into this subject. Some injections have been absolutely painless—about 20 per cent.; many have been painful for a day or a part of a day —about 60 per cent.; the remainder, about 20 per cent, have suffered more or less severe pain for periods varying from one day to one or two weeks, the pain increasing for about two days and gradually diminishing.

The medium employed for the injection seems to have no bearing on the element of pain in these cases. In some cases mercury salicylate administered epifascially gave no pain whatever; in other cases, pain was severe and lasted several days. The soluble preparations reacted to pain in the same uncertain way; one can never tell whether a particular patient is going to suffer pain or have no pain at all. Nor is there any way of telling where the pain is going to be felt. Most patients feel the pain about two inches below the point of injection. This gives the impression that the injected fluid does not remain at the site of injection, but as the patient assumes the erect position in walking about, the fluid seeks its lowest level and thereby causes the pain at that point and not at the immediate site of the injection. One of my patients, a rather fleshy woman, never felt the pain in the buttock at all; four or five hours after an epifascial injection, when the effect of the local anesthetic had passed off, she began to feel a more or less severe pain running down the thigh along the course of the sciatic nerve, the pain sometimes extending down to the toes and making it uncomfortable, and even impossible, to wear a tight shoe. Whatever spot was chosen for the injection in this patient, the pain was sure to be felt along the course of the nerve, but never at the immediate site of injection. In quite a large proportion of cases, the pain was felt in the thigh at some point distant from the site of injection, and in most of these the pain apparently ran along the course of the sciatic nerve.

The technique of the epifascial injection is not difficult once it is mastered. It is peculiarly difficult to describe. It is based on the theory that medication fluid injected in proximity to the layers of the fascia lata will be less painful and cause less inflammation with equal absorption, than when deposited in and between the muscle fibers. The success of the technique depends on the surgeon's ability to determine whether the point of his needle is in proximity with the deep fascia or simply in the muscle proper of the buttock. Experience with the method gives an amount of information which cannot be imparted in words. The needle is plunged into the gluteal muscle as in the intramuscular method; it is then manipulated until the hand feels that the needle point is moving freely from side to side. and is not being impeded by muscle fiber. When that sense of free motion of the needle point is felt, the surgeon may be certain that the point is in proximity with the deep fascia. Any doubts on this score may be cleared up easily by the simple expedient of injecting ten to fifteen drops of sterile water, saline solution or, better still, a local anesthetic solution, and withdrawing the syringe but not the needle. If the eye of the needle is epifascial, there will be a steady flow of the injected fluid, drop by drop, from the needle; if, however, the needle point is in the muscle tissue, there will be no flow of fluid. In that event the needle is manipulated, *i.e.* pushed in deeper or pulled out further, until such a point is reached where the injected fluid issues steadily from the needle. We then proceed with the injection.

Recalling the anatomy of the buttock with reference to the fascia lata, we find that the fascia passes down from its attachment to the iliac crest over the gluteus medias to the upper border of the gluteus maximus, where it splits into two layers, one passing above and the other passing below the fibers of the latter muscle. At its lower border the two layers unite to form one layer again. It is, therefore, evident that any point on the side of the buttock, the patient lying flat on the table, face downwards, will bring the injected fluid in contact with the fascia. The needle is plunged in horizontally, that is, at right angles to the side of the buttock. I find a needle about 1¼ to 1½ inches long is most suitable for this purpose.

As previously stated, a local anesthetic fluid may be used to determine whether the point of the needle is epifascial or intramuscular. This serves the double purpose of giving us the information that the needle is properly placed, and also of making the injection proper absolutely painless. I have injected neosalvarsan and mercury epifascially without the slightest sensation of discomfort or pain, by the employment in this manner of a local anesthetic, such as 2 per cent. alypin or novocain. Not more than ten to fifteen drops are needed to anesthetize the site of the injection. This freedom from pain is, of course, but temporary, like all local anesthetic effects, but the step has the double advantages already indicated above.

The epifascial technique requires the employment of a needle and two syringes for its best results, though one is sufficient for practical purposes. The needle having been plunged into the buttock, the first syringe, holding ten to fifttten minims of the anesthetic solution, is attached and the fluid deposited epifascially; this syringe is now detached from the needle, which is meanwhile held steadily in place so as to prevent its moving, and the second syringe containing the medication fluid is now attached and the process completed.

I think this method is one that offers a distinct improvement on the intramuscular method and is worthy of further study and attention.

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113 East Nineteenth Street

A FURTHER NOTE ON THE THERAPEUTIC VALUE OF SPLEEN EXTRACT.

By HENRY R. HARROWER, M.D., F.R.S.M. (Lond.),

Los Angeles, Cal.

Some years ago while making a rather extended stay in Europe I prepared a somewhat comprehensive paper on the therapeutic possibilities of spleen extract with special reference to its availability as an adjunct remedy in the treatment of tuberculosis.[1] This paper was originally published in *The Lancet* and was prepared at the instance of Sir Lauder Brunton who had become somewhat interested in the possibilities of this method of treatment.

During the past three years I have had occasion to verify a number of the statements made in this paper and the correspondence which it initiated has brought me into contact with a number of physicians who have also put the suggestions collated in the above paper to very good clinical use.

There is always a fairly well-marked element of skepticism evident amongst those who listen to an address or a paper on some phase of organotherapy, and a number of times reference to the prospective value of spleen extract has caused a smile by some who seemingly were pitying me for my belief that such medication as spleen substance could possibly have any therapeutic effect, much less in a disease as complex as tuberculosis.

Aside from the experiences which have time and again verified my position, two circumstances have established my confidence in this method of treatment, and for the benefit of those who are not aware that the extract of spleen not only has an effect when given by mouth, but that this effect is quite often a salutary one in conditions of anemia, splenic disease, and tuberculosis, it has occurred to me to detail these experiences.

Some months ago I was invited to address the San Diego County Medical Society, and took as my subject, "The Diagnosis of the Obscure Internal Secretory Disorders." During the interesting discussion which developed a physician directed attention to the value of spleen extract, and asked if I had any information upon its utility. In the answer reference was made to the paper mentioned above and to the work of one C. R. Carpenter[2] some years previously. A ripple of laughter greeted this statement, and the explanation was quickly forthcoming when it was learned that the gentleman was none other than Dr. Carpenter himself.

Naturally he was pleased that I had noticed his work and referred to it in my recent book,[3] and we had a pleasant visit which has later been rendered more profitable by an extended correspondence. It appears that for over fifteen years Carpenter has been using spleen extract in various conditions, and has accumulated quite a fund of information which certainly should be published. His confidence in

this remedy has not been shaken by the passage of time, nor by the remarks of some of his colleagues, and it has become a routine procedure to use this preparation when it is necessary to enhance the resistance to infection, increase leucocytosis, or augment the activity of the spleen, particularly in definite disease of this organ and in malaria, especially the chronic forms.

The philosophy of this procedure has been very fully outlined in my previous article,[1] and cannot conveniently be repeated here. The fact remains, however, that spleen organotherapy is a decidedly useful and much-neglected phase of treatment, and deserves to be considered and used much more frequently.

The other coincidence was the receipt from Sir Leonard Rogers, professor of pathology at Calcutta University, of a reprint telling of his clinical experiences with spleen medication.[4] The results obtained in his work, coupled with the fact that Sir Leonard is responsible for the remarkable vogue of emetine at present (he was the first to suggest the use of this alkaloid in the treatment of tropical dysenteries of amebic origin in 1912), make his remarks regarding the value of spleen extract of more than usual interest.

While the particular application of this method was made by Sir Leonard Rogers in kala-azar,* and this disease is not found in the United States, the fundamental deductions from this report are applicable in a number of other conditions which are more commonly met in general practice here.

Rogers has shown that the most important controllable factor in kala-azar is a chronic infection which, after prolonged illness, predisposes to secondary infections and permits them to become rapidly fatal. From a laboratory standpoint there is a pronounced leucopenia, and the resistance to the common infections is unusually low, and when they are present there is no response by the body evidenced by leucocytosis and the usual reaction to bacterial invasion.

Careful study showed that this absence of leucocytosis was the factor which might be combated with hope of controlling the extremely high mortality, and Rogers made a large series of attempts to accomplish this by various methods, including arsenic in various combinations (including salvarsan), iodine, sodium nucleinate (one of our best leucocytic stimulants among the drugs), alkalies and various forms of bacterial vaccines (living, killed, sensitized, etc.). The results from several of these methods were practically negative; it is clear, however, that vaccines are useful and that alkalies are indicated.

Results with spleen substance are referred to by Rogers in the following words: "As early as 1905 I recorded the use of bone marrow in kala-azar with apparently beneficial results. Early in 1913 a paper by H. R. Harrower appeared in the *Lancet* on the therapeutic action of spleen extract, in which he gave references to Goldschneider and Jacob[5] on the effects of splenic and other extracts in producing leucocytosis, and of Carpenter on the value of spleen extracts in the treatment of malarial fever. I obtained these papers through the kindness of the Royal Society of Medicine and purchased all the spleen tabloids to be obtained in India, and used them in a series of cases of kala-azar in the European General Hospital. In several cases the temperatures soon began to decline and the weight and leucocytes increased, while the spleen became considerably smaller. I hoped that at last I had found a specific, but further trials soon showed that this view was too sanguine, as in some cases four to six tabloids a day failed to maintain or produce improvement, although no harm ever appeared to follow their use."

Ten patients were treated in this manner; one was apparently cured, three were much improved (though one relapsed later), three were slightly improved, and three became worse, of which two eventually died, one from pneumonia. It must be recalled that kala-azar is, according to all authorities, "an extremely fatal disease," yet Rogers concludes that, "on the whole, spleen may be regarded as of distinct use in the treatment of kala-azar, which it may readily be given in combination with other treatment."

I am convinced that there is a greater field for spleen organotherapy in many conditions of anemia, malnutrition, poor resistance to infection, with or without a marked leucopenia, malaria and, possibly, typhoid fever. It is indeed of "distinct use," and may advantageously be added to the present treatment of many cases of tuberculosis, malnutrition and other diseases in which the physiological effects of this extract are likely to be of service.

*For convenience it may be well to state that kala-azar, sometimes also called febrile tropical splenomegaly, is a fatal epidemic fever, resembling quite definitely chronic estivo-autumnal malaria. It is endemic in Assam and is supposed to be due to infection with a parasite named the *Herpetomonas donovani*. Our interest in this, to us, rare disease is due to the fact that it is marked by chronic and progressive anemia, wasting, enlargement of the spleen and sometimes the liver, conditions which are not infrequently met in practice in this country though their etiologic origin may be quite dissimilar.

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715 BAKER-DETWILER BUILDING

The Advantages of Pyelotomy in Renal Calculus.—Henri Moyrand contends that, contrary to the general opinion, coral-shaped calculi can be removed by pyelotomy, but not large aborescent stones fitting snugly into the calyces when the body of the calculus does not come into the renal pelvis. To justify this operation we must be sure the stone is seated in the pelvis. He thinks the danger of hemorrhage following pyelotomy has been exaggerated and that pyelotomy possesses the great advantage over nephrotomy in the fact that there is no danger of secondary hemorrhage. Pyelotomy, Maynard maintains, does not in any way impair the renal function. The writer produces numerous data to show that incision of the kidney is far from so inoffensive as many urologists have claimed and that it should be resorted to with extreme reserve and only in those cases in which pyelotomy is found to be absolutely impossible.—*New York Medical Journal.*

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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MAGNESIUM SULPHATE IN THE TREATMENT OF TETANUS.

WE had occasion recently (May 20, 1916) to comment in these columns on the efficiency of tetanus antitoxin in the prophylactic treatment of this disease. When the affection has once developed, antitoxin is not nearly so valuable a remedy, though it cannot by any means be dispensed with. One reason for this is that the convulsive attacks so use up the patient's strength that he succumbs before the antitoxin is able to neutralize the toxin already in combination with the body cells. Various drugs have been used to combat these seizures and thus protect the patient while the antitoxin is allowed to act, but most of them carry with them the disadvantage of their own toxic action.

Ten years ago Meltzer and Auer introduced magnesium sulphate for this purpose after a series of experiments on animals, in which they were able to demonstrate the depressant effects of the magnesium ion. Robertson has continued his work on the study of tetanus with a résumé (*Archives Int. Med.*, 1916, xvii, 677) of the results which have been obtained by the use of this drug. Used at first only by intraspinal injection there was reported a mortality of 44.4 per cent., among which were many cases in whom the drug produced a marked amelioration of the symptoms. Later it was administered subcutaneously, and in the twenty-nine cases which he finds reported in the literature there was but one death. He admits that the number of cases is small and that they are obviously selected but nevertheless insists upon the importance of the results obtained. The drug is also given intravenously, but this method of administration is not so practical, for its action is apparently dependent upon the concentration of the salt in the blood, and as it disappears rapidly from the blood stream it is necessary to inject it either continuously over long periods of time or repeatedly at rather short intervals. The intramuscular injection is not used because of its painfulness.

There are, of course, certain dangers attendant upon the use of magnesium salts in this way. These dangers have been carefully studied by Meltzer, and quite recently Auer and Meltzer have reported (*Jour. Exper. Med.*, 1916, xxiii, 641) a number of experiments in which they produced anesthesia in animals by the intravenous injection of magnesium sulphate. They were able to produce a very satisfactory surgical anesthesia in dogs, but found that there was a distinct effect upon the respiratory center, so that it was necessary to continue respiration by means of Meltzer's method of intratracheal insufflation. Moreover, they showed that the effects of the magnesium could be neutralized by the injection of calcium chloride or sodium sulphate, preferably the former. In a very few minutes after the injection of a comparatively small amount of calcium chloride the animal recovered consciousness and rapidly became apparently normal again. There was one important exception. A dog which had an irregular heart before the experiment began did not recover but died after an anesthesia lasting about one hour, in spite of the use of calcium. Robertson mentions apparent cardiac deaths from the intraperitoneal use of magnesium, so that the drug should probably not be used, at least for anesthesia, in the presence of cardiac insufficiency. In a case of tetanus the physician would have to use his best judgment after a study of the case.

Since the salt is excreted by the kidneys, it is apt to cause a certain amount of renal irritation, and the presence of albumin and casts has often been reported after its use. There is no evidence to show that this constitutes a dangerous or even severe injury to the kidney. In connection with this subject, it is worth while to mention the work of Gates and Meltzer (*Jour. Exper. Med.*, 1916, xxiii, 655), who recognized the antagonistic action of magnesium and calcium and showed that if the calcium of the body were removed by the injection of a small amount of sodium oxalate, anesthesia could be produced by the use of a much smaller amount of magnesium sulphate than was otherwise required. The action of the magnesium salt is apparently limited, when given in subtoxic doses, to the motor nerve endings, and it is therefore well suited for the treatment of tetanus. The patient should be watched carefully as in any other serious condition, and there should be a solution of calcium chloride on hand in case of need. The possibility of renal injury may safely be neglected in the presence of the greater need. In the presence of cardiac disease the problem is complicated, but it is probable that even here magnesium sulphate offers more chances of benefit than of injury. The subcutaneous method of administration is perhaps better in the majority of cases since it requires less apparatus and technical skill. Whether magnesium sulphate will ever be widely used as a means of inducing anesthesia is a question which demands much more time and experience for its reply.

NAUHEIM TREATMENT IN SARATOGA.

IN *The Saratogian* of May 26 we find some resolutions passed by the local medical society endorsing the very proper attitude of Conservation Commissioner George B. Pratt, in disapproving the addition of any chemicals to the natural CO_2 waters of the Springs, unless prescribed by a physician. Commissioner Pratt is to be commended for this positive stand to avoid a repetition of the stigma

cast, many years ago, upon the fair fame of these waters, by reason of their adulteration. We thought, however, that this stigma had been finally and definitely removed. It is true that in the paper on "The Nauheim Method" read before the State Society, which will be published in an early issue of the MEDICAL RECORD, Dr. Simon Baruch, dwelling upon the importance of exactly following the Nauheim method in order to obtain the results which have made that spa famous, suggests the addition of certain salines which are deficient in the Hathorn water, when Nauheim baths are prescribed in cardiac cases. He advises that a carefully calculated quantity of calcium and sodium chloride be held in readiness at the bath houses, to fill any prescription that may be received from physicians desiring to follow the Nauheim method. This, it appears to us, is exactly what the resolutions of our Saratoga colleagues very properly demand, viz., that such additions should be "plainly and explicitly ordered in a prescription of the physician."

If it is against this modification of the natural Saratoga water that the new commissioner has set his face, he is, we believe, making a mistake. An effort is being made to spread abroad the fact that the Saratoga waters are radioactive; this is very commendable, for the waters are certainly radioactive and are most beneficial in those cases in which the magical action of radium is called for. But these waters also lend themselves admirably to the carrying out of the Nauheim method, for which, however, they must be modified by the addition of salts, as above stated. Unless, therefore, the physisian can be sure that a supply of these salines in weighed packages is in readiness when the prescription is presented, it will be impossible to carry out the Nauheim method in Saratoga. We cannot believe that Commissioner Pratt would fail to see the absolute propriety and necessity of having the proper chemicals supplied, since such a course would in no wise violate the resolutions of the Saratoga Medical Society, nor his own idea that "if any individual physician wishes to prescribe them (the baths) in altered form, for an individual patient, this will be entirely upon his own responsibility and will affect no other than his own individual patient." This open and avowed practice would be eminently ethical, and could in no sense be regarded as an adulteration such as was the secret addition of purgative salts. If the effort to establish the Nauheim method at Saratoga fails through a mistake of this sort, the Spa will never attain the popularity which its friends are working to secure for it.

OUT OF THE PAST THE PRESENT.

"THE thing that hath been, it is that which shall be," said Solomon the wise, and to him this seemed to make all further endeavor but folly and vexation of spirit. To the productive spirit of to-day this but acts as a stimulant. The past may not be despised, for it is the rich soil from which the present grows, nor need the repetition of experience which history furnishes be other than an incentive to greater creative effort to discover and express reality. Various writers remind us of previsions of truths which scientific investigation succeeds in explaining and establishing upon a more exact basis. Humors in the blood were once made to account for pathological conditions of the body. To-day science is learning to understand the presence of the internal secretions, hormones, and their activity under control of the nervous system, psychical as well as vegetative, which is of the utmost importance for health, and the disturbance of which is of equal significance in disease. Again, cerebral location of function was vaguely guessed in a theoretical attempt to assign definite bodily location to the various human characteristics.

The historical value of the past in this relation to the present has found especial emphasis in White's review of Reil's Rhapsodieen (*Journal of Nervous and Mental Disease*, Vol. XLIII, No. 1, January, 1915). White not only recalls us to the deferential spirit of understanding which alone will rightly appraise the past; he presents besides significant examples of Reil's apprehension of truth won, however partially, through the latter's true contact with the reality of things and expressed pragmatically in accordance with his breadth of conception. He recognized the psychopathological manifestations of daily life, which Freud has traced to unconscious complexes. He felt the limitation of consciousness as but a small part of the great whole which is ourselves. Mental disease is marked by a lack of this unity, and consciousness recedes before an advancing flood of phantasy beyond its control. White points out other conceptions which strikingly anticipated, even though incompletely, the working theories of present-day neurology and psychiatry. Reil's intuition of the interaction between two opposing forces, which he seems to have applied to the several levels of activity, nervous and psychic, White notes, is attained by man at an immeasurably earlier period, for the Australian "black fellow doctors" preconceived through the philosophy of magic the importance of the fat above the kidney, which science has been so late to confirm in its discoveries in regard to the adrenals.

What is the significance of all this? It is perhaps not that man has had supernatural glimpses into reality, or that there is an overshadowing of absolute truth which occasionally breaks through. It may be rather the pragmatic attempt to express in workable terms contact with the stream of dynamic reality. The intuitive plunge into the ceaseless flux of duration belongs to every age of man, to the primitive Australian as to the profound thinker at Halle in the beginning of the last century. There is only a difference in degree of tension. Out of this repeated immersion in duration man arises with fresh knowledge of reality to be fixed in working concepts which shall serve and, in their turn, be replaced. Thus Bergson has expressed it, and this would seem the testimony of history. Reality is not preformed. Duration is a flux in which each moment is becoming, but the ceaselessly formed present passing instantaneously into the future is born of the past which streams into it. Therefore, we may not scorn the past.

ECLAMPSIA IN EASTERN PRUSSIA.

THE exact geographical distribution of puerperal eclampsia is a subject which would well repay a study. It is said to prevail in certain relatively small geographical zones in a manner to defy explanation. Often there are no official or even unofficial statistics to bear out such a view, but even in sparsely settled sections cumulation of cases can be readily cited by the natives. Thus 25 years ago in the country surrounding Tampa, Fla., where infectious diseases have a very small incidence, many pregnant women looked forward with great dread to childbed convulsions because, as a local physician stated, recovery from that condition was almost unknown.

In the *Berliner medizinische Wochenschrift* for January 10 is an account of a recent medical meeting in Königsberg, at which Professor Winter gave a sketch of eclampsia in East Prussia which he said was very common and more prevalent in cities and towns than in the rural districts. He believed that convulsions began as soon in labor as syncytial toxins were absorbed into the circulation, and that the earlier in labor convulsions developed the graver was the prognosis. He was speaking strictly of the type of convulsion which develops in the midst of labor. Rapid delivery, he said, was the indication of necessity in all cases seen in the first two hours. Nevertheless the Stroganoff treatment is recommended to the practitioners of East Prussia whenever a conservative plan of treatment seems justifiable. This is the case when, as so often happens, an ordinary practitioner is called to a bedside where the woman has been in labor for some hours or when transportation to a clinic is out of the question. To fix an exact criterion the author calls any labor over four hours too late for operative intervention. Winter has carried out both methods with excellent results, his mortality with the Stroganoff treatment being 11 per cent.

DYSIDROSIS.

IN the course of a long series of articles on itching, of whatever origin, written in the interest of war medicine by the distinguished dermatologist Unna for the *Berliner klinische Wochenschrift* we find in the issue of March 6 a succinct account of dysidrosis under the designation chiropompholyx, an old term which is utilized because the affection does not represent an anomaly of perspiration but a true inflammatory process. Unna believes it to be due to a specific bacillus. Our knowledge of the condition shows no recent modifications, although it has been suggested that it must begin with alterations in the sweat pores, however much this is subsequently masked. The affection has always been classed as refractory to treatment, and as having a natural tendency to subside. The chief indication is therefore to control the pruritus (which is not relieved by furious scratching). For this purpose Unna recommends what he calls "spirit of silver," a 5 per cent, solution of silver nitrate in spirit of nitrous ether. If the roofs of the vesicles are very thick and tenacious these should be first scraped off with a razor. The solution is then pencilled in with excellent results.

SALT FEVER.

MANY years ago Finkelstein discovered that sodium chloride and sugar were pyretogenic when injected into the animal organism. At a later period it was learned that injections of milk exerted the same action. Unlike other substances, Engländer says, salt produces a fever which appears to improve the state of the patient. The salt fever lasts forty-eight hours, and by accelerating the formation of antibodies is able to cut short the duration of a natural febrile process. At the same time it improves the state of the body functions when these have been depressed by an infection. When injected in hypotonic concentration, it is a superior absorbent and diuretic, and will accelerate the absorption of pleuritic effusions. When and how much to inject, and whether the subcutaneous or intravenous route is preferable depends on the nature of the individual case. In the past the pyretogenous action of salt has been employed chiefly in connection with paresis and other non-febrile conditions with a view of obtaining the therapeutic effects of high temperatures. At present it is hoped that it will benefit infectious processes in which some fever is already present.

News of the Week.

City Death Rate.—For the week ending May 20, the death rate in New York City was only 13.65 per 1000, representing a total of 1462 deaths, as compared with a rate of 14.23 for the corresponding week of last year. The decrease was especially marked in the mortality from acute contagious disease, diarrhea, cancer, heart disease, influenza, pneumonia, and diseases of the nervous system. The mortality from Bright's disease on the other hand, was increased by forty deaths, and there was also an increase in the number of deaths due to pulmonary tuberculosis, cerebrospinal meningitis, and violence. During the first twenty-one weeks of 1916 the death rate was 15.25, as compared with 15.49 for the corresponding period of last year.

Salvarsan Imported.—After nearly a year of effort the United States last week received a shipment from Germany of salvarsan valued at $250,000. The German Government some time ago placed an embargo on the importation of drugs, and in addition to this the British authorities held up everything coming out of Germany, but the appeal of the State Department to both was finally successful.

Epidemic Among Marines.—The hospital ship *Solace*, U. S. N., which had been at Newport, R. I., sailed under hurried orders on May 27 for Fort Liberté, Cape Haitien, where an epidemic was reported to have broken out among the United States marines on duty. Black water fever is mentioned as one of the causes of the trouble.

New State Laboratory.—Governor Whitman of New York on May 22 signed the appropriation bill passed by the Legislature, which included an item of $65,000 for the purchase of land and the erection of a laboratory building in the city of Albany for the State Department of Health. The site chosen closely adjoins the Albany Hospital and the new Albany Medical School. The laboratory work of the Health Department is at present carried on with great difficulty in an old stable which has several times been condemned as unsanitary, the crowded quarters making it neces-

sary for the employees to work both Sundays and holidays. Although the appropriation was opposed in some quarters, the condition of the present laboratory and the fact that the demands made upon it have increased steadily in the last two years led the Governor to approve the item.

Opportunity for Clinic Work.—The Urological Clinic for men, women, and children at St. Mark's Hospital, New York, is in need of additional clinical assistants to whom a good service and, if desired, opportunities for research work are offered. Application may be made to the superintendent of the hospital, Mr. Ernest S. Lohr, 177 Second Avenue.

Civil Service Examination.—The United States Civil Service Commission will hold a competitive examination, open to men only, on June 27, 1916, for the purpose of filling a vacancy in the position of clinical director in the Government Hospital for the Insane, Washington, at a salary of $2,000 a year. Competitors will be rated on education, training, and experience; they must be graduates of a medical school of recognized standing, have been in actual charge of a medical service in an institution for the care of the insane for at least five years, and have made contributions to medical literature on the subject of insanity. The director appointed will have general administrative supervision of the medical work of the hospital, together with supervision of the hydrotherapeutic departments, the operating room, and the training school for nurses. Persons desiring to take the examination should apply at once to the United States Civil Service Commission, Washington, D. C. The examination is open only to citizens of the United States who are under thirty-five years of age.

Navy Medical Corps Examinations.—An examination will be held on June 19, next, for appointment in the Medical Corps to vacancies already existing. A candidate for appointment must be between twenty and thirty years of age, a graduate of a reputable school of medicine, and must apply for permission to appear before an examining board. These boards are convened at various places over the country, and assignments to such boards are arranged to suit the convenience of the candidate. Duty in the Medical Corps of the Navy is one that affords plenty of rewards to the ambitious worker, as well as attractions of a varied nature in personal and professional work. Pay begins at the rate of $2,000 per annum, with ample allowances, and promotion and increase in pay and allowances follow every few years. For detailed information as regards the coming examination on June 19, 1916, applicants should address the Surgeon General, U. S. Navy, Navy Department, Washington, D. C.

Army Medical Corps Examinations.—The Surgeon General of the Army announces that preliminary examinations for the appointment of first lieutenants in the Army Medical Corps will be held on July 17 and August 14, 1916, at points to be hereafter designated. Full information concerning the examinations can be procured upon application to the Surgeon General, United States Army, Washington, D. C. The essential requirements are that the applicant be a citizen of the United States, between twenty-two and thirty years of age, a graduate of a recognized medical school, and of good moral habits, and have had at least one year's hospital training after graduation. After July 1, when the bill for the reorganization of the Army becomes a law, there will be more than one hundred vacancies to be filled.

Metchnikoff Reported Ill.—A dispatch from Paris states that the condition of Prof. Elie Metchnikoff, who has been ill with heart disease since last January, has become much worse, and that his physicians have given up hope of recovery.

Flower Hospital Graduates.—Sixty-one physicians were graduated from the New York Homeopathic Medical College and Flower Hospital at the fifty-sixth annual commencement of the institution on May 24. The class was addressed by Dr. Royal S. Copeland, dean of the college, and the degrees were conferred by Mr. Melbert B. Cary, president of the board of trustees.

The Flower Hospital Training School for Nurses graduated a class of seven at the annual exercises on May 23, the diplomas being presented also by Mr. Cary.

Gifts to Charities.—The New York Post-Graduate Hospital has received from Mrs. Alfred G. Vanderbilt of New York a gift of $100,000 to be used for the erection and equipment of a babies' ward. The new structure, which will be placed next to the present hospital building on Second Avenue, will cover a twenty-foot plot and will be at least five stories in height.

Mrs. Elizabeth Milbank Anderson of New York recently made a gift of $100,000 to the Henry Street Settlement, to promote the work of the visiting nurses of that institution. During 1915, it is stated, the nurses of Henry Street cared for 26,575 patients, making 227,028 visits. Every patient able to do so paid a fee of five or ten cents for each visit, the total amount collected being $8,000. In the case of those unable to pay attendance, of course, was free.

St. Luke's Hospital of Chicago has received from Mr. Hobart Williams of that city property valued at $200,000 as an addition to its maintenance fund.

By the will of the late Miss Jessie Gillender the Johns Hopkins University Medical Department, Baltimore, receives a bequest of $100,000 to be used in establishing "The Epilepsy Medical Research Fund" in memory of a sister of the testator. The income is to be devoted to the investigation of the cause, prevention, and cure of epilepsy. After the deaths of several persons the University will receive a similar interest in an additional $50,000.

The New York Association for the Blind is made the residuary legatee by the will of the late Mrs. George Stevens of New York, the amount of its interest being estimated at $100,000.

By the will of the late Miss Sarah E. Clark of Brooklyn, N. Y., the Brooklyn Home for Consumptives, the Faith Home for Incurables, and the Church Home for the Blind receive gifts of $10,000 each, and the German Hospital, the Long Island College Hospital, and St. John's Hospital receive $5,000 each.

The Lutheran Hospital, Brooklyn, receives a bequest of $3,000 by the will of the late Mrs. Anna Hess of that city.

By the will of the late Henry Siedenbach of Philadelphia the sum of $20,000 is bequeathed to the Jewish Hospital of that city.

By the will of the late Walter E. Mooney of Philadelphia the sum of $200 is bequeathed to

St. Joseph's, St. Mary's and the Episcopal Hospital, each.

Personals.—Dr. HENRY W. WANDLESS of New York has been appointed clinical professor of ophthalmology in the University and Bellevue Hospital Medical College.

Dr. JOHN R. MCDILL of Milwaukee with a party of surgeons and nurses sailed from New York recently for the puropse of establishing field hospitals in Germany and Austria under the American Surgeons' Expeditionary Committee.

Dr. MICHAEL A. KINSELLA of New Britain, Conn., has been appointed medical examiner for the Civil Service Commission of New Britain.

Increased Registration of Babies.—The New York Diet Kitchen reports that during the week from May 1 to 6 this year 2484 babies were registered at its eight milk stations, this registration being heavier than that through the midsummer season last year, and nearly 50 per cent. greater than during the corresponding week of last May.

Memorial to Dr. Vance.—The Children's Free Hospital of Louisville, Ky., has received a fund to be known as the Vance Memorial Fund, to be used in the continuation of the work of the late Dr. Ap Morgan Vance, who for twenty-three years served the institution, and on May 15 the surgical ward of the hospital was dedicated to his memory and a tablet bearing his name was unveiled in the hospital.

Urges Campaign Against Disease.—The Kansas State Board through its president has started a movement for the improvement of health by writing to all the State universities to urge co-operation in an effort to induce the Government to establish a health experiment and research station or laboratory in conection with each university school of medicine, under the United States Public Health Service.

American Medical Editors' Association.—The annual meeting of this association will be held at the McAlpin Hotel, New York City, on October 25 and 26. The officers of the association for 1915 and 1916 are as follows: *President,* Dr. Edward S. Register; *First Vice-President,* Dr. W. A. Jones; *Second Vice-President,* Dr. G. M. Piersol; *Secretary-Treasurer,* Dr. J. MacDonald, Jr. *Executive Committee,* Drs. C. F. Taylor, John C. MacEvitt, A. S. Burdick, and Joseph MacDonald, Jr. *Committee of Arrangements,* Drs. Thomas L. Stedman, Reginald H. Sayre, Brooks H. Wells, Frank C. Lewis, and Ira S. Wile.

The meeting will be devoted exclusively to problems of a strictly journalistic nature, which will doubtless be of importance and interest to every editor and publisher of a medical journal.

Southern Medical Association.—The tenth annual convention of this society will be held in Atlanta, Ga., on November 13 and 16, inclusive. The association will be entertained by the Fulton County Medical Society.

Medical Society Elections.—NEW HAMPSHIRE MEDICAL SOCIETY.—At the annual meeting held in Concord on May 16, the following officers were elected: *President,* Dr. Emdon Fritz, Manchester; *Vice-President,* Dr. Fred S. Towle, Portsmouth; *Secretary,* Dr. Dennis E. Sullivan, Concord; *Treasurer,* Dr. David M. Currier, Newport.

STATE MEDICAL ASSOCIATION OF TEXAS.—The following officers were elected at the annual meeting held in Galveston on May 10 and 11: *President-Elect,* Dr. Edward H. Cary, Dallas; *Vice-Presidents,* Dr. Robert Y. Lacy, Pittsburg; Dr. Charles R. Johnson, Gainesville, and Dr. William L. Brown, El Paso; *Secretary,* Dr. Holman Taylor, Fort Worth; *Treasurer,* Dr. William L. Allison, Fort Worth. Dr. James M. Inze, Denton, former president-elect, will serve as president during the ensuing year. The convention of 1917 will be held in Dallas.

SOUTHERN OREGON MEDICAL ASSOCIATION.—The annual meeting was held at Roseburg on May 9, when the following officers were elected: *President,* Dr. Fred D. Stricker, Grant's Pass; *Secretary-Treasurer,* Dr. Alvane C. Seely, Roseburg.

AMERICAN PEDIATRIC SOCIETY.—At the annual meeting held in Washington in May the following officers were elected to serve during the ensuing year: *President,* Dr. F. E. Churchill of Chicago; *Vice-President,* Dr. Wilder Tileston of New Haven, Conn.; *Secretary,* Dr. Samuel S. Adams of Washington, D. C.; *Treasurer,* Dr. Charles Hunter Dunn of Boston; *Recorder and Editor,* Dr. L. E. La Fetra of New York; *Assistant Editor,* Dr. O. M. Schloss of New York.

WEST VIRGINIA STATE MEDICAL ASSOCIATION.—At the annual convention held in Wheeling on May 16 to 18, the following officers were elected for the ensuing year: *President,* Dr. Joseph E. Rader, Huntington; *Vice-Presidents,* Dr. W. H. Young, Sistersville; Dr. E. H. Thompson, Bluefield, and Dr. R. M. Baird, Wheeling; *Secretary,* Dr. J. Howard Anderson, Marytown; *Treasurer,* Dr. H. G. Nicholson, Charleston. The next convention will be held at Fairmont.

CONNECTICUT STATE MEDICAL SOCIETY.—The annual convntion of this society was held in Bridgeport on May 17 and 18, when the following officers were elected: *President,* Dr. Samuel M. Garlick, Bridgeport; *Vice-Presidents,* Dr. George McM. Burroughs, Danielson, and Dr. John C. Kendall, Norfolk; *Secretary,* Dr. Marvin M. Scarborough, New Haven; *Treasurer,* Dr. P. H. Ingalls, Hartford.

BROCKTON (MASS.) MEDICAL SOCIETY.—The following officers were elected at the annual meeting on May 18: *President,* Dr. Ezra W. Clark; *Vice-President,* Dr. M. F. Barrett; *Secretary,* Dr. Charles D. McCann; *Treasurer,* Dr. G. A. Buckley.

Obituary Notes.—Col. JOHN M. PHILLIPS, Medical Corps, United States Army, formerly in charge of the Walter Reed Army General Hospital, Takoma, Md., died suddenly on May 22, aged 57 years. Colonel Phillips was graduated from the College of Physicians and Surgeons, New York, in 1882, and was a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, and the Montgomery County Medical Society.

Dr. DAVID CHOATE of Salem, Mass., a graduate of the Medical School of Harvard University in 1854, and a member of the Massachusetts Medical Society, and the Essex County Medical Society, died at his home, on April 23, aged 88 years.

Dr. VICTOR A. BLES of Elgin, Ill., a graduate of the University of Colorado, School of Medicine, Boulder, in 1895, and a member of the American Medical Association, the Illinois State Medical Society, the Missouri State Medical Association, and the Kane County Medical Society, died of tuberculosis, in Denver, on May 9, aged 44 years. Dr. Bles was formerly a member of the staff of the Elgin State Hospital.

Dr. CHARLES F. OSGOOD of Ogden, Utah, a gradu-

ate of Rush Medical College, Chicago, in 1896, and a member of the American Medical Association, the Utah State Medical Association, and the Weber County Medical Society, died on May 4, aged 49 years.

Dr. OLIVER H. MCMICHAEL of Minneapolis, Minn., a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1871, and a member of the American Medical Association, the Minnesota State Medical Association, and the Hennepin County Medical Society, died on May 11, aged 71 years.

Dr. EDWIN W. HIGBEE of Northampton, Mass., a graduate of the University of Vermont, College of Medicine, Burlington, in 1871, died at his home on May 21, aged 67 years.

Dr. LOUIS YOUNG of Orleans, Vt., a graduate of McGill University, Medical Faculty, Montreal, in 1869, died in a hospital in Butte, Mont., on May 16, aged 68 years.

Dr. FRANK ATWATER ELMES of Derby, Conn., a graduate of Yale University Medical Department, New Haven, in 1905, and a member of the American Medical Association, the Connecticut State Medical Society and the New Haven County Medical Society, died suddenly at his home on May 21, aged 36 years.

Dr. PHILIP H. EDWARDS of Newark, N. J., a graduate of New York University Medical College in 1895, and a member of the Medical Society of New Jersey and the Essex County Medical Society, died at his home on May 26, aged 43 years.

Lieut. LUTHER MITCHELL FERGUSON, Medical Corps, United States Army, a graduate of the Medical School of Harvard University in 1915, and only recently appointed to the surgical staff of the Walter Reed Army General Hospital, Takoma Park, Md., was killed by a fall from his horse on May 22, aged 28 years.

Dr. ALONZO L. LEACH of Cape May, N. J., a graduate of Jefferson Medical College, Philadelphia, in 1868, a member of the Medical Society of New Jersey and the Cape May County Medical Society, and president of the Board of Health of Cape May, died at his home on May 25, aged 71 years.

Dr. FRANK A. JORDAN of Pecatonica, Ill., a graduate of Rush Medical College, Chicago, in 1864, died in Freeport, Ill., on May 19, aged 77 years.

Dr. ELMER M. BROWN of Tacoma, Wash., a graduate of Willamette University Medical Department, Salem, in 1879, and a member of the American Medical Association, the Washington State Medical Association, and the Pierce County Medical Society, died at his home, after a long illness, on May 13, aged 59 years.

Dr. HERBERT L. HULBURD of Morris, Minn., a graduate of the Long Island College Hospital, Brooklyn, in 1875, and a member of the American Medical Association, the Minnesota State Medical Association, and the Stevens County Medical Society, died at his home on May 13, aged 65 years.

Dr. GEORGE MORRIS ECKELS died at Mechanicsburg, Pa., on May 23, at the aged of 59 years. He was graduated from the Medical Department of the University of Pennsylvania in the class of 1885. He was a member of the Pennsylvania Legislature in 1891 and 1893.

Dr. L. G. HAIN, coroner of Bucks County, died at Reading, Pa., on May 23, following an operation for appendicitis, at the age of 45 years. He was graduated from Jefferson Medical College in the class of 1893.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

RECRUITING FOR THE MEDICAL SERVICES—COMMITTEE OF REFERENCE — HOSPITAL STAFFS — MILITARY ORTHOPEDICS — TUBERCULOSIS SCHEMES — OBITUARY.

LONDON, May 6, 1916.

RECRUITING for the naval or military service is the absorbing topic in all classes, and in our own profession has several points of special interest. The War Office has issued a statement which amounts to an appeal for enrollment by setting forth the needs of those services and showing that it is in the interests of the civil community no less than of the army that all qualified men should enter their names under the scheme which has been established by the Central Medical War Committee under the authorization of the Ministry of War. This enrollment does not mean that the person will be forthwith called up for service; in fact, he may never be called up, for he will not be so called until his services will be actually required. It is hoped that the scheme will secure that those doctors will be selected for military work who can most easily be spared at a particular date, from a particular locality, with regard to the needs of the civil population, the requirements of the army, and the circumstances of the doctor. The War Office looks to the Central Medical War Committee and the Royal College to assist it in carrying out the equitable distribution of the population by a body competent to make a proper selection—the only alternative being haphazard recruitment. The committees in each of the kingdoms include representatives of the Royal College of Physicians and Surgeons, as well as of the universities and their schools, and they are in constant contact with the several Government departments concerned. A committee of reference has also been formed to consider questions as to hospital staffs, and this has the approval of the War Office. It is estimated that to obtain the medical officers needed for the army, month by month, with the least inconvenience in all directions it is desirable that those eligible for the duty, who have not enrolled, should do so at once. The Central Medical Committee, however, decided at its April meeting not to proceed to this unless and until 75 per cent. of those eligible but not enrolled have received a commission or a letter of provisional acceptance in His Majesty's forces. This committee adopted a resolution in favor of establishing a compassionate fund in connection with medical officers serving in the war.

Military orthopedics is claiming a position as a distinct specialty and can scarcely be refused recognition now that the War Office has appointed an inspector of the subject. The gentleman selected is Lieut.-Col. Robert Jones, F.R.C.S., A.M.S., who has been lecturing on orthopedics in the University of Liverpool and who has had a very extensive experience of injuries to joints inflicted in war and their subsequent consequences, as well as the measures which have been employed to restore, as far as possible, the use of the injured limb. Hospitals or sections of hospitals have been set aside for such cases, and it is probable that derangements and injuries of joints may in them receive early treatment, leading to the prevention in not a few instances of disabling deformities. This is of con-

siderable importance in relation to pensions, in assessing which the capacity to earn is the chief point to determine—not the patient's general condition.

A "Handbook of Tuberculosis Schemes" has been issued by the National Association for the Prevention of Consumption and Other Forms of Tuberculosis. These schemes are so numerous and so varied in their proceedings that the proposal to coordinate them will be welcomed by many workers among scattered reports of most unequal value. The County Councils may be regarded as suitable authorities for organizing the results that are being obtained, but they do not provide for treatment in connection with dispensaries or hospitals—still less with sanatoriums. A beginning, however, has been made in some localities and will probably be followed in others.

Dr. Colcott Fox died April 11. He took the M.B. (London) and M.R.C.P. in 1876. He was dermatologist at the Westminster Hospital and held several other appointments. He was the younger brother of Tilbury Fox and joint author with him of an "Epitome of Skin Diseases."

Dr. Allan Jamieson died on April 21. In early life he spent some time in Queensland and a few months in a Glasgow insurance office. From this he graduated at the university where he devoted great attention to Greek, on which later he became so well known. After practising for a time in Edinburgh he went to Vienna to study under Hebra. On returning he began to practise as a dermatologist, on which he became eventually so well recognized an authority. His presidency of the College of Physicians was most successful.

Progress of Medical Science.

Boston Medical and Surgical Journal.

May 18, 1916.

1. How the State Provides for Its Mentally Ill. L. Vernon Briggs.
2. Hallux Rigidus. Charles F. Painter.
3. Use of Duodenal Tube for Diagnosis and Treatment. Franklin W. White.
4. Chronic Inversion of the Uterus. J. C. Hubbard.
5. Pregnancy and Labor Following Resection of the Ovary. Frederick W. Johnson.

2. Hallux Rigidus.—Charles F. Painter, from his clinical observations and the study of a large number of radiograms of dissected feet, shows that the anatomical variations in the lengths of the various metatarsal bones are the cause of rigidus hallux. In looking over this series of radiograms he found that there were by actual measurement variations in the comparative lengths of the bones of the feet, possessed of the same total length, amounting in many cases to as much as ⅜ or ¼ in. These variations were most notable in the lengths of the metatarsals. Furthermore the difference was noted between the two feet of the same individual, thus accounting for the fact that hallux rigidus is very often a unilateral deformity. It is obvious that when such a variation is present the feet will not conform to ready made shoes and that the resultant irritation produces proliferation of the osteoblastic cells, forming a bony overgrowth which mechanically obstructs the dorsal movement of the phalanx upon the metatarsal, and this in turn keeps the joint in a state of chronic irritability and spasm. Several cases are reported as indicating the results of treatment, operative and otherwise, and the pathological changes found. In closing he advises against surgery if an osteoarthritic tendency is present, and says that when operative treatment is employed the after treatment is much the same as in hallux valgus. He also describes a tongue plate, fashioned somewhat after the manner of the ordinary flatfoot support supplemented by a steel tongue the width of the great toe on its plantar surface and nearly as long as the toe. This line of treatment is applicable to the earlier cases before dorsiflexion is much restricted.

3. Observations on the Use of the Duodenal Tube for Diagnosis and Treatment.—Franklin W. White, in summing up a serial article on this subject, says: "The clinical use of the duodenal tube (introduced by Einhorn and by Gross in 1909-10) has proved its value in a limited field. It is a valuable contribution to medicine and deserves far greater use than is being made of it now. The tube was used by the author in 90 cases; in 56 for diagnosis, in 34 for treatment. A fluoroscopic study of the technique of the introduction of the duodenal tube showed that by placing the fasting patient successively in simple postures, the tube may be introduced into the duodenum within one-half hour in a majority of cases, where organic stenosis is not present. Spasm of the pylorus, atonic, and hook-shaped stomachs may delay the tube. A heavy Gross tube enters the duodenum more rapidly than a light Einhorn tube. In diagnosis, examination of the duodenal contents was most useful in diseases of the pancreas and in cases of chronic jaundice. It is the only method of directly obtaining the secretions of the pancreas and liver, and avoids many of the sources of error in other indirect tests, such as the Sahli capsule, Schmidt's nuclear test, the oil test-meal, or testing the feces for ferments. There is considerable normal variation in the pancreatic ferments as determined by our present tests; only absence or marked diminution has much value in diagnosis. Constant marked diminution or absence of trypsin was found (with one exception) only in chronic disease of the pancreas. Examination of the feces on the Schmidt test-diet in some cases was almost equally valuable, and simpler; in others the examination of the duodenal contents was much more valuable. In diseases of the liver, the value of the test in deciding whether the bile passages are completely or partly closed is limited by the lack of a satisfactory test for bile in the duodenal juice. The duodenal tube is a convenient and comfortable means of obtaining stomach contents; and more reliable than the usual stomach tube for aspirating small amounts of clear fasting contents." Almost every case was improved by duodenal feeding, and in a considerable number the symptoms stopped. It is superior to rectal feeding as patients usually keep their weight or gain and keep their balance of nitrogen.

New York Medical Journal.

May 20, 1916.

1. The Tonsilloscope. Thomas B. French.
2. Ineffective Appendectomies. Robert T. Morris.
3. Specific Therapy in Certain Acute Infectious Diseases. Francis J. Dever.
4. Potassium Iodide Poisoning. Reynold Webb Wilcox.
5. The Curatelle and Modern Psychiatry. George W. Jacoby.
6. Cancer of the Breast. John Edward Jennings.
7. Gas Gangrene. E. Kilbourne Tullidge.
8. Collecting Blood by Venepuncture. Lloyd Thompson.
9. Concealed Measles. Ralph Opdyke.
10. The Pathologist, the Family, and the Family Physician. M. T. Hansell.

1. The Tonsilloscope.—Thomas B. French has devised a method by which the external tonsilloscope, originally intended and used for the examinations of exploratory sections removed from the tonsil at the beginning of operations, and now used for study of the tonsil, as a whole or in part, after operations, may be used for direct tonsilloscopy or for the examination of the tonsil *in situ*. The introduction of the instrument into the throat is accomplished by using the shortest of the Jackson bronchoscopes with a beveled end and a lamp

on a light carrier of the next largest tube, packed securely with gauze so that the lamp is held just within the distal opening and the end of the tube slipped behind the tonsil. In this way the tonsil is lighted up as brilliantly as in the powerful external apparatus. With this instrument the writer has studied the various classes of tonsillar disease, including 333 cases that were operated upon and a large but indefinite number of youths and adults. He concludes that while this may not permit definite and final deductions nevertheless the results seem to indicate that the erstwhile enlarged tonsils of health in childhood may be regarded as permanently diseased if they continue enlarged after the seventh or eighth year, and that the enlarged tonsils of health which undergo a retrograde metamorphosis in late childhood may remain the tonsils of health throughout life. The assumption that the tonsil has no special function because it has not yet been discovered, is an unconscious confession of impotence to which few could agree, but one conclusion reached in this study is that the function of the tonsil is a negligible feature, for it must be conceded that a tonsil which is extensively diseased cannot perform its function, if it has one, and that a tonsil that is partially but permanently diseased, would probably be the potential or actual source of too much mischief to be offset by the value of any function which a part of it might possess. When, however, a tonsil is found to be that of health, it should be left at least in part to perform whatever function it may have, and also incidentally to spare the fauces the now common postoperative deformities and the consequent impairment of the speaking and singing voices.

2. **Ineffective Appendectomies.**—Robert T. Morris says that so many appendectomies are done upon a basis of incomplete diagnosis that a halt must be called. That matter is getting to be a scandal. He calls attention to a group of cases in which the appendix is really a factor in the patient's discomfort, but not the principal one, in which the chief irritative lesions are fibroid degeneration and syncongestive appendicitis; and, secondly, to a larger group of cases with symptoms in the appendix region, but not including the appendix, appearing to depend upon a large and complicated variety of irritative lesions of the spinal cord, with efferent impulses sent out, not only to the cerebrospinal nerves but also to the sympathetic nervous system, and possibly to the autonomic centers. The most important single diagnostic point upon which the writer depends is that if we press about an inch and a half to the right of the navel and a trifle below, and if we press deeply enough to bring out the response from the right group of lumbar sympathetic ganglia, there is definite evidence that we are to look to the appendix for the source of that particular irritation, provided that the left group of sympathetic lumbar ganglia is not hyperesthetic. This point of tenderness situated several inches away from McBurney's point is one which relates to a chronic irritative lesion of the appendix. Having determined that the appendix is the seat of chronic disturbance we are still left to exercise surgical judgment. This means that we are still to determine if the patient is one of neurasthenic habit and relaxation of peritoneal supports; if the patient is one with chronic enteric toxemia, or if he is one with syncongestive appendicitis along with important organic lesions at a distance.

3. **Specific Therapy in Certain Acute Infectious Diseases.**—Francis J. Dever reviews literature of specific therapy in acute infectious disease, and concludes that since beneficial effects from the use of vaccines are obtained through the production of an active immunity, and since active immunity is developed relatively slowly, it is difficult to understand how their employment will be of advantage to the patient suffering from an acute infectious disease, even though sensitized vaccines are employed. Hope for the future seems to lie rather in specific serum, which supplies the antibodies without calling on the cells of the body to do additional work. Experience in the treatment of typhoid fever and pneumonia does not justify their use, even though reports of harmful effects of such treatment are infrequent in the literature. The value of antimeningococcus serum has been demonstrated. The subcutaneous or intramuscular use of tetanus antitoxin is of little value. The combined use of the intraspinal and intravenous injections has reduced the mortality from tetanus and is therefore the method of use at the present time. Reports of investigators lead to the hope that in the near future serums will be available against the various groups of pneumococcus.

7. **Gas Gangrene.**—E. Kilbourne Tullidge discusses the importance and treatment of gas gangrene in the present war, during which he has had the opportunity of observing and treating 230 cases. He states that the onset in every case was sudden and stormy, the limb became swollen, discolored, and painful, the symptoms in every way resembling those of an acute rapidly progressing venous thrombosis, except for the accumulating gas and the creptius elicited, and the contused lacerated opening or break in the skin through which the infection has entered. The zone of inflammation is more painful on pressure than the peripheral areas. The infection spreads rapidly and the decision as to the advisability of an operation must be made when the patient is first seen. In five of the foregoing cases prompt amputation of the limb resulted in complete recovery. Amputation of the limb far above the seat of invasion or crepitus must be our teaching and practice. Care should be exercised to examine all the tendinous sheaths bordering on or near the infection, and when as much as possible of the gangrenous tissue has been removed, sprays or jets of hydrogen peroxide should be thoroughly played upon all the remaining structures, taking pains that every corner and crevice receives its share. Following this a wet dressing of sublimate solution 1 in 1,000 should be applied, and the treatment repeated each day for four days, after which the time is lengthened to every other day. As a result of this treatment 177 cases recovered and amputation for gas gangrene became a practice of the past. The remaining patients in this series were either too feeble to withstand the operation or were received in a dying condition.

Journal of the American Medical Association.

May 20, 1916.

1. Vaccine Treatment. Ludvig Hektoen.
2. The Determination of Alveolar Carbon Dioxide Tens on by a Simple Method. V. McKim Marriott.
3. Some Modern Views of Syphilis of the Nervous System. Archibald Church.
4. Recurrent Generalized Herpes of Infectious Origin: Report of a Case. Frank Cohen.
5. Some of the Surgical Aspects of Painful Back. William E. Shackleton.
6. Carotid Tumor and Aneurysm of the Internal Carotid: Reports of Cases. Arthur M. Shipley and Frank S. Lynn.
7. The Charcot-Marie-Tooth Type of Progressive Neuromuscular Atrophy, with a Report of Two Cases. Charles Rosenheck.
8. Streptothrix in Bronchopneumonia of Rats Similar to that in Rat Bite Fever: A Preliminary Report. Ruth Tunnicliff.
9. The Bacillus Epileptiens: Third Report. Charles A. L. Reed.
10. Transient Articular Fibrillation in a Healthy Man Following Hydrogen Sulphid Poisoning. G. Canby Robinson.
11. Granuloma Pyogenicum of the Lip. Richard L. Sutton.
12. Hydrosalpinx with Twisted Pedicle. H. J. Whitacre.
13. The Microscopic Examination of Finger Nail Deposits: Significance in Forensic Medicine and in Public and Personal Hygiene. Albert Schneider.

14. The Pseudoreaction in the Schick Test and Its Control. Abraham Zingher.
15. Fracture of the Greater Cornu of the Hyoid Bone Resulting from Muscular Action. H. P. Ashe.
16. A Case of Bothriocephalus Latus Infection. J. J. Singer.
17. Split Tensor Fascia Femoris. Leo Bernd.

1. Vaccine Treatment.—Ludwig Hektoen. (See MEDICAL RECORD, May 27, p. 974.)

2. The Determination of Alveolar Carbon Dioxide Tension by Simple Method.—W. McKim Marriott describes his method of collecting the alveolar air and analyzing the sample which may be carried out in a few minutes and with no special discomfort to the patient. The method is essentially that of Plesch. A rubber bag of 1500 c.c. capacity is connected by means of a short rubber tube to a glass mouth piece. About 600 c.c. of air are blown into the bag and the rubber tube clamped off. At the end of a normal respiration the subject takes the tube in his mouth and breathes back and forth into the bag four times. At the end of twenty seconds the tube is clamped off and the air analyzed. The analysis should be carried out within three minutes as carbon dioxide rapidly passes through rubber. A special mask for collecting the air has been devised for infants. For analysis of the air samples, the apparatus comprises eight test tubes, containing standard phosphate solutions; a standard bicarbonate solution, a small test tube drawn out to a capillary point, and a box for color comparison. The method depends on the fact that if a current of air containing carbon dioxide is passing through a solution of sodium carbonate or bicarbonate until the solution is saturated the final solution will contain sodium bicarbonate and dissolved carbon dioxide. The reaction of such a solution will depend on the relative amounts of alkaline bicarbonate and the acid carbon dioxide present. This in turn will depend on the tension of carbon dioxide in the air with which the mixture has been saturated and will be independent of the volume of air blown through, provided saturation has once been attained. High tensions of carbon dioxide change the reaction toward the acid side; low tensions have the reverse effect; hence the reaction of such a solution is a measure of the tension of carbon dioxide in the air with which it has been saturated. This method is useful in making a diagnosis of acidosis, though conditions other than acidosis may affect the carbon dioxide tension, such as stimulation of the respiratory center or changes in the pulmonary epithelium, such as would prevent the air in the lungs from coming into equilibrium with the blood in the capillaries. In normal adults at rest, the carbon dioxide tension in the alveolar air, determined as described above, varies from 40 to 45 mm. Tensions between 30 and 35 mm. are indicative of a mild degree of acidosis. When the tension is as low as 20 mm., the individual may be considered in imminent danger. In coma, associated with acidosis, the tension may be as low as 8 or 10 mm. In infants, the tension of carbon dioxide is from 3 to 5 mm. lower than in adults.

3. Some Modern Views of Syphilis of the Nervous System.—Archibald Church discusses first the prevalence of syphilis and cites statistics from which he thinks one can estimate within conservative lines that one man in every five is syphilitic. Different authorities estimate that from 3.7 to 6.27 per cent. of syphilitic men develop tabes or paresis. Women are less susceptible to tabes and paresis than are men. He then discusses somewhat at length the variations in the spirochete *in vivo* and *in vitro* and points out that to-day, in the Laboratory of the Army Medical School, investigators can produce several varieties of spirochetes. They can breed a variety that can produce a hard chancre, or one which will produce a chancre lacking the old Hunterian characteristics of a cancer-like indurated base. They can produce a spirochete which will give a rich mucocutaneous efflorescence, or one which will be poor in cutaneous manifestations, with a tendency to confine its influence to the nervous system. Perhaps we may reach a time when, if we can determine the source of infection of the syphilitic patient, the stage of the disease and its characteristics in the carrier, we may be able to draw some conclusion as to the course that lies before the patient, and the nature of the clinical history which he may be expected to run. In the treatment of locomotor ataxia and general paresis it is essential that we be guided, not by the Wassermann in the blood, but by the condition of the cerebrospinal fluid. No man is giving his patient the best treatment, or even the proper treatment, who withholds the administration of these remedies before he has obtained, for a period of years, negative results by the Wassermann, the other accepted tests, and the cell count in the spinal fluid. The granting of marriage certificates to those who have had syphilis should not turn on the examination of the blood by the Wassermann method, but on careful examination of the spinal fluid.

4. Recurrent Generalized Herpes of Infectious Origin.—Frank Cohen relates the history of a patient having generalized herpes simplex that was recurrent over a period of two years. A course of treatment with autogenous vaccines and later by a course of sensitized autogenous vaccines effected a cure. The isolation of the organism from the skin in this case, the institution of a negative phase by its injection, with skin manifestations, and the cure, unattainable by any other means than the increase of the immunity for the streptococcus by the injection of the streptococcus vaccines, are all, in the opinion of the writer, indirect evidence of the infectious nature of this type of herpes. He believes that this case has gone a step towards proving the infectious origin of herpes and another step in the direction of showing the common origin of all herpes.

7. The Charcot-Marie-Tooth Type of Progressive Neuromuscular Atrophy.—Dr. Charles Rosenheck reviews the literature on this subject and describes the clinical course of this affection, the distinguished feature of which is the symmetry of the atrophy and its distal character. The proximal portions of the limbs are well preserved and show their normal contour, in striking contrast to the wasted distal portions. As a result of the atrophy, the extensors give way, thus giving rise to various degrees of claw hand, foot drop, and equinovarus deformities. The atrophy and paralysis are absolutely parallel. Bony atrophy is absent and constitutes a singular feature of the case. Face, chest, and trunk muscles are normal and remain unaffected throughout the course of the disease. Fibrillary contraction constitutes a persistent feature of the affection. It exists only in atrophying muscles and ceases when they are completely wasted. The reflexes in most cases reported were abolished. The sensibility was not much disturbed subjectively. Forms of cramps and parasthesias have been described but violent and continuous pain is not a feature of the disease. Sphincter troubles are absent, the organs of sense intact, the psychic state good, and the general health remarkably well preserved. The writer reports two cases and hopes this study will stimulate workers in the field of neurology to recognize and isolate these neural disturbances as belonging to a distinct clinical entity and not to class them with the dystrophies with which they are often confounded.

9. The Bacillus Epilepticus.—Charles A. L. Reed presents a third report on this subject in which he re-

affirms the correctness of his view that constipation is a very essential factor in the causation of epilepsy, and that this forms the connecting link in some form of infection. In this study he outlines his more recent experiments which lead him to the following conclusions: (1) Epilepsy is an infection depending on a specific spore-bearing organism which it would seem that one is justified in calling *Bacillus epilepticus.* (2) The *Bacillus epilepticus* invades the system through the alimentary canal, its chief focus being the cecum, from which it reaches the circulation by forced absorption induced by mechanical retardation of the fecal current. (3) The *Bacillus epilepticus,* by virtue of its sporebearing characteristic, under ordinary circumstances and without appropriate treatment, has the ability in most cases to perpetuate itself indefinitely in both the cecum and the blood. (4) In a certain very limited number of instances, the *Bacillus epilepticus* seems to be overcome by the natural immunity, but only where there is no focus in the intestines for the continued infection of the system—a circumstance which would seem to account for the spontaneous recovery. (5) Treatment, surgical and bactericidal, to be rational and effective, must be addressed to the organism, with reference, first, to arresting its intake from the intestines, and, secondly, to its neutralization and eradication from the blood.

14. **The Pseudoreaction in the Schick Test and Its Control.**—Abraham Zingher calls attention to the fact that the pseudoreaction in the Schick test is caused, not by the soluble diphtheria toxin, but by the protein substance of the diphtheria bacillus which is present in the solution used for the test. It is important to control these pseudoreactions and to this end he has devised an outfit similar to the Schick test outfit, but the toxin in the capillary tube has been heated to 75 deg. C. for five minutes. This destroys the soluble diphtheria toxin, but does not appreciably affect the protein of the diphtheria bacillus. These outfits are now distributed by the New York City Board of Health together with the Schick test outfits and accompanied by directions for their use. In an individual who gives a positive reaction only, the control test with the heated toxin will be negative. In one who gives a *pseudoreaction,* the control reaction will be of about the same size and appearance, and pass through the same clinical course as the original reaction; *e.g.,* the two reactions showing a similar central area of redness of varying size, surrounded by a secondary areola which shades off into the surrounding skin. Both reactions begin to appear in about six to sighteen hours, reach their height in twenty-four to thirty-six hours and disappear in three to four days, leaving a poorly defined area of pigmentation and generally no scaling. In an individual who gives a *combined* reaction in the original test, both the positive and the pseudoreaction may be detected. The positive reaction becomes manifest in the original test at the end of three to four days, when the pseudo-element of the reaction has disappeared, as a definite circumscribed area of redness, which measures from 1 to 2.5 cm. in diameter and shows superficial scaling with beginning brownish pigmentation. The pseudoreaction is detected in the control test with the heated toxin; the reaction will not be as marked as in the original Schick test, but passes through the typical clinical course of a false reaction.

The Lancet.

April 29, 1916.

1. Infant Mortality and the Relative Practical Value of Measures Directed to Its Prevention. S. G. Moore.
2. On the Treatment of Gunshot Fractures: A Description of Apparatus and Technique. Ernest W. Hay Groves and Thomas H. Brown.
3. Some Perforations at or Near the Pylorus. W. H. Battle.
4. On Pneumococcal Bronchitis. James Goodhart.
5. Blood Findings in Epilepsy. Ralph H. Spangler.
6. The Significance of Presystolic Cardiac Murmurs. Thomas Lumsden.

1. Infant Mortality and the Relative Practical Value of Measures Directed to Its Prevention.—S. G. Moore presents a study of the infant mortality rates of England and Wales and ventures the opinion that in these reports too much importance is given to general sanitation in accounting for the reduction in infant mortality in recent years and too little importance is given to work especially directed to meet the particular circumstances of infant life. He believes that hygienic procedures directed to counteract the disability resulting from a premature entrance into the world would meet a not inconsiderable measure of success, since statistics show that premature birth holds first rank among the causes of infant mortality. The mortality rates of 30 of the large towns of England and Wales are presented which show that the infant mortality had been lessened by one-half since 1877. He finds that the fall in the infant mortality rate has been sudden while the improvement in sanitation has been gradual, and sees in this one of the reasons which has led him to the conclusion that it is by direct rather than general measures that one must hope still further to improve the baby's chance to survive. He reviews the activities of the various organizations having as their object the care and protection of infants, but makes the objection that all this work partakes of the nature of charity, while the infant has a right to protection.

3. Some Perforations at or Near the Pylorus.—W. H. Battle emphasizes the importance in perforations at or near the pylorus of accurate suturing so that the weakened part will be able to withstand the strain of vomiting, coughing, or pressure from distention of the stomach. If one or more sutures fail and leakage occurs after an abdominal incision has been closed and the patient put back to bed, death will ensue from peritonitis within a few hours. If, by some rare chance, the gastric juice is prevented from a general diffusion, there is a possibility of recovery, but the fistula which results leads to a rapid dehydration of the patient with remarkable emaciation, quite as startling as that from partial strangulation of the stomach in a diaphragmatic hernia. Recovery from such a fistula is so rare that he reports such a case. He also cites, among other cases, one of the type seen after the perforation of a gastric ulcer which has not come under early care. In such a case there was sometimes a period of repose after the first severity of the symptoms have passed, but operation must not be postponed under an impression that the patient will recover. Free fluid in the flanks as indicated by shifting dullness should warn against such a fatal error. In nearly every instance of perforation of a duodenal ulcer or one situated at the pyloric end of the stomach gastroenterostomy must be considered. In the large number it is contraindicated by the state of the patient. In most, the operation would have to be an anterior operation, for to open up new areas to the risk of infection would appreciably increase the danger of complications. Usually it is better for the patient to undergo a gastroenterostomy by the posterior method at a later date if symptoms of pyloric obstruction arise. In addition there is danger of the formation after an uncertain period of time of a jejunal ulcer when the anterior method has been employed. One of the cases cited illustrates this sequence of events. The sutures in duodenal perforations should be passed by Lembert's method in the direction of the long axis of the duo-

denum, so that further diminution of the passage may not be induced. If, however, the sutures do not hold securely in the tissue immediately around the perforation it may be possible to bring a fold of the adjacent stomach wall across and fix it in position. This method of cleaning the perforation, Battle says, has proved useful in a number of instances coming under his observation.

4. Pneumococcal Bronchitis.—James Goodhart states that during the past year or two there have occasionally come under his notice youths of somewhat degenerate development, who at some prior period have suffered from pneumonia, or maybe an empyema, below the root of the left lung. This has left behind it a patch of solid or condensed lung with a cavity within it from which there occasionally comes a slight hemorrhage, the youth being otherwise healthy. In such patients it is possible to distinguish between this condition and tuberculosis with tolerable accuracy even before a bacteriological examination has been made. The writer records of some 60 cases coming to his notice during a period of some years in which such a pneumococcus infection might have aroused suspicions of tuberculosis. A number of these cases are reported. He thinks there is generally a something in the quality of the crepitation that is heard that raises a question as to the presence of tuberculosis; the râles are often dry and rustling rather than consonating. There is no accompanying bronchial breathing or other evidence of consolidation of softening of the lung. This condition is found in people mostly, but not exclusively, of middle age or older, with a frequent or long history of colds or cough, sometimes with a little hemoptysis, none of them revealing any bacteriological evidence of the presence of tubercle bacilli, but all of them some one or more variety of micrococcus or bacilli, a diplococcus resembling the pneumonoccus invariably, but also the *Micrococcus catarrhalis*, staphylococci, the influenza bacillus, and once the *Micrococcus paratetragenus*. A further point was that the diplococcus above referred to appeared to be very persistent, and to be associated with more or less bronchial disturbance for quite a long time. Some of these cases, the author says, had been treated with vaccines, but none with conspicuous success.

5. Blood Findings in Epilepsy.—Ralph H. Spangler has made a study of the blood of 369 epileptic patients from which he draws the following general conclusions: (1) The percentage of hemoglobin in epilepsy is comparatively high (84 per cent. in the present series of 100 cases). (2) The red cells show no marked diminution and, with few exceptions, no evidence of degeneration in cases of uncomplicated epilepsy. (3) The white cells in cases of epilepsy fall within the normal limits during the interparoxysmal periods; uniformly, however, there is a tendency to leucocytosis, and occasionally a hyperleucocytosis at the time of, and frequently for 24 hours following, an epileptic seizure. (4) The average percentage of the small lymphocytes and the polymorphonuclear cells in the 100 cases fell within normal limits; the large lymphocytes averaged 9 per cent. above the normal range; there was no evidence of eosinophilia. (5) The clotting time of the blood is shortened before an epileptic seizure. The range of the clotting time of the blood in 98 of the cases of epilepsy in this series which were studied to determine this point, was definitely shorter during interparoxysmal periods (1.5 to 4.75 minutes) than it is in normal individuals (3 to 8 minutes as given by most investigators). (6) Finally, the alkalinity of the blood is lower in cases of epilepsy than in control individuals on the same diet.

British Medical Journal.

April 29, 1916.

1. Notes on Military Orthopedics. Robert Jones.
2. Preliminary Note on a Method for the Preparation of Non-toxic Dysentery Vaccine. H. R. Dean and R. S. Adamson.
3. The Therapeutic and Reaction Effects of Kharsivan. H. C. Lucey.
4. The History of Organic Compounds of Arsenic in the Treatment of Protozoan Diseases. Benjamin Moore.
5. The Prevention, Symptoms, and Treatment of Tetryl Dermatitis. Enid Smith.
6. Relapsing Paratyphoid "A" Infection. Alex. Mills Kennedy and B. R. G. Russell.
7. New Apparatus for Bacterial Fermentation Tests. S. Delepine.

1. Notes on Military Orthopedics.—Robert Jones describes the positions of election for ankylosis following gunshot injuries of the joints and gives illustrative figures. In answer to the question, "What should be done with flail joints?" he says, "Secure by operation an ankylosis in the most useful position." The only exception is in the case of the hip joint where by the use of a simple mechanism a very useful limb may be obtained in spite of the joint being flail.

2. Method for the Preparation of a Non-toxic Dysentery Vaccine.—H. R. Dean and R. S. Adamson present this preliminary report. They state that up to this time their experiments show that the toxicity of an emulsion of *B. dysenteriæ* (Shiga) can be enormously reduced, or even entirely destroyed, by the action of a dilute solution of eusol or of hydrogen peroxide. The injection of such an emulsion in which the toxin has been destroyed is followed by the production of a satisfactory degree of immunity. With regard to the production of a suitable Shiga vaccine they suggest the following procedure: Prepare an emulsion containing 200 million bacilli per c.c. Heat this for an hour at 58 or 60 deg. C. Mix with an equal quantity of a 1 in 500 solution of freshly prepared eusol in normal saline. Allow the mixture to stand at room temperature for 24 hours. Inject subcutaneously 1 c.c of this mixture; which will contain 100 million bacilli in 1 to 1000 solution of eusol. The second dose may be given ten days later and at this time an emulsion containing 800 million bacilli to 1 c.c. should be prepared. This is heated to 58 or 60 deg. C. and mixed with an equal quantity of one in 500 eusol. A third dose of 200 million bacilli may be necessary in order to complete the immunity.

3. Therapeutic and Reaction Effects of Kharsivan.—H. C. Lucey makes an appeal to the medical profession to furnish it with accurate records of the results of the use of kharsivan, the British preparation of the same chemical constitution as salvarsan, and presents a definite scheme for recording such results. He has a record of 600 injections and believes this agent every bit as potent as the original German preparation. He calls attention particularly to a peculiar reaction which he attributes to an abnormal arsenical toxicity in a particular batch which occurred in 0.5 per cent. of the cases in which this particular batch of kharsivan was used. This reaction came on toward the end or a few minutes after an intravenous injection and consisted in slight edema of the lips and eyelids, a sense of fullness in the throat and epigastric pain. In addition to this there might be a rise in temperature, headache and diarrhea. He has had no such reactions with later batches, they all having proved satisfactory.

5. The Prevention, Symptoms, and Treatment of Tetryl Dermatitis.—Enid Smith who has acted as medical officer to munition works employing about 250 women, where tetryl (tetra-nitro-methyl-aniline) is used, points out means of avoiding the dermatitis and a method of treatment which he has found effective. He says women with obvious eye or skin diseases should not do this work, and all workers should be taken on

probation. Before going into the work rooms each worker hardens her hands in a spirit lotion (filtered methyl spirit 20 per cent., water 80 per cent.) and dusts her face freely with powder (zinc oxide 1, starch 3). The workers are warned against touching their faces with their hands. On leaving the works they wash their hands using oilve oil soap or bran. The face is wiped free of powder and a simple greasy preparation may be used at the end of the day. The symptoms of this dermatitis consist in a yellow staining of the skin, irritation and roughening. In the severest cases there is an edema of the whole face. There may be an accompanying conjunctivitis, nasal irritation, pharyngeal irritation and sometimes slight constitutional symptoms, though the latter are almost always absent. For the dermatitis, in the severst cases, steaming the face with subsequent application of wet cloths reduces the swelling and allays the irritation. Later on, and in less severe cases from the first, calamine lotion acts well, though some prefer an ointment composed of zinc ointment, lanoline, and castor oil, equal parts. He avoids lead lotion, as lead has a dangerous affinity for tetryl. For conjunctival irritation colloidal silver acts well, though it smarts on application. For nasal irritation he uses liquid paraffin.

Deutsche medizinische Wochenschrift.

April 6, 1916.

Practical Significance of Protective Inoculation in Typhoid Fever and Cholera.—Fejes writes of his personal experience in the Hungarian army. These immunizations have now been carried out systematically for a year, and first of all we note a falling off in morbidity, but it is too soon to quote figures. Not only is incidence much less but the type is much milder—so much so that diagnosis by the coarser methods became at times impossible. When the inoculated subject develops typhoid it appears in one of two forms. In the first the disease begins with violence, as in the typical case, but in a few days remarkable improvement is noted, while by the eighth or tenth day fever is absent and there is no period of convalescence. When fever ceases we do not speak of convalescence but of recovery. The second form in the inoculated is highly atypical and diagnosis can be made only by blood tests. The patient has a peculiar fever. While afebrile in the morning, there is a medium rise of temperature later in the day which ends during the night in profuse, spontaneous perspiration. The sensorium is clear, patient cheerful, heart and pulse only in proportion to degree of temperature. A roseolous rash and slight enlargement of the spleen are always present. The patient does not lose his appetite or power of assimilation and hence loses but little weight. Ulceration of Peyer's patches and perforation are never seen. This mild, atypical form is very common. Retention of consciousness is all important for the prevention of certain accidents and complications. The mouth does not become foul and a source of secondary infection. Cholera immunization is much less efficacious. Aside from prevention outright—and its power here cannot yet be determined—it does not mitigate the course of the disease. This difference is not difficult to comprehend if we bear in mind that cholera is a local process and not a bacteriemia. The cholera vibrio cannot be reached through the blood and the chance of attacking it in the intestinal mucosa is slight. The blood in cholera is in a state of endotoxicosis and can only be influenced by a substance having antiendotoxic powers.

Pediatrics in Russian Occupation Territory.—Flusser, a surgeon in the Austrian army, but originally a pediatrist of Prague, gives his experience in treating the native Russian children for typhus, diphtheria, and dysentery. A nine-year-old boy seen on the eighth day of typhus showed the most unabated restlessness accompanied with facial grimaces. Every few minutes he emitted a peculiar scream as if suddenly frightened. There was as good as complete insomnia. The striking pallor of the skin made the exanthem the more conspicuous. Conjunctivitis and rhinitis were marked, as in measles. Bronchitis was also present. The mouth resembled that of typhoid. Death occurred on the eleventh day. This case must have been a notable exception to the rules stated by some clinicians that typhus runs a mild course in childhood, not unlike that of measles. The cases of diphtheria seen were of the severest type, with special tendency to laryngeal stenosis. The lymph-node paquets in the neck sometimes reached the size of the fist. The power of the serum was wonderful. In forty-two cases the author lost but one and that from cardiac failure. The initial injection of antitoxin was from 1500-3000 units, partly in the veins and partly subcutaneous. The improvement was rapid. The author saw an epidemic of dysentery confined to children which he has already reported. After the subsidence of this epidemic he saw one isolated case in a child with sclerema. As a complication, noma was present, a condition which has almost died out. The entire right cheek was destroyed. The child, aged 2½ years, was almost moribund when first seen, and died the same day. Finally the author saw a case of mongolism in an infant aged six months which was unusual by reason of peculiar eye complications — nystagmus, rigid pupils, etc.

Excretion of Salvarsan after Intravenous Injection of Concentrated Solutions.—Stern made 420 examinations of urine from 200 persons who had received salvarsan in definite concentration in a vein. He found that under these conditions elimination goes ahead more slowly than when salvarsan is infused in dilute solutions. In theory as well as from the experience of clinicians, the longer the drug stays in the blood the better the therapeutic effects. The slow escape of residues of arsenic in the tissues is not concerned here, *i.e.* there is no strict parallelism between the two. Weak reactions in urine tests should not necessarily be accepted as positive. One of the tests for salvarsan in the urine in addition of an alkaline solution of resorcin. When the drug is escaping in the desired quantity the resorcin in solution is colored a pronounced red and a red ring is formed. This can be interpreted as indicating the escape of the injected salvarsan from the blood. If this color reaction is feeble it has no significance in this connection. This superiority on the part of the intravenous injection of concentrated solutions synergizes well with the relative simplicity of technique.

Acute Syphilitic Nephritis.—John H. Stokes calls attention to the fact that this complication of syphilis may develop in the course of efficient mercurial treatment. The best recognized points in diagnosis are: (1) the establishment of the existence of early syphilis; (2) high albumin content; (3) double refractive lipoids in the urine; (4) therapeutic tests. Of course 3 and 4 are probably the most reliable. The writer emphasizes the following points: The administration of salvarsan is a valuable aid in the diagnosis and treatment of acute syphilitic nephritis. The risk in administering salvarsan to a nephritic suspected of being syphilitic, to establish a diagnosis, is no greater and perhaps less than that incurred by using a sufficient dosage of mercury. The general therapeutic response is probably better with salvarsan than with mercury. Renal injury from salvarsan seems to be the result of overdosage. From 0.15 to 0.2 gm. of salvarsan, given at weekly intervals, is adequate and must not be exceeded at the outset, but may be cautiously increased to 0.4 gm. later.—*Journal of the American Medical Association.*

Insurance Medicine.

Syphilis and Life Insurance.—In an article in the *Journal of the American Medical Association* of May 6, 1916, John A. Kolmer discusses syphilis and life insurance with special reference to the Wassermann and luetin reactions. He says that the question of frequency of syphilis is of minor importance in relation to insurance, as it has no direct bearing on any one applicant for insurance, and figures on the subject require revision in view of the results of the application of the Wassermann reaction in the diagnosis of the disease. Statistics, however, long since taught insurance companies the necessity for exercising some care in accepting syphilitics for insurance. The disease is from three to eight times more prevalent among the higher than the lower classes, although this may be apparent only because the former are more likely to seek medical attention; and it is also more prevalent among those living in cities than in the country districts. It has been variously estimated that from 10 to 20 per cent. of applicants for insurance have been infected with syphilis, the lower figure being probably nearer correct, and that the majority of men are infected before the twenty-third, and women before the twentieth year of age.

The relation of syphilis to duration of life bears a more or less direct relation to the question of treatment. Virulent infection, especially of the immature and debilitated may destroy life in a comparatively short time; in any event, the expectation of life among syphilitics must be shortened. Bramwell has estimated that the duration of life in cases of tertiary syphilis is shortened by ten years, and the general experience among insurance companies is to the effect that the disease has a heavy extra mortality at comparatively early ages, and that they have suffered considerable loss by them.

Cases of untreated syphilis are almost certain to develop late or tertiary lesions; on the other hand, syphilis is a curable disease in the majority of cases, especially when vigorous and proper treatment is instituted early in the disease. Treatment, therefore, has a very important bearing on the relation of syphilis to insurance; some companies refuse to accept the syphilitic applicant until three years have elapsed since infection, two of which must be spent under vigorous and intelligent treatment with mercury or salvarsan and the third year under observation, during which time the person is free from symptoms of the disease. Patients receiving treatment by iodides only are regarded as bad risks; likewise alcoholics and free livers. With regard to the Wassermann reaction the highly specific nature of the syphilis reaction has been proved by extensive investigations with the serums of normal persons and of persons afflicted with diseases other than syphilis. Unfortunately, the reaction is beset by so many possibilities of technical error that a review of the literature, especially of the early literature, shows results that are quite confusing and contradictory.

The luetin reaction of Noguchi is specific for syphilis, and constitutes an allergic reaction similar to the tuberculin reaction in tuberculosis. The luetin reaction is of most value in tertiary, congenital, and latent syphilis and especially in those under treatment which are the group of cases of most interest in connection with the question of life insurance. The test is of little value in primary and secondary syphilis. Kolmer concludes as follows:

1. A syphilitic applicant is not as good a risk for life insurance as a nonsyphilitic person, and never constitutes a first-class risk. 2. Persons acquiring syphilis after forty-five years of age, and syphilis among alcoholics and free livers and those showing early involvement of the nervous system are especially bad risks. 3. No syphilitic applicant should be accepted who has not undergone proper and thorough treatment nor any who show active signs and symptoms of the disease in any of its stages. 4. It is clear that the statements of an applicant cannot always be accepted in either a positive or more particularly a negative way, in answering the question concerning infection with syphilis. He may believe that he has contracted syphilis at an earlier date and be mistaken; more likely, however, he is ignorant of having contracted syphilis, or wilfully denies knowledge of infection or believes he is cured. It is frequently impossible on the basis of questions and answers and physical examination alone for the medical examiner to state positively that an applicant is or is not syphilitic or if so, that he is cured. In applicants presenting frank primary lesion or its scar, or secondary lesions or well marked tertiary lesions, the diagnosis may readily enough be made; but an applicant in the late and occult stages appearing in good bodily health and denying infection may readily enough pass as a first-class risk. In the detection of these cases, the Wassermann and luetin reactions will prove of great value likewise in deciding the question of acceptance and risk in the case of a syphilitic applicant who has undergone treatment.

Each company must decide for itself the value of such knowledge in risks and ratings; in the opinion of Kolmer an unquestionably positive Wassermann reaction in competent hands may be accepted as a sign of syphilis; a positive luetin reaction may be accepted as an indication that the applicant is or has been syphilitic. With the question of the presence, absence or cure of syphilis settled in this manner, in conjunction with a thorough physical examination, the company should be guided in accepting risks and rates by at least the same rules as govern such cases when the diagnosis is made on the basis of an applicant's statements on the results of the physician's physical examination.

The Relation Between the Life Insurance Agent and the Local Medical Examiner.—Dr. P. H. Scardino read a paper before the Section on Life Insurance, State Medical Association of Texas, at Fort Worth, on May 5, 1915, dealing with the relation between the life insurance agent and the local medical examiner, and in summarizing he emphasizes the following points: Primarily, the examiner is the employee of the company; therefore, the benefit of any doubt should always be given to the company. He should give courtesy to the company, applicant, and agent; he should be fair to all three, and prompt in all his appointments. He should assist the agent diplomatically to secure a good, though often reluctant risk. He should never disclose an applicant's name to another agent. He should never have applications lying about where a rival agent may have easy access to them. He should turn all applications in promptly on completion of examination.—*Texas State Journal of Medicine.*

Book Reviews.

PELLAGRA—An American Problem. By GEORGE M. NILES. M.D., Gastroenterologist to the Georgia Baptist Hospital, Wesley Memorial Hospital, and Atlanta Hospital; Consulting Gastroenterologist to the Atlanta Antituberculosis Association and to the Moore Memorial Clinic, Atlanta, Georgia. Second Edition. Illustrated. Price, Cloth, $3.00 net. Philadelphia and London: W. B. Saunders Company, 1916.

THE title of this book is well chosen, for pellagra is truly now an American problem and one of which the solution does not appear to be in sight as yet. Dr. Niles in the second edition of his very excellent work on the subject has set forth in a clear and concise manner our existing knowledge of this disease, together with his own views concerning it. In the discussion of poor food as a cause of pellagra the author does not refer directly to the investigations of certain members of the United States Public Service, which appear to suggest that pellagra may be due to the absence of vitamine content in the food, probably because these investigations were not completed at the time this edition was prepared. Dr. Niles' book may be recommended as a most valuable reference book for those who desire to acquire reliable information concerning a disease which has made so great headway in the South during recent years.

WOUND INFECTIONS and Some New Methods for the Study of the Various Factors Which Come Into Consideration in Their Treatment. By Sir ALMROTH E. WRIGHT, M.D., F.R.S., Consulting Physician to the Expeditionary Force. Being an address delivered before the Royal Society of Medicine and taken from the Research Laboratory attached to No. 13 General Hospital, Boulogne-sur-Mer. Price, $1.00. New York: William Wood & Co., 1915.

SIR Almroth Wright, in his address delivered before the Royal Society of Medicine recently, discusses the treatment of wound infections, criticises the methods now in vogue, and advocates the employment of the lymphagogic application which he has recommended for some years past. He believes that the use of a 5 per cent. solution of common salt, mixed with ½ per cent. of sodium citrate brings into play osmotic forces and "draws" the lymph out of the walls of the wound by a vis a fronte. Perhaps the British professor is somewhat too severe on existing methods for treating wound infections, as, after all, his mode of treatment has yet to be thoroughly tested.

MAN—AN ADAPTIVE MECHANISM. By GEORGE W. CRILE, F.A.C.S., Professor of Surgery, School of Medicine, Western Reserve University; Visiting Surgeon to the Lakeside Hospital, Cleveland. Edited by ANNETTE AUSTIN, A.B. New York: The Macmillan Company, 1916.

IN this volume the distinguished author has collected and elaborated all the data which he had previously obtained relative to the matter here considered. The former publications which he has contributed on this subject are freely drawn upon and the whole theory is presented in a clearer and more complete form than has hitherto been the case. Readers are probably fairly familiar with the theory by this time, and with many of the observations and conclusions presented we can have but little quarrel. It is well known that we are the sons of our fathers and that instincts (here called "action patterns") are the result of generations of experience. Some of his deductions seem too fantastic for our acceptance at present, perhaps only because they are so strange, but the subject is presented attractively and is one that lends itself easily to philosophical discussion. It is not our intention to discuss the theory here, but rather to recommend that each one read and study for himself. Many of the objections are obvious and others will come to mind on careful reading and we can assure a prospective reader that the effort will be stimulating.

THE CLINICS OF JOHN B. MURPHY, M.D., at Mercy Hospital, Chicago. Volume IV, Number 6, December, 1915. Octavo of 238 pages with 72 illustrations. Published bimonthly. Price per year, cloth, $12.00; paper, $8.00. Philadelphia and London: W. B. Saunders Company, 1915.

IN this number of the Clinics we have a long and varied list of clinical cases ranging from leucoplacic papillomata of the buccal mucous membrane, angiomata, sarcomata, and other affections of the soft parts to various bone lesions, among the most interesting of which are three cases of congenital luxation of the hip. About two-thirds of the cases discussed present some form of bone lesion. After reading the description of the technique employed in the cases of undescended testicle one wonders how large a percentage of these testicles stay "put." Often there is a tendency for the cord to retract; and as the testicle is stitched to the bottom of the scrotum, this latter becomes more or less invaginated if retraction takes place and follows the retracting testicle up to or within the inguinal canal. It was to nullify this tendency that the Torek operation was devised.

A GUIDE TO GYNECOLOGY IN GENERAL PRACTICE. By COMYNS BERKELEY, M.A., M.D., M.C., F.R.C.P., Obstetric and Gynecological Surgeon to the Middlesex Hospital, and VICTOR BONNEY, M.S., M.D., B.Sc., F.R.C.S., M.R.C.P., Assistant Obstetric and Gynecological Surgeon to the Middlesex Hospital. Price, $6.50. New York: Oxford University Press, American Branch, 1915.

THIS book is written especially for the practitioner to assist him in supplementing his academic knowledge of the subject with a practical understanding of its clinical difficulties. The subject is arranged in a rather unusual but none the less natural manner. The first part discusses the history and the methods of examination, all of which are given in detail. The second part takes up the significance of symptoms, that is, subjective symptoms, and part three has to do with the interpretation of physical signs. In these two parts the symptom is described and then the conditions in which it may appear with a brief differential diagnosis. While this method of attack necessitates a good deal of repetition it nevertheless furnishes the physician with an easy and quick means of locating the information he is after. Part four contains the treatment from which all details of operative technique have been omitted. It is condensed but sufficient and quite consistently clear and conservative. Part five consists of an admirable discussion of the medicolegal aspects of gynecology which, although founded upon English law, can nevertheless be used very largely in this country. This is the most complete and best discussion of the kind which we have seen and should be of great service to the profession. The index is large, with numerous cross-references, so that anything can be quickly found. The illustrations addition to being a complete and authoritative work are numerous and well drawn. The work possesses all the advantages of the ready reference handbooks, in on the subject.

DISEASES OF THE STOMACH AND UPPER ALIMENTARY TRACT. By ANTHONY BASSLER, M.D., Professor of Clinical Medicine, New York Polyclinic Medical School and Hospital. Third Edition. Philadelphia: F. A. Davis Company.

THE demands for this work have enabled the author to get out a new edition which is quite extensively revised and brought up to date. The book is profusely illustrated especially in respect of half tones of Roentgen ray plates and microphotographs and the new edition retains all the best characteristics which have made the former editions as popular as they have been.

MEDICAL AND VETERINARY ENTOMOLOGY, a Textbook for Use in Schools and Colleges as well as a Handbook for the Use of Physicians, Veterinarians and Public Health Officials. By WILLIAM B. HERMS, Associate Professor of Parasitology in the University of California, Consulting Parasitologist for the California State Board of Health. Price, $4.00. New York: The Macmillan Company, 1915.

THIS volume is not intended to be a comprehensive treatise but rather an attempt to systematize the subject. It contains a discussion "of all the more important diseases and irritations of man and of the domesticated animals in which insects and arachnids are concerned, either as carriers or as causative organisms." The plan of the work is a broad one and it is carried out in detail. Naturally the greatest attention is devoted to the fly and the mosquito, but the other insect pests receive ample attention. The author has an extensive acquaintance with his subject and has had the book in preparation for a long time so that he writes smoothly and authoritatively. His discussion of the medical side of the subject is marked with restraint and sanity. There are very many illustrations, for the most part photographs that really illustrate. The book makes interesting reading and is a veritable mine of information. It can be highly recommended.

Society Reports.

MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16-18, 1916.

(Special Report to the MEDICAL RECORD.)

(*Continued from page 982.*)

SECTION ON MEDICINE.

Wednesday, May 17—Second Day.

THE CHAIRMAN, DR. JOHN L. HEFFRON, IN THE CHAIR.

The Value and Limitations of Physiological Therapeutics.—Dr. JOHN M. SWAN of Rochester read this paper and also presented some lantern slides. He said that the various forms of modern hydrotherapy, gymnastics, massage, passive motion, etc., were the direct descendants from an ancient cult which flourished so long ago in the hills of the Argolic Peninsula. It must not be supposed, however, that it would do to-day to tell a patient to go to a health resort and "take a few baths." The details of the various forms of treatment employed must be studied and understood and careful prescriptions must be written for the kind and duration of the treatment desired. In this day of scientific research into the causes of the various effects following different forms of treatment, it would no longer suffice to say, as it was said many thousand years ago, that the value of the waters at Apidaurus depended upon some drops of Gorgon's blood which had been given Aesculapius by Athena, nor would it do to ascribe the benefits to changes in metabolism when no metabolic studies had been made, to influences on the skin, heart and blood pressure not backed up by figures as to the influences of salts, gas, etc., in the water, not confirmed by control experiments with plain water. Dr. Swan quoted a few paragraphs taken from Honan's paper which was published in 1910, and entitled "Bad Nauheim: Its Treatment and Therapeutic Value." "There is so much of real therapeutic value in the baths of Nauheim that I know all progressive practitioners of to-day will appreciate a truthful and unprejudiced opinion of the most recent studies of these waters." "It is a well-known fact that carbonic acid baths have a special action on two organs of the human body—the heart and the skin. The heart is strengthened by the increased flow of blood in the coronary arteries due to the action of the carbonic acid on the vasomotor nerves and the increase in the coronary circulation." "To the presence of certain salts is due the activity and great therapeutic activity of these Nauheim baths. The carbonic acid, as we know, greatly accelerates the action of the calcium and sodium salts." Dr. Swan then reported several cases that he had treated with the brine baths, carbonic acid baths and with fresh water only. In one case of a male, aged 51, who was suffering from a moderate amount of cardiac hypertrophy with beginning arteriosclerosis, the water in the fourth bath instead of the usual 1-6 dilution of brine was fresh. The patient observed no difference. This was an example of several other cases in which the patients noticed no difference in their condition from these baths and in which the pulse rate was not affected. Dr. Swan said that his object in presenting this subject in this manner was not to discredit physiological therapeutics but to endeavor to stimulate those who were engaged in the administration of health resorts to study the effects of the methods employed by every method obtainable so as to provide some accurate basis for the statements made. They should try to get away from mysterious statements whether it was Gorgon's blood or radium, to get away from commercialism which tried to make patients believe that "X"-spring was the only place in the world where the individual could get well.

The Nauheim Method of Bath.—Dr. SIMON BARUCH of New York read this paper by invitation. (To be published later.)

A Study of the Cerebrospinal Fluid in Fifty Cases of Cerebrospinal Syphilis.—Dr. CHARLES CLYDE SUTTER of Rochester, N. Y., said he had analyzed the findings in 50 cases of cerebrospinal syphilis. This series included 10 cases of cerebrospinal syphilis, 11 cases of tabes dorsalis, 20 cases of general paresis and 9 cases of tabo-paresis. He found the greatest value of the examination in paresis and taboparesis, next in cerebrospinal fluid and lastly tabes. The Noguchi butyric acid seemed the most reliable of the globulin tests. It was present in almost all the cases examined, 41 out of the 50 cases and weak in 4 others. The cell count was a very important element in the study of the cerebrospinal fluid. When studied differentially it gave some insight into the severity of the meningeal reaction. The Hange colloidal gold chloride reaction was a useful adjuvant to the Wassermann and other tests. In paresis he found the typical "paresis curve." In tabes dorsalis the reaction was not quite so characteristic and was present in a less percentage of cases. The chief advantages in this reaction were the small amount of fluid used, its technical simplicity, the sharpness of the reaction, and its delicacy. The reaction was particularly useful in differentiating incipient general paresis and neurasthenic disturbances in a syphilitic. The positive Wassermann reaction was now a more constant finding in the cerebrospinal fluid since larger (five times) quantities of fluid was used in performing the reaction. He stated that a negative response should not be accepted as decisive until the technic with the larger amount had been used. In conclusion Dr. Sutter emphasized the value of the examination of the cerebrospinal fluid in both the study and in the treatment of syphilis. He also said that the serum Wassermann should be used routinely in the physical examination of all patients with or without a history of venereal disease. A positive reaction should be followed by a lumbar puncture with a study of the fluid in order to determine whether the nervous system was implicated. The treatment should not be suspended until after a systematic course of treatment and only after a negative Wassermann reaction in the cerebrospinal fluid.

Cancer as a Non-Surgical Disease.—Dr. L. DUNCAN BULKLEY of New York City read this paper. Cancer, he said, was not a surgical disease, although it was true that the local results of the cancerous process might be removed by surgical measures, that the wound might heal primarily, and in some proportion of instances the tissues might remain sound. But the experience of all had shown that the mere removal of the cancerous tumor and adjoining tissues surgically did not insure that the disease would not return in or near the scar, or elsewhere. It was well recognized and acknowledged that somewhere about 90 per cent. of those affected with cancer died from that malady. Surgery as a cure for cancer had been tried in the balance and found wanting since under the supervision and treatment the death rate had increased to a lamentable degree of late years. According to the United States Mortality Reports, the deaths from cancer under surgical control had increased steadily and alarmingly since 7900, when they were 63 per 100,000 of the population, to 79.4 per 100,000 in 1914, or over 25 per cent. During the same period the mortality from tuberculosis, under intelligent medical supervision, had diminished from 201.9 to 146.8 per 100,000, or over 27 per cent., making an actual difference of over 50 per cent. in their relative mortality since 1900. At this rate the deaths from cancer would outstrip those of tuberculosis in 14 years more. Was it not time for them to consider whether the present attitude toward cancer was correct or not? The points thus far acknowledged by those who had most deeply studied cancer were both negative and positive. First he considered the negative as follows: (1) Clinically and experimentally cancer was shown to be *not* concontagious or infectious; although under just the right conditions certain malignant new growths could be inoculated in some animals, but human cancer could not be transplanted. (2) Although micro-organisms of many kinds often had been found and claimed as the cause of cancer, there had been no concurrence of opinion in regard to them, and it was now pretty conclusively agreed that cancer was *not* caused by a micro-organism or parasite. (3) Cancer was *not* wholly a result of traumatism, although local injury might have much to do with its development in some particular locality, even as in connection with late lesions of syphilis. (4) Cancer was *not* hereditary in any appreciable degree; although some tendency in that direction had been demonstrated in certain strains of mice. (5) Occupation had *not* any very great influence on the occurrence of cancer, although it was more frequent in some pursuits than in others. (6) Cancer was *not* altogether a disease of older years, although its occurrence was decidedly influenced by advancing age. (7) It did *not* especially belong to or affect any particular sex, race, or class of persons. (8) Cancer was *not* confined to any location or section of the earth, but had been observed in all countries and climates.

He then considered the positive results of the laboratory investigation which were more encouraging and were as follows: (1) We know now that the local mass, which they called cancer, represented but a deviation from the normal life and action of the ordinary cells of the body. These once normal cells for some as yet unexplained reason, took on an abnormal or morbid action, with a continued tendency to malignancy which invaded and destroyed contiguous tissue, and was associated with a progressive anemia which destroyed life. (2) Microscopic study had shown that there was a certain change in the polarity of cells about to be cancer-genetic, with an altered relation of the centrosome to the nucleus. These changes were again attributed to an alteration in the enzyme contained in the cell, which further depended on the nutrition of the cell as influenced by a faulty metabolism of food elements. (3) The exclusion of all other possible causes led them naturally to look to a disordered metabolism as a cause of the disturbed action of the hitherto normal cells; and they found much to confirm this view both in laboratory studies on the biochemistry of cancer, and also in clinical and statistical observations. (4) The blood in advancing cancer had repeatedly been shown to exhibit many manifest changes, which indicated vital alteration in the action of the organs which formed blood, and so controlled the nutrition of the body and its cells. (5) Laboratory and clinical evidence demonstrated that the secretions and excretions of the body, both in early and late stages of cancer, exhibited departures from normal which deserved consideration. Although none of these had as yet been established as pathognomonic of cancer, they indicated metabolic distubances which influenced the nutrition of the cellular elements, and so these secretory and execretory disturbances were of importance in connection with its causation. (6) As all healthy cells of the body, by their catabolism and anabolism contributed a hormone or something to the general circulation, so experimental evidence showed that the cells of a cancer mass itself, when fully developed, secreted a hormone or something which was poisonous to animals, and which probably hastened the lethal progress of the disease. (7) Repeated laboratory experiences had demonstrated, in a most remarkable manner, the absolute controlling effect of diet on the development of inoculated cancer in mice and rats, so that the process was inhibited almost entirely with certain vegetable feedings. (8) They thus saw that as the laboratory had eliminated the local nature of cancer, it had also, in a measure, established the fact that there were medical aspects of the disease which further studies would show to be of the utmost importance. These all tended to demonstrate its constitutional origin, that was, its relation to deranged metabolism, which was recognized as the basis of so many diseases.

But clinical and statistical studies came in with overwhelming force to confirm the correctness of this position. (1) We had already seen that with utter medical neglect cancer mortality had steadily and greatly increased in the United States, of late years, in spite of the prodigious advances in surgery during the same time. They had seen also that tuberculosis, as a result of careful medical attention, had decreased in mortality, by an even greater percentage. The same was reported by reliable observers all over the civilized world. (2) Any member of observers, in many lands, had recorded the almost entire absence of cancer among aborigines, living simple lives, largely vegetarian; they had also shown the definite increase in the disease, and in its mortality, in proportion to their adoption of the customs and diet of so-called modern civilization. (3) This increase of cancer seemed to depend largely upon the altered conditions of life, particularly along the lines of self-indulgence in eating and drinking, and in indolence. (4) Statistics from any countries showed that increase in the consumption of meat, coffee, and alcoholic beverages, appeared to be coincident with a very great and proportionately greater augmentation of the mortality from cancer. (5) Clinical observation had time and again shown the effect of specific nerve strain and shock in the development of cancer; and there seemed to be little question but that the enormous nerve strain of modern life was an element of importance in this direction, both through metabolic disturbance, and by direct action on living cells. (6) At present no clear demonstration was possible of the direct method by which errors of metabolism effected the changes in cells to which they gave the name malignant any more than they knew how other alterations on the body were produced, such as arterial degeneration, bone changes, obesity, etc., which were recognized as due to metabolic derangement. (7) The results which had been observed in connection with the starvation of cancer, by ligature of vessels, illustrated the relation of the blood supply to growing cancer. (8) Finally, the repeated observation and report of the spontaneous disappearance of cancer, by careful and competent medical men, showed that conditions of the system might arise which were antagonistic to malignant growth, even when it had begun to take place; just as there were other conditions of the system which favored aberrant action of previously normal cells, resulting in cancer. The medical aspects of cancer thus appeared in quite a different light from that in which they had been commonly viewed. We now began to see some of the reasons why cancer was not primarily a surgical disease, and some of the lines along which observation and investigation should proceed, namely, biochemistry, secretory and excretory derangements, metabolic disturbances, diet, etc., etc.,

Election of Officers.—*Chairman*, Dr. John M. Swan of Rochester; *Secretary*, Dr. Arthur F. Chase of New York City.

The Determination of Uric Acid in the Blood and Remarks Concerning Its Value.—Dr. Morris S. Fine of New York presented this paper. He said that the publication of the Folin-Denis method for determining the uric acid of the blood might justly be regarded as an epoch in the development of the physiology and pathology of uric acid metabolism. The method commonly employed had involved the use of 300 c.c. of blood, from which by a tedious process in the course of several days the uric acid was isolated. At best only approximate results could be obtained. Folin's method called for but 25 c.c. of blood and the determination could be completed in a day. In the hands of Folin and his co-workers this procedure appeared to yield practically quantitative results, although many users of the method were unable to report such favorable experiences. Many of the difficulties inherent in the method of Folin and Denis were analyzed by Benedict, who introduced modifications which made the procedure, so far as simplicity and accuracy were concerned, little short of perfect. To one who had worked with these methods, Benedict's modification appeared hardly less a contribution to the subject than the original Folin-Denis method itself. The procedure for determining the uric acid of the blood as now carried out in their laboratory required but 10 c.c. of the blood and might be completed within an hour and a half. The method was then described. Until about one year ago, it was generally considered that normal human blood contained 1 to 2 mgm. per 100 c.c. and gouty blood 4 to 6 mgm. Since the introduction of Benedict's modification of the original Folin method, they had rarely noted figures below 3 mgm. for apparently normal individuals, nor below 6 mgm. for gouty patients. Emphasis should be placed on the observation that despite the common association of uric acid and retention with gouty symptoms, a high blood uric acid did not necessarily indicate gout. Similar accumulations of uric acid might be noted in the early stages of nephritis, where gouty symptoms were absent, and therefore great care should be taken to exclude nephritis before regarding such retention as evidence of gout. The determination of uric acid concentration of the blood might be an aid in the differential diagnosis between gout and the non-gouty arthritides if their newer standards of comparison were kept in mind. It should be emphasized, however, that arthritis complicated with early interstitial nephritis might have exactly the same blood picture as was found in gouty conditions. The method as carried out at present had made it possible to elimiate the large and unaccountable variations frequently noted on successive examinations by the original Folin-Denis method.

Metabolism in Gout.—Dr. Nellis B. Foster of New York said that two questions were stated for discussion: (1) The cause of the increase of uric acid in the blood and (2) the explanation for deposists of uric acid in cartilages. In gout as in health the sources of uric acid were known and did not differ, there was no new source of supply. All the evidence indicated that man was unable to destroy uric acid once formed. Man resembled birds in respect to his purin metabolism. It seemed likely then that the uric acid increase in the blood in gout was due to defect in excretion. The same increase in the blood was noted in renal disease. For the deposition of uric acid as tophi, no explanation

was at hand. It was not due to the blood being saturated, since this was not the case; serum dissolved more uric acid than water because of the phosphate content. The explanation was probably to be found in the chemical state of uric acid, which existed in two forms in many animals, free and combined. This was not demonstrated for man as yet, but evidence pointing to this conclusion was accumulating. One might then summarize the facts which bore upon the metabolism in gout in this way: The uricemia was not due to abnormal production of uric acid, neither was it due to a defective destruction; it was due to a defective excretion. From this it was evident that the disease was due primarily to a defective renal function. The retention of uric acid was not peculiar to gout, but was more pronounced with this disease. Due to unknown conditions a deposition of urates from the blood into the cartilages occurred. Why this phenomenon did not occur commonly in nephritis but did occur with gout was unknown.

Treatment of Gout.—Dr. ARTHUR F. CHACE of New York said that the determination of the amount of uric acid in the blood was an aid to the diagnosis of gout and served as a guide in its treatment. A list of cases showed an accumulation of uric acid in the blood, above 3 mg. per 100 c.c. in patients with clinical gout and below this figure in cases of infective arthritis and neuritis. Differential diagnosis between the uric acid retention of incipient nephritis and gout was made by clinical symptoms. The treatment was directed toward lessening the formation of uric acid and to facilitating its elimination. A table was shown illustrating the amount of uric acid reduction due to dietary restrictions and to the administration of salicylates and atophan. This table also showed that the elimination of uric acid was not increased by giving quinine, colchicum or diuretin. Alcohol, tea, and coffee caused a retention of uric acid in the blood. A purin free diet was given containing all foods except meat, meat extracts, peas, beans, spinach, tea, coffee and alcohol and an accessory diet consisting of meats and fish of which the uric acid-forming possibilities were known, being based upon the fact that 100 grams of roast beef produced 14 mg. of uric acid of which approximately one-half was excreted in the urine. By determining according to suggestion of von Noorden, the eliminative capacity of the body for exogenous uric acid, it was possible to keep the intake of purins well within this limit. Or, according to Umber, the number of days required to elimiate the uric acid arising from a definite amount of purin substances could be ascertained, and articles on the accessory diet be given at such intervals that retention of uric acid was avoided. For practical purposes these methods had proved cumbersome, particularly, as they necessitated the accurate collection of twenty-four hour specimens of urine and the careful weighing of prepared diets and are being superseded by the simpler procedure of examining the blood for uric acid. Continuous use of alkaline drinking waters induced a deposition of sodium biurate in the joints and cartilages and was capable of precipitating an acute attack of gout. The value of the periodic administration of atophan or, in non-nephritic cases of salicylates, in depleting the blood temporarily of uric acid was emphasized as a means of giving symptomatic relief and preventing the deposition of uric acid in the joints, thereby aborting acute gouty attacks. Exercise, massage and hydrotherapy assisted in the elimination of uric acid while the treatment of acute attacks was limited to the giving of colchicum large doses of hydrochloric acid, salicylates, water and the application of soothing lotions.

Functional and Organic Differentia in Nervous Diseases as Shown by Cases.—Dr. TOM. A. WILLIAMS of Washington, D. C., (by invitation) presented this communication. He said that a new nervous symptom occurring in a neurotic patient should never be attributed to his neuroticism. It should first be thoroughly observed and analyzed, for it might be an index of organic disease. For instance, a nervous man who had been drinking was sent to him an account of a tremor which had been treated for three months by hydrotherapy without benefit. Proper examination showed it was not a neurotic tremor at all and that there was dysergia, impairment of speech, exaggerated reflexes, impaired pupils and diminished deep pain sense. Syphilis was diagnosed and was confirmed by the examination of the spinal fluid. In another case, in spite of negative laboratory findings, a diagnosis of insula-sclerosis was rejected because of the absence in a grave case of all three important differentia, nystagmus, Babinski's sign and white pallida. Again, a diagnosis of psychasthenia by a family physician because of the fear of going out was rejected because there was absent such necessary differentia as obscession, monomania, anxiety, compulsive movement, serupolosity, and sense of incompleteness; the examination then showed the condition to be a vasomotor one. It was by psychological criteria that corticollis, facial grimace or other tic was differentiated from spasm due to irritation of a reflex arc, as well as by the fact that the muscles involved were not innervated by a single nerve arc. No neurotic condition should be diagnosed by exclusion; it was only by finding positive stigmata that one had a right to diagnose it.

Tobacco Smoking and Blood Pressure.—Dr. W. GILMAN THOMPSON and Dr. WILLIAM H. SHELDON of the Cornell University Medical College in New York City, embodied the results of 109 experiments conducted upon 58 patients selected for their advanced arteriosclerosis and high blood pressure. The patients, several at a time, were seated in a small closed room and required to smoke cigars energetically while observations were made upon their systolic and pulse pressures at intervals up to an hour. It was interesting to note that considerable variation in results was obtained not only in different patients having the same initial pressures, but in the same patient when tested again after intervals of from one to three years. Thus, there was a rise of systolic pressure in 35 per cent. of the cases and a fall in 45 per cent., the remaining 20 per cent. showing no change. The maximum elevation produced in any one case was 35 mm. systolic pressure. The results were not uniformly proportional to the initial blood pressure in the individual patient. The pulse pressure sometimes rose and sometimes fell, the average change on either side of the patient's normal being 11 mm., and it did not invariably rise with the systolic pressure. The effects of cigarette smoking were also tested and found similar to those of cigar smoking. The average increase in pulse rate was 13 beats per minute. These considerable variations emphasize the importance of studying each case of arteriosclerosis with high blood pressure individually before imposing restrictions upon smoking, but, in general, it was shown to be undesirable for anyone to smoke whose constant systolic pressure had reached 200 mm. or more; and secondly, it was undesirable for anyone to smoke whose initial pressure was above 160 when the use of tobacco was found uniformly to produce a considerable rise in systolic presure.

Studies in Acidosis.—Drs. CHARLES G. STOCKTON and JOHN L. BUTSCH of Buffalo presented this paper which was read by Dr. Butsch. They stated that much attention had been given to acidosis in the past few years. With acidosis, as with many other things, the clinician must wait until the chemist, physicist, or mechanic gave him processes with which conditions might be studied. They reviewed the true cause of acidity in any solution; all acidity was due to free hydrogen ions, and all alkalinity was due to free hydroxyl ions. When these two ions were balanced they had neutrality. If, however, one was in excess of the other, they had an acid or an alkaline reaction. The degree of acidity or alkalinity was measured by comparison with some known standard and this standard was, as in many other instances, water. They could measure the number of the hydrogen ions very accurately. Such measurement showed that in pure quadruple distilled water they had one hydrogen ion for each 10.000.000 parts of water. They did not, however, use this form of expressing hydrogen ion concentration or acidity. They used the logarithm of the number. To show how delicately balanced the solutions of the body must be, it was only necessary to keep in mind that if the body fluids were to become as acid as ordinary distilled water, the organism would die. The same was true if its fluids were to become as alkali as tap water. The tendency in metabolic reaction seemed to be toward producing acid. It behooved the body, therefore, to keep in store plenty of alkalies to keep the acidity reduced, or to use other means that it had to neutralize acid. After discussing three questions on the subject of acidosis: (1) What were the acids that were produced, and what was their source? (2) What protection had the body against this acid production? and (3) What processes might they use to detect an early acidosis, they said that what they offered was an untechnical description of the meaning of acidosis, but

the importance of the subject to the clinician was manifest. Clinically they were faced by a toxic state, often accompanied by dyspnea, edema, and coma, and upon investigation, acidosis was found to be present. When the acidosis was relieved by a suitable diet and by the administration of alkalis, the condition was relieved. They often encountered acidosis in nephritis, in diabetes, in the puerperal state, in hepatic and cardiovascular disease, in persistent vomiting, in the gastrointestinal diseases of childhood, etc. While it was true that some cases appeared to suffer from certain types of intoxication in addition to the acidosis, most of them were promptly relieved by increasing the aklalinity of the blood. The benefit that followed the introduction of alkaline hypertonic solution of sodium chloride, Fischer's solution, intravenously or per rectum, in some cases of nephritis was very remarkable. Similar results might be observed in the approaching coma of diabetes and in other states. The persistent use of alkaline waters or of alkaline mixtures was of great importance in the more chronic conditions. In conclusion it might be stated that the search for acidosis was demanded in most cases of coma, edma and persistent vomiting; also, that when found present, acidosis should be combated and overcome by thorough alkaline treatment.

SECTION ON SURGERY.

Tuesday, May 16.—First Day.

Dr. HARRY R. TRICK OF BUFFALO IN THE CHAIR.

Postoperative Ventral Hernia. — Dr. EDWIN MACD. STANTON of Schenectady read this paper. For the past thirty years he had found but one exhaustive study of data concerning postoperative hernia, that of Dr. A. Bell. His technique included the use of iodinized gut, silkworm and horse-hair. He seldom used the McBurney incision. In 456 operations by the midline or rectus route, he had hernia in but 21. The McBurney, on the other hand favored the development of hernia. The stability of any wound depended upon the healing between the sutures. The facial layers, too, afforded support of the abdominal contents. Above the semi-lunar fold the fascial barier comprised the transversalis fascia and the posterior layer of the aponeurosis of the internal oblique muscle. Below, the fibers of the transversalis fascia protected the peritoneum behind the rectus muscle. These fibers with the peritoneum must be sutured in closing the abdominal wound. He reported one "clean" case in which healing was delayed for ten months. Although drainage was necessary in many operations, it did not necessarily contribute toward the production of postoperative hernia. He had five hernias develop in 52 midventral wounds after drainage and 2 in 135 without drainage. In 64 "clean" rectus incisions, he had hernia in 1; in 67 acute cases after rectus incisions, hernia in 3, and after drainage of suppurative appendicitis in 63, hernia in 8. Unless the drain was large, it was not a potent factor—that is a drain of 3 cm. diameter or less did not increase the probability of hernia formation. In 12 drained cases he traced the production of hernia to suppuration in the fascial planes. In these cases, the faulty character of the union in the sutured parts of the fascial layers made hernia possible. Coughing might be a contributing cause. Nerve injuries had not favored hernia in his experience. The prognosis of all abdominal wounds depended upon the character of the fascial union. In the upper abdomen, whether a drain was used or not, hernia was exceedingly rare. He had none after 61 gall-bladder operations, none after 10 high rectus without drains, none after 39 lumbar incisions. He concluded by remarking that statistics of hernia following McBurney incisions were highly desirable.

Dr. SAMUEL LLOYD of New York added that he did not know that postoperative hernia was more common in the McBurney incision. He said that such hernæ were often small protrusions of gut at the lower or upper extremities of wounds due to imperfect fascial closure. Had noticed failures to close the posterior layer of fascia with the peritoneum and omissions of the extremities in suturing.

Dr. HOWARD LILIENTHAL of New York continued the discussion. He did not think the McBurney incision was more prone to produce hernia. He advised the transverse incision in the upper abdomen, having been led to use it after seeing a case of Dr. Moschcowitz thrice opened transversely through the same incision, with pus after the third opening, heal without being followed by hernia. Neither he nor Dr. Moschcowitz had had a hernia following a transverse wound in the upper abdomen.

Dr. STANTON concluded by saying most of the hernia cases he had seen had come from McBurney incisions. Had written for reports from surgeons without obtaining definite data from them. Johnson held hernia more common after the gridiron incision.

The Surgery of Splenic Anemia. — Dr. GEORGE W. COTTIS of Jamestown cited a case of Banti's disease in a patient, 43 years of age. Had lost weight, strength; skin was pigmented; spleen was large and palpable to level of the iliac crests, the blood showed 5,120,000 red cells and 45 per cent. hemoglobin. He removed the spleen. He found the liver slightly enlarged, the gall-bladder full of stones, and no enlarged mesenteric nodes. The convalescence was uneventful. The red-cell count remained over 5,000,000. He felt, as Mayo had intimated, that there was a causative relation between the gall-stones and the splenomegaly. The spleen was found to contain tuberculous tubercles. Of fifty-one cases of tuberculosis of the spleen reported but one was primary. He discussed the physiology of the spleen and its relation, as he understood it, to the liver and bone marrow. It withdrew bacteria, white cells with bacteria, and injured red cells from the blood stream. Liver extracts were said to leave a hemolytic action upon red cells. This was not true of splenic extracts; but splenic extracts given with liver extracts enhanced the hemolyzing property of the latter. The spleen, too, probably contained a hormone that regulated the production of red cells by the bone marrow. The spleen was not essential in that its function was vicariously assumed by the lymph and hemolymph nodes. The color index in pernicious anemia was recognized as high, the spleen small, and the toxic element of intestinal origin. For splenic anemia, splenectomy was associated with good immediate and probably not ultimate results.

Dr. PACKARD of New York said in Banti's disease the finding is always hypersplenism, hot hyposplenism; but in pernicious anemia the spleen might be large or small. Polycythemia followed increased CO_2 or a need for increased oxygen. Hemolysis was the important indication for the removal of the spleen.

Dr. G. W. COTTIS of Jamestown added that in the case reported by him, the skin was "muddy," not jaundiced, and that hemolysis is the important characteristic in such cases. He said it was difficult to differentiate Banti's from Gaucher's in many instances. Of nineteen spleens removed by the Mayos for pernicious anemia, one alone was found enlarged.

Dr. PACKARD added that he had never seen a case of Banti's disease with more than 4,000,000 red cells.

Radium Treatment of Various Surgical Conditions.— Dr. JOSEPH B. BISSELL of New York reported his experience with radium in 100 non-malignant cases. He thought that the stimulating rays might be of service in bone necrosis. Miss B. had radium applied for 20 minutes and 6 times to a bleeding corn. The callosity dried and dropped off. Ten milligrams cured another corn, previously cauterized and incised without relief. Mrs. C. had 25 milligrams applied to uterus for fibroid, causing tumor to decrease in size and to make operation unnecessary. Mrs. S. of 47 years, had a fibromyoma, the size of an orange, for which radium was applied in 50 milligram doses three times. She experienced rises in temperature, pulse, and backache; later she developed cystitis; but eventually the fibroid had decreased to a small nodule. A keloid on the neck disappeared after 15 milligrams for 30 minutes and (after one week) 25 milligrams for 10 minutes. Radium softened a scar from a razor wound of cheek after a 20-30 minute application. Two applications removed the discharge and granulations from an amputation stump following the removal of a toe osteomyelitis. He reported two infected knees similarly relieved by the use of radium. He believed that the present results in bone cases justified more extended trial.

Recent Progress in the Operative Treatment of Empyema of the Thorax.—Dr. HOWARD LILIENTHAL of New York said the death rate at Mount Sinai Hospital for empyema during the past ten years was 28 per cent. Of those that survived 16 per cent. had to have a secondary thoracoplasty. Cases of emypema without adhesions got well with suction. After adhesions, more extensive operative procedures became necessary. If the confining membrane could be removed the lung would approach the chest and he was not obliged to

bring the chest wall against the lung. All the cases treated were first *x*-rayed to determine a unilocular or multilecular empyema and to differentiate pneumonia. Diagnostic puncture was not recommended until the patient was prepared for operation. He preferred local or nitrous oxide anesthesia. He performed a "minor" thoracotomy for the case when first seen (unless a more radical operation was specially indicated), and if the case did not get well in one week, it was *x*-rayed again. The "major" operation was carried out often after the minor had failed. This called for a 4-6 inch incision between the ribs for the relief of the fluid and a vertical incision to expose and free the adhesions and tough membrane. His mortality for this latter operation was 20 per cent. During postoperative care it was possible to explore the wound digitally if desired. Of the 63 emypemas during the past 2 years, not one case required a thoracoplastic operation.

Dr. SAMUEL LLOYD of New York said he did not resect ribs but incised between them. Was gratified that Dr. Dowd and now Dr. Lilienthal were following his methods. The important step was the expansion of the lung within the chest. It was necessary to free the adhesions. He used ether anesthesia. It was difficult to free adhesions from the diaphragm and from the pericardium, his mortality was 20 per cent. It depended upon the type of the infection, being greater with the virulent and mixed than in the pneumococcic infections; interlobar abscesses should be guarded against.

Dr. LILIENTHAL concluded by saying resection was necessary in abscess of the lung.

Melanotic Sarcoma of the Small Intestine, with Report of a Case.—Dr. EDGAR A. VANDER VEER of Albany held that sarcoma was more common in the small and carcinoma in the large intestine. Mrs. A. S., 50, U. S. A., housewife, was constipated, suffered abdominal pain for 4 weeks before coming under observation; pain was localized in left side and radiated to right, vomited 2 days before admission to hospital, and had tenderness marked over the descending colon. The operation disclosed an intussusception and a mass in the middle third of the ileum. Six inches of ileum were resected. The tumor was melanosarcoma. Generally symptoms were concealed until kinking or intussusception was produced. Anemia and cachexia were early symptoms; abdominal distention, a late one. The prognosis depended upon early diagnosis and complete removal of the growth.

Dr. ELLIS KELLERT of Albany said the patient coughed up material resembling mostly granulation tissue, and that the tumor was definitely sarcomatous.

Wednesday, May 17—Second Day.

Types of Cerebral Defects in Children That May Be Benefited by Operation.—Dr. HERMAN G. MATZINGER of Buffalo read this paper. He said that he was not concerned with orthopedic defects of childhood but only with those cases in which head operations were indicated. The nature of the underlying cause involved progressive and irreparable injury to brain tissue. All cerebrally defective were essentially feeble-minded and many of the worst cases, fortunately, died early in life. Nevertheless, one should not discourage any attempt to relieve them. In the inherited types, including infantile paralysis and Mongolian idiocy, prevention offered the soundest method of cure while operation remained purely experimental. This cause was so obscure that autopsies failed to reveal it. Proof was wanting that meningeal hemorrhage gave rise to diplegia. At necropsies, cysts, area of softening, wrinkling, or adhesions, indicative of more deeply situated pathological changes, were found but characteristic local pathology, gross or microscopical, of a causative nature, were entirely absent. As infantile cerebral paralysis attacked the brain early in life operative relief must be sought early if any good was to be expected from it. He considered hemorrhage a definite indication for operation. Similarly might Little's cases be operated upon. Operations were of no avail where there were early changes in the pyramidal tracts. Increased intracranial pressure added new symptoms to the old symptom complexes but was accountable for deaths in only 7 per cent. of cases. Operation might be attempted for the relief of increased intracranial pressure but it must be remembered that simple incision of the dura was often not sufficient, for fluid might be enclosed in regions away from the site of incision. Dividing the falx or tentorium might, therefore, be necessary. Epilepsies developed in one half of the cerebral palsies. Eye-ground examinations gave operative indications in infantile cerebral paralysis.

Results of Cranial Decompression in Selected Types of Cerebral Spastic Paralysis Due to Hemorrhage.—Dr. WILLIAM SHARPE of New York read this paper. He said he wished to report the results of operations undertaken by Dr. B. P. Farrel and himself for the relief of spastic paralysis during the past three years. He had examined 211 cases of cerebral spastic paralysis and had determined the ophthalmoscopic findings and intraspinal pressure for each individual. He had operated upon most of these. The time elapsed since the operations was not great but the results to date were gratifying. He did not operate upon the constitutionally inferior, the microcephalic, or cases of spastic paralysis due to lack of development, the so-called Little's syndrome. Dr. Sharpe was operating on children that had gone through difficult labor and that revealed changes in the optic discs and in the spinal fluid indicative of increased intracranial pressure. Of these, the most satisfactory were those with no impairment of mentality. The condition of spastic paralysis following birth trauma, appeared before, during, or after birth. The spasticity produced deformities that were usually flexor in type. Later Jacksonian epilepsy might intervene. As these children grew older their mentality was noticeably impaired. They became imbeciles or idiots. It was important to recognize in them the possibilities of "hemorrhage of the new-born." Such bleeding resulted from rupture of a tributary vein of the longitudinal sinus from the application of forceps to the child's head or from other rough handling. The hemorrhage became cortical or subcortical. In cortical hemorrhage the damage to brain tissue was due to pressure; in subcortical bleeding there was direct injury to brain substance. Motor symptoms followed and depended upon the area of brain impaired. The author held intracranial hemorrhage accounted for 70 per cent. of the spastic paralyses. The remaining 30 per cent. included meningoencephalitis, cases of agenesis, etc. Defects in the pyramidal tracts did not affect mentality excepting through impairments in the associations. Pertussis might give rise to meningoencephalitis and to spastic paralysis. Treatment accomplished little in the extreme cases because of the defects in brain tissue. On the basis of the old theory that the brain remained small because the skull was small, treatment was formerly directed toward enlarging the skull. Trephine openings were made and dura was divided. The author said the dura must be left open. He performed subtemporal decompression on one or both sides. Twenty-six per cent. of these cases showed increased intracranial pressure. He had had 16 deaths. Of these 9 were extreme diplegias. Had operated upon three on the second day and two on the third day after birth. Improvement was less in the older children.

Dr. C. G. KERLEY of New York said that Dr. Sharpe's operations were likely to spread rapidly among the people. A vast number should not be included under this operative type. Among them were the mongols, cretins, macrocephalics, microcephalics, and the feeble-minded or inherited defects. The traumatic cases should be operated upon. Many of these suffered from hemorrhage or transudation following the pressure of forceps or unskilled handling. There were comparatively few who developed spastic paralysis from other causes. Therefore it was necessary to improve the obstetrics to apply prevention to birth palsies. He believed it would be well for every prospective mother to be confined in a hospital by expert attendants. Cesarean section would have prevented many of these traumatic cases. If it was not practicable for mothers to receive special attention, it was a calamity. It made little difference whether feeble-minded children were 50 or 75 per cent. feeble-minded so long as they belonged in that class.

Dr. B. H. WHITBECK of New York said that the orthopedic surgeon had to deal with the deformities of such children. These cases returned after operation and had to be reoperated upon or abandoned. The examination of the eye-grounds confirmed by lumbar puncture determined the selection of the case for Dr. Sharpe's operation. The cases with beginning changes, as congested discs, were suitable ones. He reported a case of marked improvement following decompression. This child now went about without appliances. He believed obstetrical trauma was on the increase. Nerve-suture, tenotomies, and the prevention of deformities were in their hands, but the cases should not occur.

Dr. P. I. NASH of Brooklyn asked if there was any case in which an ophthalmoscopic examination had not been made.

Dr. CLARKE believed the sooner the case with cerebral hemorrhage was turned over to the surgeon, the better. He reported a child 3-4 days old delivered by the morphia-scopolamine method and one in whom there were no paralyses but athetoid movements and nystagmus a case of probable fracture of the skull. Inasmuch as the parents refused operation, he treated the child palliatively. At 16 months, one could place a finger in any of the sutures. At 2 years, he had lost his nystagmus, could raise his head, and played with the buttons on his mother's dress. He fed the infant concentrated milk, that was all that he had done. He believed in early operation but wanted to know where to draw the line.

Dr. ROBY of Ohio wanted to know how the spinal fluid pressure was measured.

Dr. MATZINGER declared himself fascinated with the work of Dr. Sharpe. Good sense was shown in the selection of cases. He asked for proof of the estimate of 70 per cent. spastics with intracranial hemorrhage. Did not think the history of distocia was sufficient evidence for electing it as the cause of brain injury in the majority of cases. The fetal head was pressed out of shape in most cases. If hemorrhage was so easily produced why did so many escape? Why not some vulnerable condition? The results in Dr. Sharpe's cases would remain good. As long as the cases operated upon did well, why should not more be included?

Dr. SHARPE, in conclusion, said more cases were not included in the operable list because brain losses could not be made good. He could remove an extradural clot and mitigate the effects of hemorrhage. The work of Oppenheim and of Hoch was authority for 70 per cent. of spastics being due to hemorrhage of the cortex or of the base. Preventive measures should be urged. Cases with increased intracranial pressure offered hope of improvement. In answer to Dr. Nash,—some individuals with intracranial hemorrhage gave clear fluid on spinal puncture. The early evidence was (1) history of a first child, (2) convulsions after birth, (3) blurring of the nasal half of the optic disc, (4) and increased intraspinal pressure. He used the Strauss needle, had the child on side, spine on level with head, and the child quiet. The needle was graduated, showing the rush of the fluid from the spinal canal, in centimeters. Eight to 12 cm. were normal measures of pressure. Above that was pathological. One instance of 37 cm. was mentioned. He obtained a wet, edematous brain in one case of suspected hemorrhage. Dr. Roby's case belonged to the type difficult to restore after birth and one that might break out into a spastic state 7-8 months later. He believed that early operation in selected cases produced normal children.

Toxemia of Intestinal Origin in Children.—Dr. DE W. H. SHEARMAN of Buffalo read this paper for Dr. I. M. Snow of Buffalo. He said that the cause of death was shown by experiment to be not bacterial but altered mucous membrane, that the injection of fluid from a closed intestinal loop caused death with symptoms similar to obstruction, and that much had been learned through the investigations of Whipple, Hartwell, Draper, and others. These were tissue-dehydration and cerebral anemia from failure of absorption and from vomiting. A second theory of death was the absorption of bacteria through the damaged mucosa. A third theory ascribed the cause of death to an active toxin. Hartwell held the toxin might originate from the food, bacteria, or from a substance secreted from the intestine. High intestinal obstruction was considered more poisonous than low. The stagnation of detritus and of bacteria was not considered sufficient to account for the toxin. Hartwell occluded a loop of intestine 10-14 cm. from the pylorus. They were made to fast 55 hrs. All the animals so treated recovered from the operations and lived 5-7 days. They vomited when given water. There was no peritonitis, and no apparent cause of death. The dogs given sterile water or saline lived longer than those that were not. Hartwell was said to be the only experimentor who worked without damaging the intestinal wall. He, also, eliminated the bile, pancreatic, and duodenal secretions from the site of obstruction. A retained secretion, as the gastric, was dangerous to the economy; an injured mucosa failed to alter its poisonous nature but allowed it to be absorbed in its toxic state into the blood stream. Hartwell believed, according to the author, that high intestinal obstruction might not produce death when the mucosa was not damaged, that changes in obstruction were found in the liver and in the kidneys, that hemotogenous bacteriemia did not necessarily occur, and that bile, pancreatic, and duodenal secretions were not necessary for the production of death in intestinal obstruction because double occlusion of the ileum was lethal. The lethal toxin was the product of secretion of the injured mucosa or of bacteria. He did not consider that Whipple had excluded bacterial activity in his study of intestinal death. The contents of a closed loop injected into an animal of the same species produced death. If this secretion was duodenal, death occurred in 4 hrs. and in such cases the duodenum was found to be congested.

Intestinal Obstruction in Children with Special Reference to Intussusception.—Dr. EDWARD W. PETERSON of New York read this paper. Intestinal obstruction occurred in imperforate anus, congenital bands, acquired intussusception, obturation, volvulus, intestinal paralysis, and in infarction of the mesenteric vessels. Congenital occlusion high up in the intestinal tract was difficult to recognize. Intussusception occurred at any age but more frequently early. In the first year the picture was clean-cut, and the mortality was insignificant in those cases that were recognized early and operated upon. If the diagnosis was delayed the death rate was high. No other form of obstruction was more mismanaged and in no other form was the mortality due as much to criminal procrastination. There was obstruction of the blood supply as well as of the fecal current. The obstruction might be intestinal, colic, or iliocolic. It might be simple or compound. Seventy-five per cent. of the intestinal obstructions were in the iliocolic region. As a rule, a well, strong child was seized with abdominal pain, tumor, and bloody stools. The child would become calm after this initial attack. Muco-hemorrhagic stools developed two hours after obstruction. Vomiting was prominent, especially late in the disease, but seldom fecal in character. In every case there was an abdominal tumor which was admittedly often difficult to palpate because of the rigidity and distension. From the beginning, the pain and stools varied with the degree of the strangulation and the toxemia arose from the injury to the lining epithelium of the gut. Occasionally the symptoms might be less acute; there might be no strangulation of the vessels. One should differentiate purpuric disease. The *x*-ray helped diagnose difficult cases. The safe method of treatment was open operation and manual reduction. The incision served best at the midline below the umbilicus or at outer edge of the rectus. It was important to push and not to pull out the intussuscepted loop. It was well to remove the appendix in all cases, for the appendix might be an exciting cause of the obstruction in many instances. After operation water was given and morphine was avoided. He had seen twenty-five cases, of which twelve, the successful ones, appeared within an average twelve hours following the obstruction and four within twenty-four hours. Of the twenty-five nineteen were ileocecal, one was colic, one ileo-ileocecal, and the other colic. In conclusion he said that intussusception presented a uniform clinical picture, aerohydrostatic measures succeeded in a few cases, and early operation with manual reduction offered the best chances of cure.

The Surgical Treatment of Intestinal Toxemia.—Dr. JEROME M. LYNCH of New York read this paper. He quoted from the *Scottish Medical Journal* of 1855 showing the early significance of intestinal obstruction. Stick had injected the feces of one animal into the same or other animals to show the symptoms following intestinal absorption. Sir Arbuthnot Lane attempted to cure these cases of fecal absorption by improving the intestinal drainage. Other surgeons, lacking the diagnostic acumen and operative skill of Lane, have imitated him with varying measures of success. Wright introduced vaccine therapy. Satterlee of New York tried out colonic vaccine on cases of intestinal stasis. The mixing of the colonic with the intestinal contents, such as occurs in iliocecal insufficiency, might be harmful to the individual but operations calculated to correct incompetent valves did not seem justified. The physiologists had shown the parts played by the cerebrospinal nerves in the control of intestinal movements, but the work on the internal secretions and the sympathetic system of Cannon, supported by Bayliss and by Starling, was probably to bring the greater help to the surgeon. The ileocecal valve was occasionally missing in man. He showed how the valve was developed in the third month while the iliocecal junction occupies the upper

right quadrant of the abdomen. The terminal ileum was intussuscepted into the colon, the invaginated portion lost its longitudinal and retained its circular fibers. The mechanisms of the intestinal valves were important: the iliocecal sphincter functionated after division of the cord at the tenth dorsal vertebra; the internal sphincter of the anus was under voluntary as well as involuntary control. In general, the sympathetic system and adrenalin were probably the more important. Dr. Lynch enumerated the operations that were undertaken to relieve intestinal toxemia and condemned many of them for being unphysiological. The authors had performed twenty-five "reconstruction" operations with encouraging results.

Dr. S. Lloyd of New York said the question of intestinal obstruction was an interesting one. Wished Dr. Peterson had reported the statistics of the other services besides his own. He recalled one case of absence of the colon. The use of hydrostatic pressure in the colon was unheard of to-day. Diagnosis and early operation required care. The necessity of resection demanded judgment. The possible presence of a rupture of the bowel should be ascertained before an operation upon the bowel.

Dr. G. R. Pisek of New York said an intestinal paper should be read in every meeting of the Pediatric Society. The pediatrician was prone to give castor oil and wait. When he asked about the stools and was told they contained mucus and blood, he instituted mechanical treatment. The surgeons thought of an appendix or of an obstruction, and were more apt to make a diagnosis. Prompt diagnosis and prompt surgical intervention were needed.

Dr. F. D. Turck of New York said that obstruction was well discussed by those present. Senn's work was most important. He had found 70 per cent. of intestinal obstruction caused no symptoms until venous stasis was produced. The intracellular proteins from the intestinal mucosa were liberated by the injury to the mucosa. Had produced ulcers in animals similar to those occurring in burns by feeding bacteria to animals. In venous stasis there was atrophy of the walls and bacteria entered them. Within the walls they underwent bacteriolysis. As a result of this breaking down of bacteria antibodies had been formed. These antibodies produced death suddenly when injected into like animals, and the author believed their sudden liberation, after the relief of intestinal obstruction, caused the sudden anaphylactic death. He suggested hot intracolonic irrigations, for he observed these antibodies less increased after flushings of the bowel. Spasms were relieved by the same means. He suggested the use of a rubber apron or a piece of rubber dam through an opening in which an intestinal operation might be performed without soiling the abdominal cavity with toxic products from the intestinal walls. Heat might be sustained during the operation by placing hot water bags in the abdominal cavity.

Dr. C. G. Kerley of New York disagreed with Lloyd's contention that the evidence of intussusception was clean-cut. In his experience one case, three days old, presented vomiting, abdominal distension without tumor, and obstinate constipation. Was it intussusception, or what? Surgeons, called, decided it was obstruction, and at operation found a constricting band at the middle of the transverse colon. He saw another case without an abdominal tumor, believed it was intestinal obstruction, recommended operation, and found tuberculosis of the sigmoid with adhesive closure of the gut. Another case at the Babies' Hospital offered intermittent, acute distension and at operation two diverticula were found in the descending colon, one in the ileum and two in the colon at the orifice of the iliocecal valve. Any obstruction that was not relieved should be operated upon at once. A child of eighteen months or two years that passed mucus and blood, and without an abdominal tumor, was thought to be purpuric, but at operation, later, revealed high intestinal obstruction. Diagnosis of intestinal obstruction, in his experience, was not easy.

Dr. L. T. LeWald of New York said that, as Dr. Kerley had said, there were cases of intestinal obtruction without tumor, even with the patient under anesthesia, so that absence of tumor did not exclude intussusception. The obstruction of the pylorus from any cause produced constipation, therefore it was necessary to make roentgenographic study very complete.

Dr. J. M. Lynch said that he was interested in Dr. Peterson's paper. He had had five cases of intussusception with Dr. Draper. One case in the second year with fecal vomiting was not recognized, but intussusception was found at operation. One, one and one-half years in shock was watched until out of shock, and then operated upon. Another case in Richmond, Va., was found to have a tumor of the transverse colon before operation and carcinoma of the iliocecal value with intussusception at operation. Washing out of the bowel was very important in these cases.

Dr. John W. Draper of New York said the discussion was particularly interesting to all who had done work on intestinal obstruction. He had commenced experimental study with Dr. Weir in 1901. He had concluded that the animals, dying with intestinal obstruction, died from autogenous toxins absorbed through the duodenum, or resulting from the activity of the duodenum. In 1907 a proteose was mentioned as the toxic factor. Whipple has since corroborated and enlarged this work. Hartwell's association of the toxin with desiccation of the tissues was not in accordance with his findings. By feeding a dog pilocarpine his tissues were robbed of 10 per cent. of their water, although he showed no symptoms of obstruction, and intestinally obstructed animals lost the same or less, and presented the classical symptoms. From a study with Dr. Schultze at Rochester no constant organic changes were found in the liver or kidneys, but when the glycuronic paring capacity of the liver was measured after obstruction, it was found to have been reduced 30 per cent. Intense congestion in terminal colon was a constant finding. Underhill of Yale recently showed death was in part due to the products of bacterial digestion of amino acids.

Dr. G. Reese Satterlee of New York said that the colon bacillus was prominent in chronic appendicitis. There were forty-seven or more varieties of this organism identified. About three years ago he began injecting autogenous colon vaccines for intestinal toxemias. One case, undoubtedly toxic, grew worse after operation; urine was full of indican and contained albumin, casts, and blood; patient was delirious. In three weeks all these symptoms improved after administration of the vaccine. Another individual with the symptoms of intestinal obstruction was unrelieved by calomel and catharsis, but got up and about after three weeks of vaccine therapy.

Dr. Shearman said that diagnosis was not easy in his experience of twenty cases. He had got one case early to the surgeons and that one lived—all the others died. Dr. Turck explained the cause of death well. It seems to be "up to the surgeon" to save the late case.

Dr. Peterson said he had reported all his own cases. He had had twenty cases and eight deaths. The picture was "clean-cut" in babies. The pain, constipation, and mucohemorrhagic stools were characteristic of intussusception which should be diagnosed in 98 per cent. of cases. Children died not as the result of the operation, but because of the toxin. Dr. Draper pointed out the impairment in liver function. By operation he had saved those that would have otherwise died.

Dr. Draper said that intestinal obstruction was many-sided. There were bacterial, biochemical, neuromuscular, and mechanical theories of the condition. His early work had been corroborated by Whipple. The lethal agent was probably a proteose, the toxicity of which varied with the digestive activity of the gut. Animals withstood obstruction in the colon and terminal ileum for days, but in the duodenum for hours only. Developmental reconstruction had, in his hands, produced the best results for properly selected cases.

Wednesday Afternoon.

Officers.—*Chairman*, Dr. Paul M. Pilcher of Brooklyn; *Secretary*, Dr. T. F. Laurie of Auburn.

The Causation and Treatment of Idiopathic, Operative, and Postoperative Anorectal Hemorrhage.—Dr. Samuel G. Grant of New York enumerated the many conditions that gave rise to hemorrhage from the anus and rectum. It was the frequent manifestation of anorectal disease. Bleeding was called external when apparent, and internal when concealed. Hemorrhage was primary when it occurred immediately after operation, recurrent when it came four or five days after operation from a cause such as the slipping of a ligature, and late, when weeks or months post operative it occurred as the result of the passage of hardened feces or foreign bodies. Among the causes of internal hemorrhage were proctitis, constipation, impaction, varicosities, and villous tumors. Other causes of hemorrhage were the use of edged needles, divulging a strictured rectum, omitting to pack the upper rectum in high rectal operations, pulling down rectal wall for examination, carelessly introducing specula, failing to cauterize rectal stumps in

hemorrhoidal operations, administering strong cathartics that produce straining at stool, and the careless withdrawal of packing. External hemorrhage was quickly recognized; internal, often not until patient was in a dangerous condition. Incessant desire to go to stool was a symptom of hemorrhage. Abdominal distension, pallor, syncope, and shock were later manifestations. Occult blood was of no diagnostic importance. Blood from the sigmoid was coffee-ground in appearance. The treatment included rest in bed and hot flushings of rectum. Accessible vessels should be ligated, but packing was most reliable.

Dr. D. C. McKENNEY of Buffalo remarked that when hemorrhage from the bowel was due to pathology of anorectal canal, it was usually recognizable by inspection. *X*-ray assisted him in diagnosing causes of bleeding in certain cases. Cleaning out of the rectum after hemorrhage removed blood and sources of irritation. He recommended colostomy for bleeding in carcinoma, and appendicostomy for dysentery. He favored packing of rectum with gauze strips one inch wide.

Dr. J. M. LYNCH of New York considered the subject unimportant. He never saw any serious results from rectal hemorrhage.

Dr. DEAVER compared the bleeding from the rectum to bleeding from the appendix stump. Said it was well to invert the appendix stump after ligation.

Dr. GANT, in conclusion, said that the use of urea and quinine postponed healing and might cause induration. He preferred gauze to cotton for hemostasis.

The Treatment of Anterior Poliomyelitis.—Dr. CHARLTON WALLACE of New York read this paper. He said that the disease was an inflammation of the anterior bone cells, with resulting degeneration of the motor fibers. The disease was communicable and infectious. The onset might be sudden. There were temperature, constipation, malaise, and pains about the joints or in the muscles. Prevention was important, and to this end the throats of infected patients must be kept clean and their rooms dust-free. He recommended the use of calomel, castor oil, enemata, salts, urotropin (for the spinal canal), salol, heat over spinal cord, atropine, and strychnine (for tonic effect upon the muscles). Plaster-of-paris bandages should be applied to prevent contractures and hot fomentations for pain. During the stage of threatened paralysis, rest in bed was imperative. During the stage of recovery (third month to the second year) massage, stretching, and bracing were recommended. Electrotherapeutics might be employed during the first year. Operative treatment was a prolific field, but should not be resorted to until the third to the fifth year. (Contractures should be immediately overcome.) He said astragalectomy was the best for calcaneous or dangle foot. The transplantation of one of the quadriceps often prevented recurvatum.

Dr. WHITBECK of New York said that such cases came to the orthopedist after they had been to many other physicians. Complete rest (barring electrical treatment) was best for the acute stage of anterior poliomyelitis.

Dr. F. H. ALBEE of New York said every case should be studied separately. Each muscle should be tested for complete or partial paralysis. In transplantations muscle tendons should be buried in grooves beneath periosteum.

Dr. WALLACE closed the discussion by emphasizing the need of complete rest in the acute stage, and illustrated it by a case in point. A young woman, badly paralyzed, was told she might raise her head from her pillow when she could whistle. She was kept on a mattress on the floor. Three years later she walked without braces, could dance, and showed paralysis only in two muscles of one foot and one of the other foot.

Dr. F. H. ALBEE of New York showed moving pictures of his bone-plating and bone-pegging operations. He said that speed was desirable. Many of his spinal transplantations were completed in ten minutes, and one was accomplished in nine. He used bone pegs for ununited fractures of the femora. He was careful to round off the peg to exactly fit the hole in the shaft and head made by the drill.

Thursday, May 18—*Third Day.*

Diagnosis of Renal Tuberculosis.—Dr. THOMAS F. LAURIE of Auburn said that few cases of renal tuberculosis were referred to the urologist until advanced in the disease. The general practitioner was not thoroughly cognizant of genitourinary practices. He said that continual nocturnal urination and pyuria were suspicions of renal tuberculosis (Braasch). There were symptoms of cystitis in 80-90 per cent. of cases due either to reflex causes or to mucus changes. Frequency of urination was as great as every one or two hours by day and night. There was hematuria in 25 per cent. of cases and pain or tumor in 10 per cent. The tumor was due to hydronephrosis or to an actual kidney tumor. There might be loss in weight and night sweats. In a case of irritable bladder he secured careful clinical history, including the duration of frequency of urination, he examined the urine for pus and tubercular bacilli, inoculated a guinea pig with urine sediment from the suspected kidney, and catheterized the ureters. Rest and sandle wood oil might quiet the bladder sufficiently for purposes of cystoscopy. Ureters were strictured at time or their mouths might be surrounded by granulations. Tuberculous urine was generally clear and pale, with a low percentage of urea. There might be a nodular vas or epididymis. Radiography assisted by giving the outline of the kidney. The tuberculin test was not to be relied upon. It was important to differentiate nontuberculous cystitis (more acute, no tubercle bacilli), pyelonephritis, and renal calculus (hematuria, absence of bacilli, pus not as common). The cure or the relief of symptoms depended upon an early diagnosis.

Dr. KEYES of New York said that spontaneous cystitis in young people was strongly suggestive of tuberculosis. Indigo-carmine, administered intravenously immediately before cystoscopy, gave dark blue urine which served to more clearly mark out the ureteral orifice. He favored spinal anesthesia for ureteral catheterization as he saw no discomfort from it excepting an occasional headache. He required cystoscopy and ureteral catheterization before operation for renal tuberculosis.

Dr. EDWIN BEER of New York said, in general, the history and clinical examination sufficed to indicate nephrectomy. This applied to 80 per cent. of his 100 cases. The finding of tubercle bacilli implied tuberculosis of the kidney corresponding to the side from which the urine was obtained although contamination with tuberculous urine from the bladder occasionally occurred. It was necessary at times to expose both kidneys in difficult cases. If palpated, the ureter on the affected side was sometimes nodular. Sterile acid pyuria was considered more significant of renal tuberculosis than acid pyuria.

Dr. FURNISS of New York said that acid-fast bacilli in the urine meant tuberculosis of one kidney, at least. Had had two negative pig inoculations and positive tuberculous kidneys in two different cases. He held that delayed indigo-carmine secretion and periureteral changes were sufficient grounds for operative intervention. He favored a continuous small stream of boric acid from the ureteral catheter to prevent contamination from bladder urine. Had seen dilatation of the ureter on the normal side and sterile urine in nephrolithiasis.

Dr. MARTIN TINKER of Ithaca said he felt the general surgeon should cooperate with the urologist. It was important to enforce general hygienic care and sleeping in the open air upon patients with renal tuberculosis. Otherwise recurrences would occur. Careful diagnosis and treatment were essential for improved mortality.

Decapsulation for Chronic Bright's Disease. — Dr. SAMUEL LLOYD of New York read this paper. He said life had been prolonged by decapsulation in cases with chronic parenchymatons nephritis with anasarca. Edebohls reported decapsulation operations in 1901, and 1908, 108 in all, and considered retinitis albuminuria the only contraindication. He (Lloyd) reported a case almost blind relieved by a double decapsulation. Chronic interstitial nephritis was little benefited and two fatal cases were mentioned as illustrations. Of 25 cases operated upon, 15 were parenchymatous (and 2 died) and 7 interstitial nephritis (all died). He had operated upon 146 cases with a mortality of 10 per cent.

Dr. FURNISS of New York spoke of the use of functional kidney tests.

Dr. KEYES of New York added that the functional kidney tests in his experience were inaccurate and untrustworthy.

Dr. BEER of New York reported a case he had decapsulated three times. One case he had intended decapsulating was cured of pyuria by draining the chest for empyema.

Dr. LLOYD in conclusion said a new capsule formed after decapsulation but it did not compress the parenchyma. The benefit from the operation seemed to be the improvement in the circulation.

Ureteral Calculi.—Dr. EDWIN BEER of New York said that extensive exploration and incision for ureteral stones was safe. He had had 98 cases, 34 of which were operated upon. Repeated cystoscopic and radioscopic examinations should be made. Over 90 per cent. of the cases delivered of stones gave radiographic shadows. With argyrol ureterography a higher percentage of positive demonstrations had been made. In 34 operated cases, 24 gave obstruction to the ureteral catheter, 15 per cent. diminished indigo-carmine. The wax-tip bougie was not as reliable in his hands. The (10 per cent.) cases not recognized by *x*-ray might have contained stones of such a composition as not to throw a shadow, 95 per cent. of cases passed stones or had them withdrawn with forceps. The indications for open operation were (1) calculus of large size, (2) repeated colics that did not pass off, (3) repeated severe pain, and (4) no attempt on part of individual to dislodge stone. In the conservative treatment of the calculus, it was necessary to guard against secondary kidney changes.

Lantern Slide Demonstration of Diagnositic Technique in Kidneys and Urethral Regions.—Dr. HENRY G. BUGBEE of New York said that radiographs of value had been brought by comparison with cystoscopies. He showed a large number of slides. He favored the use of *soft* ureteral catheters, for such catheters passed readily into the ureters without distorting them and often curved about intraureteral calculi and revealed abnormal angulations or relations of the ureters themselves.

Dr. S. T. SEWALD of New York emphasized the relative importance of the *x*-ray study of ureteral cases. It was especially serviceable in detecting abnormalities or malformations of the ureters themselves. A pivoted table, assisted in obtaining exposures at different angles. Among other interesting exposures was that of an echinococcus cyst sent into the hospital for splenomegaly.

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

PENNSYLVANIA BUREAU OF MEDICAL EDUCATION AND LICENSURE.

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PHYSIOLOGY, PATHOLOGY AND BACTERIOLOGY.

1. Name two bacilli that are apt to attack the respiratory tract. Describe the characteristic lesion of each. Outline the laboratory tests used in identifying each.
2. Describe briefly gastric digestion. Diagnose by laboratory methods each of two lesions which seriously impair it.
3. Outline briefly ways in which hypertrophied lymphoid tissue in the pharynx may be detrimental to health, (*a*) physiologically, (*b*) pathologically.
4. Given a case of pyuria (pus in the urine) outline the investigations and tests which may locate the source of the trouble.
5. Temperature of the body: Tell briefly how the heat is produced, (*b*) how regulated, the (*c*) physiological and the (*d*) pathological significance of any increase or decrease from normal.
6. Describe the gross lesion in (*a*) tabes dorsalis, (*b*) apoplexy. What alteration in function does each produce?
7. Give a general outline of the essential equipment for a clinical laboratory. Outline the type of work which should be performed in such a laboratory.
8. Given a case of irregular fever in an adult which persists, give the laboratory tests which would aid in establishing the diagnosis.
9. State the significance of each of the following: (*a*) Jacksonian epilepsy, (*b*) choked disc, (*c*) Bell's palsy, (*d*) nystagmus, (*e*) Argyll-Robertson pupil.
10. Name three localized lymphatic glandular enlargements and give causes for each.

SYMPTOMATOLOGY, DIAGNOSIS, TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. Enumerate the symptoms diagnostic of typhoid fever. Name one disease with which it may be confused and differentiate them.
2. Enumerate the symptoms of cancer of the stomach. Differentiate it from cholecystitis.
3. Enumerate the symptoms of lobar pneumonia and differentiate it from acute pleurisy with effusion.
4. Enumerate the symptoms of scarlet fever. Name two sequelæ which may follow and describe the symtoms of each.
5. Enumerate the symptoms diagnostic of acute alcoholism. Differentiate it from uremia.
6. Differentiate the secondary eruptions of syphilis from other skin lesions.
7. Differentiate acute inflammatory glaucoma from iritis.
8. Enumerate the symptoms of chronic laryngitis. Differentiate it from laryngeal tuberculosis.
9. Enumerate the symptoms of ptomaine poisoning. Differentiate it from other forms of gastroenteritis.
10. Name four conditions of a pregnant female in which a physician would be justified in causing premature birth. What are his duties from a medicolegal standpoint?

OBSTETRICS AND GYNECOLOGY AND PHYSIOLOGICAL CHEMISTRY.

1. Given a patient eight weeks pregnant with a retrodisplaced uterus: How would you distinguish the displacement? What are the possible results? How would you manage the case?
2. Given a case of labor with a prolapsed cord: What are the possible results? How would you manage the case? How would you treat the child after delivery?
3. Given a patient six hours in labor who has begun to bleed freely: What are the possibilities in the case and how would you differentiate between them? How would you treat any two of the possible conditions?
4. Given a patient with persistent itching about the vulva: Name four common causes for the condition. Give the local treatment.
5. Name four abdominal enlargements (as large as pregnancy at the seventh month) other than pregnancy. Differentiate them one from the other.
6. Name the more usual bacteria which cause puerperal fever, together with the methods of their introduction into the birth canal. Name the results that may occur from their presence and the prevention of these possible results after the introduction of the bacteria.
7. Should you be called upon to deliver a woman at full term of pregnancy discuss the status of the use of (*a*) the vaginal douche; the use of (*b*) an anesthetic; the use of (*c*) ergot; the use of (*d*) pituitrin.
8. Discuss the thyroid gland from the chemical and physiological standpoints and state the effect of any change in equilibrium of the essential constituent.
9. Describe a test for each of the following pathological urinary constituents: (*a*) Bile; (*b*) blood; (*c*) acetone.
10. What is cholesterol (cholesterin)? Where is it found normally and in what pathological conditions is it of importance?

ANSWERS.

PHYSIOLOGY, PATHOLOGY AND BACTERIOLOGY.

1. *Two bacilli that are apt to attack the respiratory tract:* The bacillus diphtheriæ and the bacillus influenzæ.

Lesions. In *diphtheria*, the false membrane may be found on the fauces, larynx, pharynx, trachea, or other mucous membrane. This membrane consists of a network of fibrin which enmeshes round cells, connective tissue cells, streptococci and the specific bacilli; in the fauces and nares the membrane is adherent. The superficial layer of epithelium is necrosed, later on the deeper layers suffer in the same way, the zone of inflammation extends, and the membrane becomes a mass of dead cells undergoing hyaline degeneration and mingled with fibrin. In *influenza*, there is an inflammatory swelling with hyperemia of the nasal mucous membrane and sometimes of the nasal sinuses and trachea and bronchi; the latter may be covered with muco-pus.

The *characteristics of the bacillus of diphtheria:* The bacilli are from 2 to 6 mikrons in length and from 0.2 to 1.0 mikron in breadth; are slightly curved, and often have clubbed and rounded ends; occur either singly or in pairs, or in irregular groups, but do not form chains; they have no flagella, are nonmotile, and aërobic; they are noted for their pleomorphism; they do not stain

uniformly, but stain well by Gram's method and very beautifully with Loeffler's alkaline methylene blue.

A sterile swab is rubbed over any visible membrane on the tonsils or throat, and is then immediately passed over the surface of the serum in a culture tube. The tube of culture, thus inoculated, is placed in an incubator at 37° C. for about twelve hours, when it is ready for examination. A sterile platinum wire is inserted into the culture tube, and a number of colonies of a whitish color are removed by it and placed on a clean cover slip and smeared over its surface. The smear is allowed to dry, is passed two or three times through a flame to fix the bacteria, and is then covered for about five or six minutes with a Loeffler's methylene-blue solution. The cover slip is then rinsed in clean water, dried, and mounted. The bacilli of diphtheria appear as short, thick rods with rounded ends; irregular forms are characteristic of his bacillus, and the staining will appear pronounced in some parts of the bacilli and deficient in other parts. *Methods of culture:* The bacillus of diphtheria grows upon all the ordinary culture media, and can be readily obtained in pure culture. Loeffler's blood serum, particularly with the addition of a little glucose, is an admirable medium for the rapid growth of this bacillus. The medium should be alkaline and not less than 20° C. *Method of staining:* It stains with any aqueous solution of an aniline dye, and quite characteristically with Loeffler's alkaline methylene blue. Neisser's stain is also recognized. The bacilli also stain well by Gram's method.

The bacillus of influenza is a very small bacillus, generally found in pus cells in the nasal or bronchial secretions; it is Gram negative, and stains more deeply at the ends than in the middle; the colonies are small, discrete and transparent.

2. On *entering the stomach* the food is already crushed, mixed with saliva, and reduced to a pulp; it is rendered slightly alkaline, and a small amount of the starch has been converted into maltose; the proteids and fats are unaltered. *In the stomach,* where the contents are rendered acid, conversion of starch into sugar ceases, connective tissue of fats is dissolved, and fats are set free. Proteids are dissolved and peptones formed. The albuminous foods are dissolved for the most part, and a grumous mixture of peptones, liquid fats, and starches is formed, which is termed chyme, and is gradually passed through the pylorus into the intestine. The contents of the stomach at the close of gastric digestion are: Water, inorganic salts, acidified proteids, peptones, liquid fats, starch, cellulose, and the indigestible residues of various foods.

In *gastric carcinoma* there may be noted absence of free hydrochloric acid, presence of lactic acid, and presence of Boas-Oppler bacillus. In *gastric ulcer,* there is excess of free hydrochloric acid generally, and blood is often present; lactic acid and the Boas-Oppler bacillus are not present.

3. Hypertrophied lymphoid tissue in the pharynx may result in: Mouth-breathing; snoring; open-mouth; a vacant, dull expression of the face; modification of the voice (nasal twang), with inability to pronounce certain letters. Earache and other ear affections; mental deficiency; frequent attacks of coryza; nose-bleed; stunted growth; convulsions, laryngismus, stridulus, and various other neuroses may also be noticed.

4. In a general way, it may be said that if pus appears in the first part of the urine, it is from the urethra; if it appears in the last part chiefly, or at the end of urination, it is from the bladder; if the pus and urine are mixed, the pus probably comes from the kidney. Further, if the pus is from the bladder, the urine is more or less alkaline; if from the kidney or from some outside source, it is usually acid. By the use of a cystoscope, urethroscope or ureteral catheterization, the lesion may be located; a sound may detect a vesical calculus; *x*-ray examination may show lesion in kidney, and a bacteriological examination of the pus may also aid.

5. The normal body temperature is *regulated* and *maintained* by the thermotactic centers in the brain and cord keeping an equilibrium between the heat gained or produced in the body and the heat lost.

Heat is produced in the body by: (1) Muscular action; (2) the action of the glands, chiefly of the liver; (3) the food and drink ingested; (4) the brain; (5) the heart; and (6) the thermogenetic centers in the brain, pons, medulla and spinal cord.

Heat is given off from the body by: (1) The skin, through evaporation, radiation, and conduction; (2) the expired air; (3) the excretions—urine and feces.

Increase of body temperature may indicate the presence of infectious diseases, toxemias, inflammation, or some interference with the nerve mechanism of heat regulation.

Decrease of body temperature may indicate wasting diseases, starvation, alcoholism, convalescence from fever, poisoning or collapse.

6. In *tabes dorsalis* the posterior columns of the spinal cord and the posterior nerve roots are involved. The posterior columns of the spinal cord are gray and shrunken, and show considerable overgrowth of connective tissue in the columns of Goll, Burdach, and Lissauer; this process extends upward from the lumbosacral region; the posterior nerve roots degenerate and become atrophic. The meninges over the affected parts become opaque and adherent. Some of the cranial nerves may also atrophy, notably the optic, but also the motor oculi and vagus. The process is destructive and progressive; it is not a simple wasting, although the nerve fibers are atrophied, but it is characterized by irritation, changes in the axis cylinders, overgrowth of the connective tissue, and sometimes congestion; the spinal ganglia may be affected.

In *apoplexy* "the primary effects are tearing and compression of the brain-substance. If the patient does not die immediately, softening occurs. As a result of the staining by the retained hemoglobin the area is known as red softening. Shortly after the blood escapes it undergoes coagulation, forming a cerebral hematoma. This acts as a foreign body, and sets up an inflammatory reaction, with more or less hyperplasia of the surrounding neuroglia. The fluid portion finally becomes absorbed, the corpuscles broken down, and the pigment liberated, which stains the walls of the cavity. Occasionally a cyst filled with a clear fluid may form. If all fluids are absorbed, the walls of the cavity may come in contact and a scar result." (McConnell's *Pathology.*)

In *tabes dorsalis* the disturbance of function includes loss of sensation in the feet, girdle sensation, loss of coordination of muscles, inability to preserve the erect position with the feet together, impairment of vision, Argyll-Robertson pupil, abolition of patellar reflex, muscular atrophy, loss of sexual power, and paralysis.

In *apoplexy* the disturbances of function depend on the site of the lesion; if this is above the first cervical segment of the pyramidal tract, there will be paralysis of the opposite side of the body; if above the middle of the pons, paralysis of the lower portion of the face on the opposite side is also produced; if below this point, paralysis of the same side. Monoplegias are likely to occur if only a small portion of the fanlike projection-fibers of the pyramidal tract is involved. such as would be produced by a lesion in the cortex or in the centrum ovale. Spasticity arises in the muscles; subsequently their nutrition is impaired, and they contract. Amnesia or aphasia will occur if the lesion is in those portions of the cortex which have to do with speech. Lesions of the optic tract posterior to the chiasm cause hemianopsia. (From Stengel's *Pathology.*)

7. A clinical laboratory should be provided with a sink, running water, gas, electric light, tables, benches, stools, shelves, reagents, test tubes, beakers, slides, coverslips, microscope, centrifuge, apparatus for estimating hemoglobin and counting blood corpuscles, Petri dishes, flasks, pipettes, litmus paper, distilled water, Bunsen burner, alcohol lamp, burettes, holders for burettes and test tubes, stomach tube, urinometer, ureometer, Esbach's albuminometer, funnels, tripod, wire gauze, sphygmomanometer, incubator, thermometers, steam sterilizer, thermoregulator, platinum wire loops, pure culture of typhoid bacillus. The work which can be done will depend on the size and equipment of the laboratory, the number and experience of the workers, and the time that can be given to such work. It should include uranalysis (at least qualitative and microscopic); examination of gastric contents, and sputum; blood examinations (counting corpuscles, estimating hemoglobin, and searching for parasite of malaria); Widal's test; examination of smears for gonococcus; examination of blood for anemia, chlorosis, leucemia, and the *Treponema pallidum;* estimation of blood pressure; examination of feces for parasites, protozoa, bacteria, and occult blood; cerebrospinal fluid; milk, and various bacteriological methods (such as sputum for tubercle bacillus, nasal secretion or smear from throat for diphtheria bacillus). Wassermann's reaction and Noguchi's reaction may also be included.

8. *Irregular fevers* are of a negative character, and

indicate the absence of any febrile disease which has a characteristic temperature curve, such as malaria, typhoid, pneumonia. Some other symptom will have to be taken as a guide, and the laboratory tests (sputum, urine, cerebrospinal fluid, and blood) will have to follow such indications as these other symptoms supply.

9. *Jacksonian epilepsy* may indicate: Tumor, softening, abscess, hemorrhage or injury of the brain; general paresis; uremia; it may occur as a sequel to hemiplegia in children.

Choked disc may occur in: Retinitis, tumors of cerebrum or cerebellum, cerebral abscess, tuberculous meningitis.

Bell's palsy may occur in rheumatism and as a result of infection or exposure; it may be found in cases of multiple neuritis or locomotor ataxia, and may follow ear disease and injuries to the petrous portion of the temporal bone.

Nystagmus may indicate: Irritation of the ocular muscle centers, cataract, errors of refraction, optic atrophy, epilepsy, neurasthenia, hysteria, chorea, tumors of brain, Friedreich's ataxia, locomotor ataxia, and chronic hydrocephalus.

Argyll-Robertson pupil may signify: Locomotor ataxia, intracranial syphilis, and general paralysis of the insane.

10. Enlarged lymphatic glands *in the neck* may be due to: Inflammation, tuberculosis, syphilis, Hodgkin's disease, leucemia; *in the groin*, the cause may be: Syphilis, gonorrhea, chancroid, Hodgkin's disease, tuberculosis, malignant disease; *in the axilla*, the cause may be: malignant disease or suppuration in the breast.

SYMPTOMATOLOGY, DIAGNOSIS, TOXICOLOGY AND MEDICAL JURISPRUDENCE.

1. TYPHOID FEVER. *Symptoms:* Insidious onset, weakness, headache, epistaxis, vague pains. The temperature rises gradually, about 2° in the evening, falling 1° in the morning. Diarrhea, tenderness in the right iliac fossa, enlarged spleen, and a characteristic rash which appears from seventh to twelfth day. During the second week the temperature remains at a uniform level; typhoid state and delirium may be present. The pulse becomes rapid, weak, and dicrotic; the heart sounds are feeble; the tongue is coated, fissured, and tremulous; sordes appear on the teeth; the abdomen is distended; the stools are yellowish and offensive (said to be like pea soup); the Widal reaction may be positive. In the fourth week the temperature becomes normal.

It may be confused with malarial (remittent) fever. The following table is taken from an elaborate one by Thayer:

TYPHOID FEVER.	MALARIAL (REMITTENT) FEVER
Blood shows no leucocytosis; eosinophiles diminished or absent; serum causes agglomeration of typhoid bacilli; malarial parasites and pigment absent.	Blood shows no leucocytosis; eosinophiles not notably diminished serum does not cause agglomeration of typhoid bacilli; malarial parasites and pigmented leucocytes present.
Fever uninfluenced by quinine.	Fever disappears under quinine.
Usually epidemic; prevailing commonly in cities.	Is an endemic disease occurring particularly in rural districts; rarely epidemic.
Anemia absent, excepting in later stages.	Anemia more or less marked early in the course.
Characteristic roseola.	No characteristic exanthem; urticaria not uncommon.
Has a fairly characteristic course.	No distinct course.
Urine high-colored; bile absent; Ehrlich's diazo-reaction present during the height of the process.	Urine high-colored; may show a trace of bile; Ehrlich's diazo-reaction rarely present.
The temperataure does not reach 40° C. (104° F.) before the third or fourth day.	The temperature may arrive at 40° C. (104° F.) within twenty-four hours.
The apathetic expression of the face, the dryness of the tongue, and sordes upon the teeth are well marked and progressive.	These symptoms are not very marked.
Herpes rare.	Herpes common.

2. *Symptoms of cancer of the stomach.* It does not usually occur before forty years of age, is more common in males, the pain is localized and constant, vomiting is copious and occurs some time after eating; the vomitus contains "coffee ground" material; hemorrhages are common; a tumor may be palpated, and examination of the gastric contents shows absence of free HCl and presence of lactic acid; severe anemia and cachexia are also present.

Cholecystitis is not accompanied by the "coffee ground" vomitus, and the gastric contents do not show lactic acid or absence of free hydrochloric acid. Further, there may be obstinate constipation and jaundice; the pain is at first more diffuse, and bears no relation to the time of eating.

3.

PLEURISY WITH EFFUSION.	LOBAR PNEUMONIA.
Onset marked by chilliness persisting for a few days.	Onset acute, with rigor, lasting one hour or longer.
Cough is irritating; no expectoration, or, if present, catarrhal in character.	Cough more marked, and accompanied by rusty or bloody, tenacious expectoration.
Sputum negative; tubercle bacilli rare.	Dense aggregations of pneumococci present.
Moderate fever of continuous type; declines by lysis.	Fever, 102° to 104° F.; falls by crisis.
Prostration moderate.	Prostration extreme.
Unilateral distention of the thorax.	Absent.
Countenance pale and anxious.	Mahogany-colored flush of cheeks.
Limited expansion at base of chest on the affected side.	Degree of expansion slightly, if at all, inhibited.
Tactile fremitus diminished or absent.	Increased over area of consolidation.
Interspaces bulging at base of chest.	Absent.
Percussion shows flatness, with great resistance to the pleximeter finger.	Dullness with less resistance, and sometimes a tympanitic note.
Diminished or absent breath-sounds over effusion the rule. Respiration murmur diffuse, distant, and generally unaccompanied by rales. Bronchial breathing may be present over the entire affected side of the chest.	Harsh bronchial breathing and presence of rales in first and third stages, unless a bronchus is plugged.
Friction sound heard in early and late stages.	No friction murmur; rales present.

(Anders and Boston's *Medical Diagnosis.*)

4. SCARLET FEVER. *Symptoms:* Abrupt onset, with rigors, vomiting, sore throat, anorexia, rise of temperature on first or second day to 100° to 104° F. On first or second day a typical scarlet rash appears, on a red background; after a few days desquamation commences, and the epidermis peels off in large flakes.

Two sequelæ: Nephritis and inflammation of the middle ear.

Nephritis is indicated by the presence of urine of a high color and containing albumin, blood, and casts; dropsy of ankles or eyelids or general; and possibly uremia, with convulsions or coma.

Otitis media is indicated by pain in the ear, tinnitus, difficulty in hearing, swelling in the ear; the membrane presents a glistening red and sunken appearance; suppuration may occur, with perforation of the membrane, and possibly facial paralysis or meningitis.

5.

UREMIC COMA.	ALCOHOLIC COMA.
Deep coma. Slow onset unless convulsions have preceded the coma.	Can be aroused by supra-orbital pressure unless very profound.
Albuminuric retinitis.	Pupils normal or somewhat dilated.
Pulse rapid.	Pulse more rapid than normal and full.

UREMIC COMA.	ALCOHOLIC COMA.
Respiration, frequent and irregular.	Regular respiration.
Urine shows albumin, casts and low urea percentage.	Normal.

6. The secondary skin eruptions of syphilis are polymorphic in character, do not itch, are roughly symmetrical, are of the color of copper or raw ham, are painless.

7.

	GLAUCOMA.	IRITIS.
Age	Over forty.	Any.
Tension	Plus.	Normal.
Congestion	General, especially scleral.	General, especially circumcorneal.
Cornea	Cloudy and steamy surface.	Cloudy.
Anterior chamber	Shallow.	Unchanged.
Pupil	Dilated, oval.	Contracted, synechiæ.
Pain	Severe, continuous.	Especially at night.
Vision	Much reduced.	Somewhat reduced.

(From Alling and Griffin's *Diseases of the Eye and Ear.*)

8. The *symptoms of chronic laryngitis* are: Hoarseness and discomfort in the use of the voice, a tendency to cough, and possibly aphonia.

Laryngeal tuberculosis has, in addition, dysphagia with severe pain as an additional symptom. Further, the laryngoscope will show tuberculous ulcers.

9. The *symptoms of ptomaine poisoning* are: Onset more or less sudden, abdominal pain, persistent nausea and vomiting, chill, diarrhea, headache, weakness, vertigo, faintness, neuromuscular pains, sometimes fever.

In other forms of gastroenteritis, the vomiting ceases when the stomach is emptied, but in ptomaine poisoning the nausea, retching, and vomiting are persistent; in gastroenteritis the onset is less sudden, and the symptoms not so severe.

10. Four conditions which may justify the induction of premature labor: Certain pelvic deformities; toxemia of pregnancy; habitual death of a fetus toward the end of pregnancy, and when the mother's life is in imminent danger owing to the presence of disease of the heart or kidney.

The physician must obtain the consent of the woman or of her husband or guardian, and he should be sustained in his view by a recognized consultant.

OBSTETRICS AND GYNECOLOGY AND PHYSIOLOGICAL CHEMISTRY.

1. At eight weeks, the retrodisplaced uterus will cause pain and difficulty in micturition, owing to the pressure of the cervix on the bladder; similarly, pressure of the fundus may cause pain in the sacrum and constipation; vomiting, and other reflex phenomena may occur; the cervix is found higher up than usual, and the body of the uterus is in Douglas' pouch. The condition may right itself (spontaneous reposition), or the uterus may become incarcerated, or spontaneous abortion may occur. The patient should be placed in the knee-chest position, and the bladder being empty, the uterus should be replaced by the physician's fingers or a repositor; it should be kept in place by adequate tampons or pessary. Incarceration is not likely to occur till the third month.

2. The possible results of a prolapsed cord are compression of the cord causing death of the fetus, and for the mother, hemorrhage due to premature detachment of the placenta and breast complications due to the death of the fetus.

Treatment of prolapsed funis consists in: (1) Not rupturing the membranes prematurely unless there is some positive indication; (2) postural treatment, in which the woman is placed on her back or on the opposite side to that on which the cord lies, with hips and pelvis elevated, or the knee-chest position may be adopted; (3) reposition of the cord, either manually or with some form of repositor; (4) speedy delivery, by forceps or podalic version. If the child shows signs of asphyxiation, the various methods of artificial respiration should be tried and persisted in.

3. The possibilities are: Placenta prævia, premature detachment of a normally placed placenta, rupture of the uterus, and lacerations of the lower part of the birth canal.

In *placenta prævia*, the hemorrhage is abrupt, painless, and there are generally repeated hemorrhages of increasing severity; the placenta may be felt through the cervix.

In *premature detachment*, the hemorrhage is sudden, and is generally attended with sharp pain; the hemorrhage persists until the uterus is emptied or the patient dies; vaginal examination shows nothing abnormal.

Ruptured uterus is announced by a sudden, acute, and persistent pain. Sometimes the sound of the rupture is heard by the patient; the symptoms of internal hemorrhage and shock are present—collapse, air-hunger, cyanosis, rapid, feeble pulse; the uterine contractions cease. Vaginal examination shows that the presenting part of the child has receded from its former situation owing to escape of the fetus (partially or completely) through the rent into the abdominal cavity, where it may be felt by abdominal palpation.

Treatment of placenta prævia, at term: (1) Introduce one or two fingers within the os (the hand being in the vagina) and dissect the placenta from the uterine wall for about three inches from the os uteri in all directions, pushing it to one side if necessary. (2) Rupture the membranes, and if there is an unfavorable presentation turn the child and make the breech engage in the os; or, if the head presents forceps may be used if speedy delivery is necessary. The strength of the woman is then the main point to be cared for, and if in a reasonable time the uterus seems to be incompetent, the child may be delivered by art. In some cases of central placenta prævia, where rapid delivery is required, cesarean section may give good results for mother and child. (Landis' *Obstetrics.*)

Treatment of rupture of the uterus: "After rupture has occurred, especially if it be 'complete' and extensive, and the child should have escaped, wholly or in great part, through the rent into the abdominal cavity, laparotomy should be done at once, child, placenta, blood clots, etc., being removed through the abdominal incision; the peritoneal cavity cleansed with hot saline solution; the rent in the uterus repaired by suture; or in case of an infected uterus, or one that will not contract, or in which the rupture cannot be well secured, the entire uterus should be removed." (King's *Obstetrics.*)

4. Pruritus vulvæ may be *caused by:* Parasites; diseases of the vulva, as inflammation, edema, vegetations, congestion, irritating discharges, lack of cleanliness, diabetic urine; it may also be of nervous origin or idiopathic. *Local treatment* consists in applications of solution of bichloride of mercury, 1:2000; or carbolic acid, 1:100; or lead and opium; dusting powders of bismuth subnitrate, calomel, or zinc oxide are also useful.

5. *Pregnancy:* The tumor is hard and does not fluctuate, is situated in the median line, and may give fetal heart sounds and movements; the cervix is soft, and the other signs of pregnancy are present. The rate of growth of the tumor and the general condition of the patient's health may also help in arriving at a diagnosis.

Uterine fibroid: Menstruation is irregular and sometimes very profuse; absence of the signs of pregnancy; the tumor is nodular, firm, irregular in outline, and while generally placed somewhat centrally is not in the median line, and is not symmetrical; the rate of growth is irregular, being, as a rule, slow, and sometimes extending over years.

Ascites: Absence of the signs of pregnancy; the abdomen is distended, but the shape varies with the position of the patient; on lying down there is bulging at the sides, the tumor fluctuates, and percussion shows dullness in the flanks, with resonance in the median line, but the dullness varies with the position of the patient.

Fat: Absence of signs of pregnancy, also of fibroid, or ascites.

Pseudocyesis: The uterus is not enlarged, and the administration of a general anesthetic causes the collapse of the "tumor."

6. The *bacteria which cause puerperal fever* are: Streptococcus pyogenes, staphylococcus pyogenes aureus, gonococcus, bacillus coli communis, bacillus diphtheriæ, bacillus typhosus. They are generally introduced by the fingers of the physician or nurse, or by instruments,

or general lack of cleanliness. The results are shown by chill; rapid rise in temperature, to about 103° or 104°, higher in the evening than in the morning; sweats; rapid pulse; depression; dry tongue; anorexia; carphologia; scanty, high-colored, albuminous urine; restlessness; sometimes delirium or coma. The uterus is large, and tender; the lochia are diminished or suppressed; the milk secretion is often suppressed; pain in the abdomen; peritonitis may develop. *Treatment:* Prophylaxis is of the greatest importance. Purgatives; vaginal douches; some recommend curettage, others decry it; the introduction of antiseptics into the uterus; supportive and general treatment are indicated; specific sera and vaccines have been recommended by some.

7. *Vaginal douches* should not be given unless distinctly indicated, such as in cases that are probably septic or prior to version or forceps or other operative procedure.

Anesthetics are used in labor to lessen suffering produced by labor pains; to lessen the pain attending obstetric operations; to relax the uterus when its rigid contraction interferes with version; to promote dilatation of the os uteri; to reduce excessive nervous excitement which may interfere with progress of early stage of labor; to relieve eclamptic convulsions and mania; in cases of uterine inversion to relax the constructing cervix and so facilitate replacement; in bipolar version to lessen pain of introducing the hand into vagina; in precipitate labor to suspend action of voluntary muscles and retard delivery; in all cutting operations upon the abdomen; and sometitmes in sewing up a lacerated perineum when many sutures are required. (From King's *Obstetrics.*)

Dangers: They lessen the efficiency of the uterine contractions; predispose to postpartum hemorrhage; and, if given too freely, may be followed by headache, nausea, and vomiting.

Ergot should be used after the placenta is expelled, so as to secure uterine contractions. Before this period, the use of ergot is dangerous, the objections being: (1) That it may produce tetanic contractions of the uterus and so cause rupture of the uterus, death of the mother, or asphyxiation of the child; (2) that it increases the chances of lacerations of the cervix and perineum; (3) that it tends to cause retention of clots and membranes, etc.; and (4) that it retards the secretion of milk.

Pituitrin may be used in cases of uterine inertia, provided the os is dilated and there is no obstruction to delivery.

8. The *function of the thyroid* is not definitely settled; (1) it has some trophic function, regulating oxidation in the body, and it is supposed to have also a special influence on the vasomotor nerves, the skin, the bones, and on the sexual functions; (2) it is supposed to antagonize toxic substances; and (3) it produces an internal secretion.

Removal of the thyroid gland causes mental and bodily dullness and apathy, tremors, twitchings, overgrowth of the connective tissues, and development of fat; the hairs fall out, and the patient becomes unwieldly and clumsy in both body and mind. The complete removal causes death in most animals, and it is not considered justifiable in man.

Removal of all the parathyroids causes death from acute tetany. Their exact function is unknown, but it is supposed that some of the evil effects attributed to removal of the thyroids is really due to the removal of all the parathyroids as well, and that if the parathyroids are left (with their blood supply intact) these results will not ensue. Thyroid substance is composed of water, 82 per cent., and solids 18 per cent. The solids consist of nucleoprotein and iodothyrin. This latter is found in the colloidal substance, and contains carbon, hydrogen, oxygen, nitrogen, phosphorus, and iodine. The thyroid is the only tissue in the body which normally contains iodine, and it is believed that the changes which occur in disorders of the gland are due to the excess or lack of the iodothyrin.

9. *Test for bile pigments in urine:* Put 33 cc. of nitric acid in a test tube and heat until the acid is yellow; cool; then float some of the urine on the surface of the acid. If bile pigments are present a green band is formed at the junction of the two liquids, which gradually rises and is succeeded from below by blue, reddish violet, and yellow.

Test for blood in urine: Place a few drops of the urine in a test tube, and add a drop of freshly prepared tincture of guaiacum and a little ozonic ether; then agitate. In the presence of blood the ether, which rises to the surface, is blue.

Test for acetone in urine: Add a few drops of a freshly prepared solution of sodium nitroprusside, and then solution of KHO, when, in the presence of acetone, the liquid is colored ruby-red, and on supersaturation with acetic acid, changes to purple.

10. *Cholesterol* is a monoatomic alcohol, with the empirical formula $C_{27}H_{45}OH$, but of unknown constitution. It is found chiefly in bile, but also in blood, nerve tissue, brain, and nearly every animal tissue and fluid. Pathologically, it occurs in biliary calculi, pus, hydrocele fluid, cancer, brain tumors, atheromatous patches, dermoid cysts.

(To be concluded.)

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THE CLINICS OF JOHN B. MURPHY, M.D. At Mercy Hospital, Chicago—April, 1916. Published bi-monthly by W. B. Saunders Company, Philadelphia and London. 174 pages. Price, $8 per year; foreign, 35 shillings.

THE ENDOCRINE ORGANS. An Introduction to the Study of Internal Secretion. By SIR EDWARD A. SCHAFER, LL.D., D.Sc., M.D., F.R.S. Published by Longmans, Green & Co., 39 Paternoster Row, London. With numerous illustrations. 156 pages. Price $3.50 net.

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Original Articles.

ROENTGENOGRAPHIC CONTROL OF THE PNEUMOTHORAX TREATMENT OF PULMONARY TUBERCULOSIS.

BY I. SETH HIRSCH, M.D.,

NEW YORK.

PROFESSOR OF ROENTGENOLOGY, NEW YORK POST GRADUATE HOSPITAL AND MEDICAL SCHOOL; DIRECTOR OF X-RAY LABORATORY, BELLEVUE HOSPITAL, NEW YORK CITY.

THE necessity of carefully, persistently, and continually controlling the pneumothorax treatment of tuberculosis of the lung by the Roentgen ray need hardly be emphasized, since it is generally agreed that the more constant the study and the checking of the cases by radiographic and fluoroscopic examinations, the more certain and effectual is the treatment.

The application of the Roentgen method is manifold. It assists in the selection of cases fitted for this treatment, it permits the estimation of the degree of collapse of the lung and of the effect on the opposite lung, it allows the study of the progress of the disease, it indicates graphically the displacement of the heart and mediastinum, and makes possible the early discovery of complications. These conditions cannot always be determined by the ordinary methods of examination, for the air in the pleural cavity makes a sounding box of the chest, which results in exaggeration and transformation of every sound and in the obliteration of the finer differences of tone. It accordingly appears to be almost impossible by the usual physical examination to map out the extent of pneumothorax, to determine what is the actual position of the collapsed lung, or to estimate the displacement of the mediastinal structures.

These difficulties demand that all the diagnostic means at our disposal be employed in the effort to obtain a true idea of the conditions existing in this disease.

The examination may be made either with the aid of the fluoroscent screen (roentgenoscopy), which permits the study of the movements of the thoracic viscera, or a record of the pathological conditions may be obtained upon the photographic plate (roentgenography). Both methods are to be employed and the examination cannot be considered complete without either. For no description, however accurate, of the fleeting image seen upon the fluorescent screen can compare as a graphic record with the permanent impression on a photographic plate, which also gives the finer structural detail not to be seen with the screen. The picture of pneumothorax is so striking and characteristic that once seen the condition is thereafter readily recognized.

For its clear understanding a rapid analysis of the normal sagittal view of the thorax will be made. On either side of the triangular median shadow, due to heart and mediastinal contents, are seen two brightly illuminated areas shaped like Gothic windows—the pulmonic fields. These are bounded above by a convergence of the spinal column and ribs, and below by the curve of the diaphragmatic domes. Radiating outward from two winged shadows (hilum shadows) which lie close to the median shadow, are linear shadows which fade out as they extend to the periphery, into fine reticulations. These are known as the pulmonic markings and are due in greatest part to the blood-vessels, but the bronchi and lymphatics also contribute to their make-up. At the periphery the shadows of the thin-walled bronchioles are lost in the brilliancy of the illumination due to their air content, but at the hilum the larger bronchi may be seen in longitudinal section, as white rings (bronchial wall) with illu-

FIG. 1.—Partial pneumothorax of the right pleural cavity. The exposure made during forced expiration. The middle and lower lobes are about equally retracted. Complete retraction of the upper lobe, which is most diseased, is prevented by adhesions.

minated centers (air content). With respiration the lung markings move. The brightness of the illumination of the pulmonic fields is an index of the air content of the lungs, in other words, of its state of aeration. This degree of illumination is estimated by a comparison with the illumination of that portion of the plate or screen which is uncovered by any structure. The normal pulmonic illumination is less than this. Any encroachment on the air-containing capacity of the alveoli will show itself as a clouding either local or general of the field. This clouding may vary in degree from a slight haziness through which the pulmonary markings are visible to a complete shadowing which obscures completely all the pulmonic markings. So, also, any increase in the air content above the normal will show itself as an increase in the brilliancy of the illumination of the pulmonic fields. Thus in

pneumothorax, because of the replacement of the normal lung tissue by air, the illumination attains its highest brilliancy. For the ray now affects the screen or plate almost as if nothing had been interposed. The contrast between the brilliantly illumi-

Fig. 2.—Same case as shown in Fig. 1. Partial pneumothorax. Exposure made during forced inspiration. Shows the inflation of the lung, both the middle and lower lobes moving to the same extent. The upper lobe, however, shows diminished motion because of the existence in it of the focus of disease and adhesions.

nated pulmonic field and the central dense structures is now very marked. The pulmonic field is divided into two parts—an outer, very brilliantly illuminated, corresponding to the air-containing pleural space, and an inner, less brightly illuminated, which corresponds to the more or less collapsed lung. Examination of this brilliantly illuminated area will show that the normal lung markings are absent, while in the irregularly rectangular or oval shadow with its well defined outline in the inner part of the field these markings may be visible. This shadow of the retracted lung may enlarge and grow lighter during one or the other phases of respiration. The lattice-work effect of the ribs over the bright area is very clear, the structural detail very distinct and of a lighter shade than the ribs on the normal side. The intercostal spaces are widened. The costodiaphragmatic space is widened, sharply defined, and clear. The diaphragmatic shadow is depressed, irregular, and relatively immobile.

The Roentgen ray study is made at three periods: (*A*) The preliminary examination for the estimation of the amount of disease and the selection of the site of the puncture. (*B*) The study during and immediately after the injection of gas. (*C*) The subsequent study with the determination of the amount of collapse, restitution, etc.

A. The Examination Preliminary to Injection.—There is no necessity of entering into a detailed description of the findings which indicate tuberculous involvement. This may be studied in four stages: (1) The stage of congestion: shown as hypervascularization, diminished illumination, and adenopathy. (2) The stage of infiltration: shown as more or less localized, large areas of absent illumination (consolidation), more or less generally distributed smaller areas of absent illumination about the bronchi (peribronchial consolidation), localized or general miliary infiltration—pin-point shadows. (3) The stage of necrosis: shown as cavitation. (4) The stage of repair: shown as calcification or fibrosis.

It is beyond the purpose of this paper to discuss the indications for the production of pneumothorax. It is generally understood that the condition of the lung as seen in the radiographic examination is not the sole criterion for the determination as to whether or not gas is to be injected. The subjective phenomena are after all the important standard. Extensive disease on both sides is, however, not a contraindication against the induction of even double pneumothorax.

In the determination of the site of injection, it is of course important to avoid an area over which extensive adhesions are present. This may be done by shunning areas where consolidation exists or where the linear shadows extending from hilum to periphery indicate interlobar pleurisy. Marked general clouding of a portion of the pulmonic field in one view with normal illumination in examination in the opposite direction indicates adhesions.

But, though extensive fibrosis gives the characteristic picture of obliteration of the pulmonic field, narrowing of the intercostal spaces, retraction of the heart shadow, etc., unfortunately mere localized pleural thickening is not always visible radiographically, especially over the lateral portions of the lungs. At the root and base of the lung adhesions show as a distortion and downward extension of the hilum shadow and as irregularities and distortions of the diaphragmatic outlines, the smooth convex surface of which is thrown into wavelets. These are best demonstrated during deep inspiration, which also show the limitations in diaphragmatic movement.

B. The Examination During and After the Injection.—For the proper comprehension of the phenomena which follow the injection of gas into the pleura a consideration of the mechanics may be of value.

When air is admitted between the pleural layers, the negative intrapleural pressure is diminished; that is to say, it approximates the atmosphere. The lung may now satisfy its inherent tendency to shrink. There appears to exist a belief that even the smallest opening of the pleura or the admission

Fig. 3.—Complete collapse of right lung, visible as an airless mass lying at the central and basal portions of the thorax.

of the smallest amount of air invariably results in the immediate and complete collapse of the lung and that under these circumstances the lung takes no part in respiration. But animal experiments long ago demonstrated that

the lungs do not collapse perfectly, and continue to functionate even when there is a pleural opening the diameter of the trachea, and that considerable quantities of gas are necessary to obtain extensive collapse. In fact, the opening in the chest

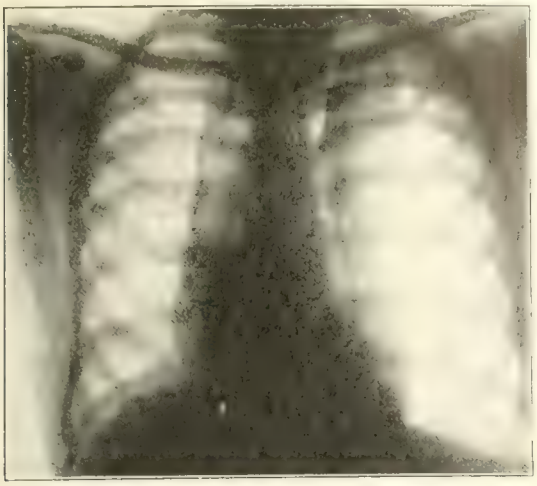


Fig. 4.—Massive collapse of left lung. Displacement of upper pleural septum into right thorax. Marked displacement of heart to right.

wall may be very large and yet the lungs will continue to functionate if the animal be so placed that the perforation is lowest and this in spite of the fact that in dogs there is often a communication between the two pleural cavities just above the tendonous center of the diaphragm, so that nearly every pneumothorax is really bilateral and that the unusual mobility of the mediastinum considerably impairs the activity of both the sound and the affected lung.

So, also, in human beings it has long been known that in pneumothorax under certain circumstances not only is there no shrinkage, but there may be an actual protrusion of the lung through the wound in the chest wall constituting a hernia and that complete collapse of the lung can usually be produced only by the administration of large amounts of gas into the pleural cavity. But whether the open or closed form of pneumothorax exists, the lung in the affected thorax usually continues to functionate to a greater or less extent so that even double, though incomplete pneumothorax is compatible with life.

What are the conservative forces which counteract the tendency of the lung to retract? The forces concerned in the maintenance of the lung in its normal position may be divided into two classes: Those acting from without, which may be styled extrinsic, and those due to properties inherent in the lung tissue itself, which may be called intrinsic. The extrinsic forces consist of, first, the pressure of the atmosphere on the exterior of the chest; second, the pressure of the air within the lungs (intrapulmonary), which, with some variations, is that of the atmosphere; and third, the tension which exists between the pleural layers (intrapleural negative pressure). The intrinsic forces consist of, first, the elasticity of the lung, which constantly tends to diminish the tension under which its structure has been placed; and second, the tonus of the lung, due to its bronchi, muscular and vascular tissue, which maintains definite structure and shape of the organ.

Besides this there is the power of vicarious distension of the alveoli which the lung tissue may exhibit in response to an afferent impulse.

The integrity of the lung and its intrinsic forces, however, is of the utmost importance as affecting the degree of collapse.

When the lung is but slightly diseased, with its intrinsic forces not markedly impaired, the tendency to collapse is counteracted by the compensatory dilatation of parenchyma, in the immediate vicinity of that portion subjected to the stress of the atmospheric pressure.

This increase of the pulmonary volume, associated as it is with increased intrapulmonary tension due to exaggerated respiratory activity, is sufficient not only to maintain the approximation of the pleural layers, but when there is added the expiratory pressure from the sound lung, collapse is prevented, necessitating the exhibition of considerable positive pressure.

When the lung is partially involved, and its tonus is depressed by the disease, the degree of collapse will depend considerably on the amount of involvement and the quantity of gas injected. The lobe more affected will shrink more and remain more immobile. The redistension takes place through the agency of the same forces as mentioned above, except that the expiratory pressure from the sound lung plays a more important part. The lung continues to take part in respiration when the collapse is not complete, but its movement at times differs from that of the sound lung; that is, it expands with expiration and collapses with inspiration. As more and more gas is absorbed, the type of respiration changes to the normal.

If, however, because of extensive disease, its tonus is completely lost, the collapse is complete and its mobility impaired. Restitution to the normal is delayed and may never take place. The most extensively diseased lobe casts a larger shadow than the less involved lobe. This is, however, not due to a lesser degree of collapse but to the infiltration which gives a greater mass than the uninvolved lung.

C. The Subsequent Study with the Determination of the Amount of Collapse, Restitution, etc.—The *x*-ray examination after the injection gives the following data:

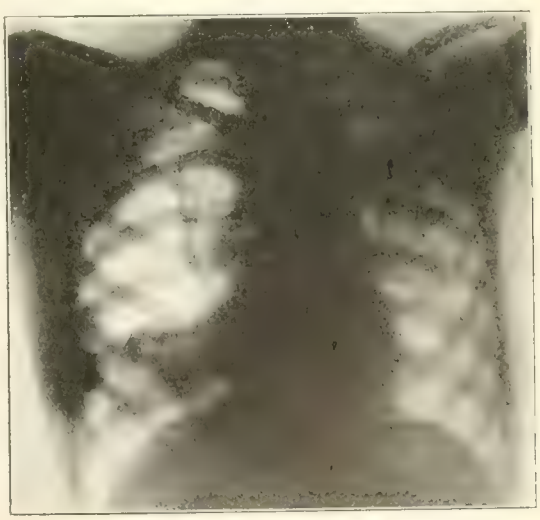


Fig. 5.—Partial collapse of the lower and middle lobes. The upper lobe containing two large cavities is collapsed to a greater degree, the rigid walls of the cavity preventing complete retraction.

1. The degree of pneumothorax. Is the air present in all parts of the pleural cavity or confined to a particular part?
2. The condition of the lung. Is the lung com-

pletely or only partially collapsed? What is the position and mobility of the retracted lung? Does it functionate?

The collapse of the lung is not proportional to the amount of gas injected. If free from adhesions, the

FIG. 6.—Left pneumothorax. The upper lobe is only partially collapsed and contains a very large cavity. The lower lobe is partially consolidated in its upper portion and is only partially collapsed.

collapsed lung is usually found lying about its root, but the stereoscopic examination shows that it is never concentrically displaced. With a small amount of gas the partially compressed lung casts a distinct shadow of considerable extent, with a sharply defined border, but as the lung continues to shrink, with continued injections, its shadow grows denser and smaller until in long standing cases it is finally barely visible, airless and motionless, a ribbon-like mass along the spinal column. The collapse may be toward the anterior or posterior chest walls, toward the apex or base of the pulmonic field. This depends considerably upon the amount of adhesions and infiltrations. A large area of consolidation may not permit the lung to collapse to any marked extent or extensive adhesions may present free retraction, though now adhesions become clearly visible. By the examination in the oblique position the extension of the adhesions in all directions may be demonstrable. The lobes of the collapsed lung may now also be differentiated, for they do not collapse similarly. The cavities are the last to collapse. The firm, rigid walls of these cavities maintain their form even when the surrounding lung is collapsed.

The opposite lung should be studied and the compensatory emphysema noted. There appears a clear outlining of the markings due to the pulmonic blood vessels, but whether this is due to an increased blood supply in the opposite side (congestion) or just to a clearer delineation of the vessels because of the increased air content, one is not able to state; perhaps both factors are concerned. Aside from the compensatory emphysema the treatment has no appreciable effect on the opposite side, it surely does not intensify the disease if the proper technique is employed in the administration of the treatment.

An apparent improvement in the lesions on the other side has been noted, but this is not always a correct observation. Because of the greater dilatation of the air vesicles these lesions become more widely separated and an area which gives a shadow of apparently almost consolidation due to a confluence of areas of infiltration has now the appearance as if this infiltrated area has cleared up by the absorption of the tuberculous process.

3. The Condition of the Pleura—does it contain effusion? The difficulty of detecting by the usual diagnostic means, either the presence or the amount of effusion within a pleural cavity containing air, is well known to every clinician. With the aid of the Roentgen ray the smallest effusion may be detected. The effusion is first observed in the costophrenic space. The lower angle of this space is cut off by a shadow with an upper horizontal border, and as the level of this shadow rises the pulmonic field becomes divided into three zones. There is a bright upper zone, a brilliant middle zone and a dark lower zone. The bright upper zone corresponds to a part of the collapsed lung retracted and pressed against the upper and posterior part of the chest. The middle brilliant zone represents the parts of the chest containing air. The contrast between this zone and the dark zone beneath it is very marked. The lower zone represents the fluid. It is a dense, homogeneous shadow which may obscure the shadow of the ribs. Below it merges without any defined boundary into the shadow of the subdiaphragmatic organs, while its upper level is sharply defined and perfectly horizontal.

This upper level is sharply defined, no matter how small the quantity of air. In simple effusion the upper border of the fluid is concave, rising higher at the periphery, while a change in the position of the thorax has no immediate appreciable effect on the level. This level of the fluid in hydropneumothorax remains horizontal in every position and changes freely with every position of the thorax or movement of the body. Thus the rise and fall of the level corresponding to the respiratory movements, the undulations synchronous with the systole and diastole of the heart, the agitation of its surface when the chest is percussed or during coughing, and the waves produced by the more forcible succussion are all phenomena to be observed with the fluoroscopic screen. When considerable in amount the level of the effusion rises with inspiration and falls with expiration—a reversal of what should normally occur. This paradoxical condition

FIG. 7.—Complete collapse of lung prevented by numerous fibrous bands.

is due to the loss of tone of the diaphragm whose movements become altogether passive and follow the abdominal pressure changes. When the effusion occurs late, that is, after the collapsed lung has become airless, or if the condition is an old one, then

but two zones will be seen, an upper brilliant zone corresponding to the air and a lower dark zone corresponding to the fluid. The lung in these cases lies against the spinal column and its shadow merges with that of the mediastinum. This is the picture when the patient is examined in the upright position. In some cases it is neither feasible nor advisable to examine in the erect posture. It should

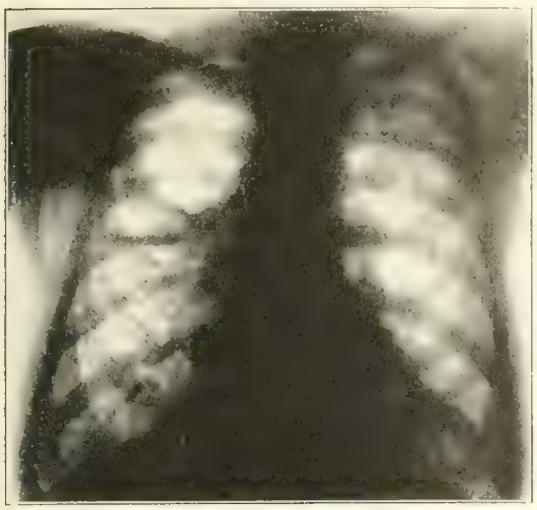


Fig. 8.—Collapse of right upper lobe only. The superior surface of the middle lobe is visible, bounded by the two linear shadows extending from the hilum to the lateral chest just below the pneumothorax.

be borne in mind, however, that when lying down, the fluid flows over the posterior wall of the chest, while the air rises above it. The picture now obtained is a little more difficult of interpretation. Instead of two sharply contrasted zones indicating the air and fluid, the entire chest is obscured by a light shadow, and it is only at the sides that the brilliant illumination due to the air is visible. The lung, however, still holds its position at the root.

4. Displacement of the heart and mediastinal contents—how are the mediastinal contents displaced and to what extent? Is an excessive strain brought to bear on the vessels? The displacement of the heart is not proportional to the amount of gas injected and varies with the same amount of gas. Though the displacement is marked immediately after injection, restitution quickly takes place. It is in pneumothorax due to pathological causes that most marked displacement is seen. The displacement is more marked when the left pleural cavity is injected and when effusion is added to the air. Under these circumstances there is also a rotation of the organ, so that the left ventricle lies more anteriorly. A dilatation of the pulmonary artery and left auricle may be noted. The circulation in the large vessels may be interfered with as a result of distortion, due to displacement.

Besides the displacement of the mediastinal structures, heart, vessels, trachea, etc., certain parts of the pleural septum are frequently displaced to a considerable degree. These are, so to speak, weak areas in the dividing pleural wall.* One is anterior, in the pleural fold between the sternum and large vessels above the arch of the aorta, and the other in that portion of the septum lying posteriorly between the heart and the spine. The displacement varies considerably in different individuals. The importance of bearing this possibility in mind lies in the necessity of explaining the radiographic appearance of the upper and lower portions of the median shadow and of the pulmonic field in pneumothorax. A thin convex linear shadow enclosing an area of bright illumination may be seen encroaching on the upper or lower portion of the normal pulmonic field and representing this herniated pleural fold. Thus is also explained the encroachment of medium sized exudates, apparently across the median line into the normal pulmonic field. These simple pleural displacements have been erroneously diagnosed, particularly so in many published articles, as pneumopericardium, associated with artificial pneumothorax because of the localized area of bright illumination over the cardiac shadow.

5. The position and movement of the diaphragm—how and in what degree is the motion affected and limited, once retraction of the lung occurs? The movements of the diaphragm are inhibited and the dome becomes flattened and irregular when the lung is collapsed to a marked degree. In some cases the muscle appears to lose its tone and rises and falls paradoxically.

6. Subcutaneous emphysema. The extent of the subcutaneous emphysema may be studied radiographically. The air may be demonstrated not only underneath the skin but throughout the various fascial layers on both sides of the chest. It is as a rule rapidly absorbed.

7. Restitution—reinflation. The absorption of a moderate amount of gas, 600 c.c., will take place in about two weeks. The outer brilliantly illuminated field gradually becomes fainter, smaller, and is last visible in the peripheral part of the pulmonic field as a narrow triangular strip.

8. Effect on disease. This should be studied from time to time and comparisons made. The healing by fibrosis takes place in cases wherever destructive lesions are present. Where simple infiltrated lesions existed the foci appear smaller, show areas of calcification. The entire pulmonic field shows an illumination far less bright than the uncollapsed side and this appears to be maintained

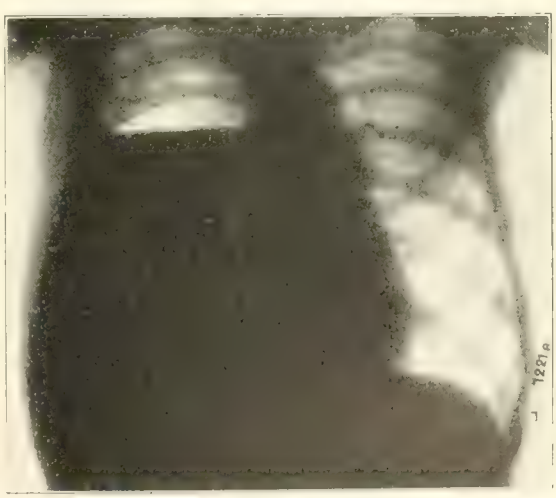


Fig. 9.—Hydropneumothorax. Note the shadow of the compressed lung at apex of field. Below it the brilliantly illuminated area corresponding to the air in the pleural cavity and below this the horizontal upper border of the dense shadow of the fluid.

over a long period. The pulmonic markings are also apparently more numerous and clearer. This is perhaps due to an increase both in vascular content and fibrous tissue.

96 Park Avenue

*Nitsch: Die schwachen Stellen des Mediastinums. *Beitr. z. Kl. d. Tbk.*, Bd. 18.

GASTROHYDRORRHEA IN CIRRHOSIS OF THE LIVER ACCOMPANIED BY PYLORIC STENOSIS.*

BY MAX EINHORN, M.D.,

NEW YORK.

PROFESSOR OF MEDICINE AT THE NEW YORK POSTGRADUATE MEDICAL SCHOOL.

(From the German Hospital, New York.)

BY the term "Gastrohydrorrhea" is meant the flow of a watery fluid from the stomach, containing neither hydrochloric acid nor the characteristic ferments.

I may be permitted to describe the case in which gastrohydrorrhea was most marked and first noticed.

Antonio C., about forty-two years old, consulted me August 31, 1915, for the first time. He then complained of vomiting small quantities of fluid, principally in the morning, anorexia, slight constipation, and great loss in weight, during the last six months about fifty pounds. He used to consume great quantities of alcoholic beverages, and had syphilis twenty years ago. The examination showed no abnormalities in the chest. The abdomen, likewise, failed to reveal any gross patholical changes. The stomach extended to the navel. The liver was not palpable. The urine contained no albumen nor sugar, but a considerable quantity of urobilinogen.

Based upon the symptoms and etiology, a tentative diagnosis of gastric catarrh (due to the abuse of alcohol) and beginning cirrhosis of the liver was made.

Patient was instructed not to partake of any alcoholic beverages, and to eat plain foods, avoiding much meat and highly seasoned substances. He was also given—

Extr. fluid Condurango,
Extr. fluid Quassiæ,
Extr. fluid Cascar. sagr. āā 10,0.
M. Sig.: 20 drops t.i.d.

Patient (who lived in a distant country) then improved for quite a while (during the whole month of October, eating with impunity, without vomiting), when all of a sudden the old symptoms returned with greater severity. At the beginning of November he was seized with incessant vomiting. The attending physician instituted rectal feeding for about two weeks, but even then the vomiting persisted. Patient was then brought to the German Hospital and placed under my care.

November 15, 1915.—Patient is extremely emaciated and weak; he can hardly talk. His tongue is dry and reddish. Heart sounds are very weak, but no murmur is present.

The stomach is somewhat dilated, extending to one finger's width below the navel, and somewhat painful to pressure. No resistant mass can be discovered. Liver dulness is slightly diminished, extending merely to one inch above the right costal margin. The vomited matter contains no hydrochloric acid and is of a neutral reaction; blood is present, but no Oppler-Boas bacilli. Rennet is absent. The urine, spec. gravity 1,010, contains no albumin nor sugar but a great quantity of acetone.

On November 16, the stomach is emptied in the fasting condition, 75 c.c. being obtained; fluid looks dark-brown, containing a large quantity of mucus: Hcl = 0; Acidity = 18; lactic acid + trace; blood +; large amount of bacteria, mostly cocci; no sarcinæ.

The duodenal bucket, given with atropin, did not pass the pylorus. Stool not formed, dark brown, contains a considerable quantity of mucus; occult blood, present.

Blood—hemoglobin, 80 per cent.
Red blood corpuscles, 5,000,000.
White blood corpuscles, 12,600.
Polynucl., 77 per cent.
Lymphocyt., 21 per cent.
Transitional, 1 per cent.
Eosinoph., 1 per cent.

Patient complains of great weakness and vomits almost constantly. The diagnosis at present appeared to be severe gastritis with multiple erosions, stricture of the pylorus (with the possibility of malignancy), and cirrhosis of the liver. The patient was given—

℞ Menthol 1,0.
Spirit. Vin. 50,0.
Aq. dest. 120,0.
Syr. Zingib. 30,0.
M. Sig.: One tablespoonful, t.i.d.

and placed on the following régime: one ounce of either barley water or egg albumin water, alternating every hour by mouth; 1,000 c.c. glucose solution 6 per cent. by the Murphy drip per rectum twice daily; gastric lavage every morning in the fasting condition. Under this régime the urine increased and the tongue became moist. Patient felt somewhat easier; but the vomiting persisted. The quantity vomited always exceeded by far the ingested amount of fluid. Thus on the 19th of November the intake per os amounted to 540 c.c., while the quantity vomited was 1,310 c.c. In this vomited material there was no trace of gastric juice (reaction neutral or rather slightly alkaline), nor was there bile nor pancreatic juice. It always contained some blood and mucus, the blood at times macroscopically visible, at times found merely by chemical tests. Although a Wassermann test was negative, we decided to apply antisyphilitic treatment. Mercury salicylate was given subcutaneously, and potassium iodide per rectum.

Nutritive enemas were added to the glucose solution and for a time nothing was given by mouth for twenty-four hours, but the vomiting persisted, 1,500 c.c. being collected during that period. Patient gradually grew weaker, and notwithstanding gastric lavage and total abstinence of fluids by mouth kept on vomiting 1½ to 2 quarts daily of a watery mucous fluid, at times tinged with blood. November 24, the patient became irrational and also developed a slight rise in temperature. On November 25 he lost consciousness and died on November 27, without any additional new symptoms.

The autopsy was performed in my presence about five hours after the exitus by Dr. Humphreys, the pathologist of the German Hospital whose report I herewith submit.

"Anatomical Diagnosis: Carcinoma of the Pylorus and Stomach; Dilatation of the Stomach; Chronic Passive Congestion; Atrophic Cirrhosis of the Liver; Lobar Pneumonia. Body is that of an elderly man of large frame but much emaciated. The skin is pale and of a subicteroid tint. Rigor mortis is present. Post mortem lividity slight. Marked emaciation of face, trunk and limbs. One lymph node is palpable in the neck about the size of a hazlenut.

"Diaphragm: Fourth rib right side, fourth interspace left side.

"Peritoneal Cavity: The intestines are moderately ballooned with gas. The stomach is very markedly ballooned, crowding over beyond the line of the gall bladder. The serous surfaces are smooth and glistening throughout. The lesser omentum is shortened and thickened, and adherent to the pylorus. The bladder is distended with dark urine. The mesentery fat is slight in amount but not absent. On the surface of the mesentery are found numerous small reddened areas resembling petechia. The free border of the lumen is entirely invisible behind the border of the ribs.

"Pleura: Left pleura normal. Right pleura shows old adhesions posteriorly.

"Pericardium: Normal.

"Heart: Normal in general size and appearance. The valves and orifices are normal. Myocardium slightly pale, shows no areas of degeneration or fibrosis.

"Lungs: Both lungs show marked hypostatic congestion of the lower lobe. On the left side are found numerous small areas of consolidation of very recent origin, poorly marked off from the surrounding tissues as dark red spots. The lower lobes of both sides are edematous but show no pneumonia.

"The bronchi are moderately congested.

"Spleen: Somewhat enlarged measuring 12 by 7 by 4 cm. It is rather firm but friable in consistence. The capsule shows one or two areas of local thickening. The pulp is of a deep purplish red color, appears swollen. The stroma is still visible. Malpighian bodies are invisible.

"Liver: Much diminished in size, weighs 1,600 grams. The surface is coarsely granular and of a pale yellowish brown color. It cuts with resistance. The cut surface appears of a yellowish brown color, subdivided by fibrous tissue trabeculæ into islands 3 or 4 mm. in diameter. The normal markings are completely obliterated. The gall-bladder appears normal excepting for adhesions on its outer surface; contains a small quantity of thick bile.

"Kidneys: About normal in size and consistence;

*Read at the annual meeting of the Association of American Physicians, Washington, May 12, 1916.

their capsules strip readily leaving a smooth rather deep red surface. On the left kidney near the hilus is a small cyst about 1.5 cm. in diameter filled with clear yellow fluid. On section the cortex appears moderately congested, slightly thickened but otherwise normal. The pelvis and ureters appear normal. The bladder

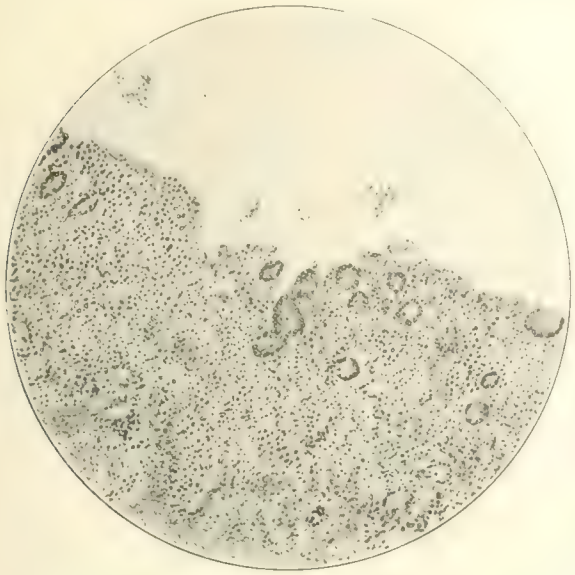


Fig. 1.—Section through the gastric mucosa. The glands are destroyed to a great extent. Numerous infiltrating cells are noticeable, also, at places, surface defects of the mucosa. (Small magnification.)

shows one or two petechia on its surface but otherwise is normal.

"Pancreas: Somewhat small and firm but on section appears normal.

"Gastrointestinal Canal: Esophagus normal. Stomach immensely ballooned with gas, contains a small quantity of brownish fluid. At the pylorus is felt a hard tumor which apparently encircles the lumen. It measures about 3 cm. in all dimensions. The blade of a scissors can be run throughout it from the duodenum into the cavity of the stomach. On opening the organ the mucous membrane throughout the whole stomach is of a deep purplish red color. At the pylorus the wall is thickened, measuring about 1.5 ctm. through. The mucosa at this point is ulcerated and eroded, but the floor of the ulceration appears clean. No metastases were found in the lymph nodes in the lesser or greater omentum. The duodenum is intensely congested similarly to the stomach. The small intestine less so. The large intestine is very markedly congested in the lower portion. Nowhere is there any ulceration. The aorta is rather narrow, shows a few deep atheromatous patches in its first portion. The abdominal portion appears normal."

A section of the pyloric tumor was submitted to Dr.

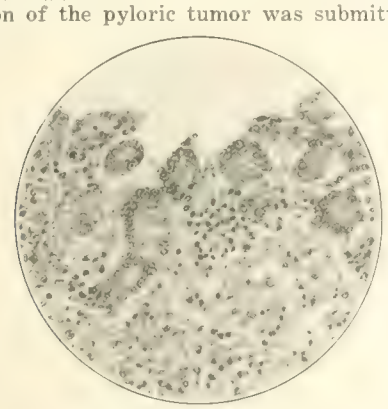


Fig. 2.—The Same as Fig. 1 under higher magnification.

James Ewing, who was kind enough to examine it. He reports as follows:

January 14, 1916.—"Report on Fibrocarcinoma of Pylorus. The pyloric muscle is infiltrated with somewhat indefinite cells which form an anastomosing net work dividing up the muscle bundles into large groups. The infiltration is exclusively through the connective tissue. The subserous fat tissue is also the seat of small groups of hyperchromatic cells of indefinite type. The mucosa is missing and there is little submucous tissue present. On careful inspection the infiltrating cells prove to be typical of gastric fibrocarcinoma. They are small poly-

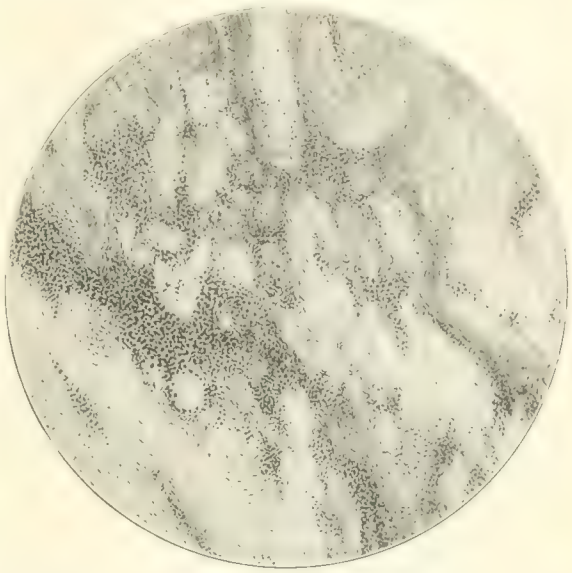


Fig. 3.—Section through the pyloric tumor. The connective tissue of the pyloric muscle is infiltrated with small polyhedral cells forming an anastomosing network and dividing the muscle bundles into large groups. (Small magnification.)

hedral with compact hyper-chromatic nuclei and opaque acidophile cytoplasm. Many of them show large mucous globules which may occupy the whole cell, pushing the nucleus to one side in crescent form. In several foci, especially in the fat tissue, there is definite formation of small alveoli lined by cuboidal epithelium. These appearances are characteristic of this type of gastric carcinoma. In wider extent they appear in the lesions known as linitis plastica."

I am indebted to both Dr. Humphreys and Dr. Ewing for their kind reports.

To illustrate the state of the gastric mucosa, which was extremely congested and inflamed throughout and eroded all over, and the thickened pylorus, we give the following four drawings:

Epicrisis.—In considering the clinical picture of the disease, which consisted of a severe gastritis with pyloric obstruction and the last stages of cirrhosis of the liver, the following features are

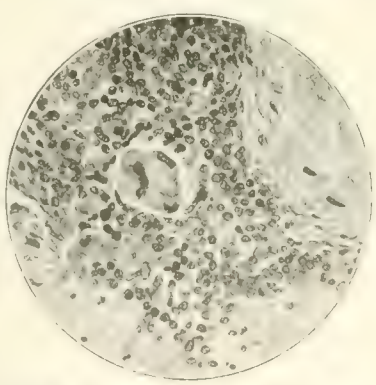


Fig. 4.—Same as Fig. [illegible] In the center [illegible] of liver cells are noticeable in which large mucous globules occupy the whole cell, pushing the nucleus to one side in crescent form. (Large magnification.)

somewhat out of the ordinary and demand our attention:

1. The vomiting greatly exceeded the quantity ingested and persisted even when nothing was taken by the stomach. It contained neither HCl nor bile.

2. In this extremely emaciated man, who had lost over 70 or 80 pounds, the blood picture a few days before death shows 80 per cent hemoglobin and over 5,000,000 blood corpuscles.

3. Notwithstanding the high degree of liver cirrhosis, there was no trace of ascites found in the abdominal cavity.

Vomiting in excess of fluids ingested is encountered off and on. It is either due to hypersecretion of gastric juice or to a regurgitation of bile and intestinal juices into the stomach. In the case before us, however, neither of the two factors played a part. There was no ordinary gastric secretion present, as evidenced by the absence of HCl and the ferments, nor bile nor intestinal juice, as shown by the lack of biliary pigment or pancreatic ferment. Besides, the pylorus was stenosed to such a degree that nothing could enter or leave the stomach through this outlet. The vomitus was a watery fluid mixed with mucus, frequently tinged with blood, of slightly alkaline reaction. The characters of ordinary gastric secretion being absent in this fluid, it

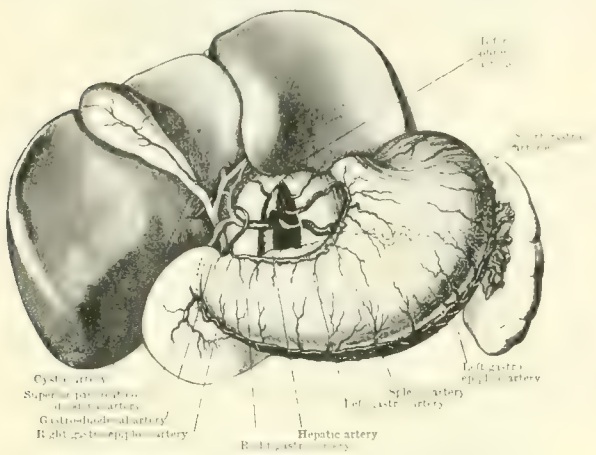


FIG. 5.—The celiac artery and its branches.

appears to me that we may explain the latter (gastrohydrorrhea) as an exudate due to the extreme congestion and accumulation of blood in the circulatory apparatus of the stomach.

For the development of hyperemia and extreme venous congestion in the latter organ, the conditions here were particularly favorable. If we take into consideration the intimate relationship between stomach and liver with regard to their blood supply, abnormalities in the liver will easily affect the stomach. This the more so as they both derive their inflow of blood from one and the same trunk artery, the "celiac."

In cirrhosis of the liver the connective tissue constricts the acini and also the arterioles with the result that the blood does not find an easy access here. It is dammed back and in consequence the blood from the celiac artery, instead of flowing into the hepatic artery which is already overfilled, enters in more abundant quantity the vessels supplying the stomach. In a similar manner, in complete pyloric stenosis, when the small intestine is empty and cut short from its work, the blood supply there will naturally be at a low ebb, and in consequence there will be a more active circulation in the blood vessels situated higher up, namely, in the celiac artery and more particularly the gastric arteries. The venous supply of the stomach, on account of the difficulty of reaching the liver through the clogged up portal vein, will likewise be overfilled—in the case before us—almost to bursting.

The regulatory arrangement of the organism can bring temporary relief by emitting some of the congested fluid in the circulatory apparatus of the stomach through the walls of the latter into its cavity. Or there will be an exudation of fluid into the stomach, very much on the same order as the ascitic fluid in the peritoneal cavity in ordinary cases of cirrhosis of the liver without pyloric obstruction.

The process described appears to have happened in the case before us. The fluid exuded in the stomach, was no gastric secretion, but rather a transudate. Accumulating in this organ and not being able to pass the pylorus, the liquid was then vomited.

The origin of the fluid explains in a satisfactory manner the two other anomalies here, namely, the absence of ascites and the good condition of the blood. The ascites was missing, as the act of liberating congestion took place in the stomach. The blood showed an almost normal amount of red blood cells, as the superfluous fluid was constantly drained off through the gastric walls.

In the case before us, in which gastric secretion was entirely missing, the gastrohydrorrhea was easily recognized. There is no doubt, however, that in other cases of cirrhosis of the liver accompanied by pyloric obstruction a similar transudation into the stomach or a gastrohydrorrhea takes place. The fluid, however, being mixed with gastric juice will not be easily recognized in its true light.

The following case I have recently observed will illustrate this point, also the relationship of pyloric stenosis and cirrhosis of the liver to the place of transudation (stomach, or peritoneal cavity). The case is briefly as follows:

November 30, 1915.—Thomas M., about fifty-three years old, was always well until about a year ago, when he commenced to complain of fulness in the abdomen and slight nausea. Patient used to partake liberally of alcoholic beverages and smoked considerably. For the last five months there was vomiting, at first occasionally, and during the last two months almost constantly. The vomited matter in twenty-four hours frequently exceeded in quantity the total amount of ingested substances in the same period of time.

The examination showed an extremely dilated stomach (extending to the *symphysis*) with active peristalsis visible. There was constant ischochymia: HCl +, acidity = 40, much mucus. The liver dulness ceased three fourths of an inch above the right costal margin. Patient complained of great weakness, thirst, and vomiting. The duodenal bucket failed to pass the pylorus. The diagnosis of cirrhosis of the liver and obstruction of the pylorus—probably of a benign type—was made.

Patient was put on rectoclysis and no fluids given by mouth. Although the stomach was washed out daily, vomiting of a watery fluid, containing HCl and showing an acidity of about 30, was a constant feature. The whole quantity of ejected fluid would amount to one and one-half to two quarts daily. Apparently nothing could pass the pylorus. Patient had meanwhile lost over 80 pounds in weight. A surgical operation, although considered of great risk, had to be undertaken and was performed in my presence by Dr. Willy Meyer on December 8, 1915.

The pylorus was found completely stenosed, presenting an even swelling of thumb-size for one to one and a half inches; no swollen glands were found. A gastroenterostomy was then established. After the operation patient did badly for about four days, continuing to vomit. Lavage was again instituted with great benefit. Nourishment was then given in small quantities and retained. December 16, diarrhea set in; patient, however, felt better and picked up in strength and general well being. On December 24 ascites was observed in the abdominal cavity. Patient continued to gain in strength and weight, although the fluid in the abdomen likewise slowly progressed. Calomel and diuretin were

given in order to hold the ascites in check. It never entirely disappeared, although there was considerable improvement in the condition of the patient.

The noticeable features in this case are: before the operation when vomiting was incessant there was no ascites. After the operation, as soon as the gastroenterostomy opening put the intestinal tract into activity, ascites appeared, and there was no more vomiting.

The explanation here again is satisfactory if we assume that during the period of pyloric obstruction the vomited fluid relieved the congestion and was to a great extent in the nature of a transudate. As soon as the gastroenterostomy established the activity in the intestines, the venous congestion was overcome by exudation of the dammed back fluid through the intestine and omentum into the peritoneal cavity.

The frequent occurrence of vomiting in chronic alcoholic gastritis with cirrhosis of the liver (vomitus matutinus) may be due in part to a similar regulatory mechanism. The vomited matter would then represent to a certain extent transuded fluid and indicate a beginning faulty portal circulation.

20 East Sixty-third Street.

OSTEOCHONDROFIBROMA, OR OSTEITIS FIBROSA.

WITH THE REPORT OF A CASE.

By V. P. GIBNEY, M.D.,

NEW YORK.

At a meeting of the Society in December, 1913, I presented a specimen from an operation on a case of what was regarded at that time as Osteitis Fibrosa, involving the upper end of the femur (Medical Record, Feb. 7, 1914). This report was based upon the findings of the pathologist to the Hospital for the Ruptured and Crippled, Dr. Jeffries. The section referred to him was taken from a wedged-shaped piece of bone from the neck of the femur, the gross specimen as shown by the *x*-ray (Fig. 1). The operation was done through the middle of this mass, and our pathologist reported as follows: "Bone and cartilage both exhibit inflammatory changes the etiology of which does not appear. No neoplasm was observed on section cut. One bit is a portion of perichondrium."

Dr. George Barrie of the hospital staff was present and secured a section from the upper portion of the wedge and submitted it to Dr. O. S. Hillman, who reported as follows: "Microscopic examination shows the tumor to be made up of a frame work of cellular fibroblastic with rather delicate bone trabeculæ embedded in it and circumscribed areas of cartilage. The growth is covered by a fairly dense connective-tissue capsule; only a moderate number of blood vessels are seen throughout the fibrous portion of the mass. No definite evidence of malignancy can be detected. The growth is essentially an osteochondrofibroma."

Since my report of the case before the Practitioners' Society in 1913 there has arisen more or less discussion in the hospital as to the nature of this growth. At the time of the first operation it was a question whether it was a sarcoma or a benign tumor, but this question was soon settled by both of the pathologists. From my own study of the case with a reference to similar ones reported by Hirschberg in 1889, von Recklinghausen in 1891, Bloodgood in 1910, Silver in 1911, and Freiberg in 1912, I was persistent in my original diagnosis of osteitis fibrosa. I find, however, that some of my colleagues, including Dr. Barrie, adhere to the one which heads the title of this paper. Neither one is regarded as malignant, and both occur as a rule in early life.

The latter is regarded as congenital, yet the history of the case I am about to present does not furnish conclusive evidence.

Fig. 1.—The radiograph of the case in 1913 just prior to the first operation.

Case.—A boy was admitted to the Hospital for Ruptured and Crippled November 13, 1913. He was born and brought up in the country and, but for lameness involving the left hip, was always regarded as healthy and well nourished. The mother gave the history for our record that the boy was not lame until he was two years of age. Barrie learned from a neighbor that there was some defect about the hip at the time of birth, but this has not been confirmed. During the nine or ten years prior to his admission to the hospital he was treated for hip disease of the quiet type, and until we secured the *x*-ray the case was regarded as one of hip disease or sarcoma. Examination in the ward revealed a deformity just over the left hip simulating a tumor, range of motion over very nearly the normal in flexion and extension, but adduction and abduction were limited to about one-half the normal range; there was about 1 inch shortening and only a moderate amount of atrophy. The details of the routine examination are not given and the presumption is that there was no involvement of the leg, for the reason that I personally examine and dictate notes of all the orthopedic cases, when on duty, coming into the hospital with

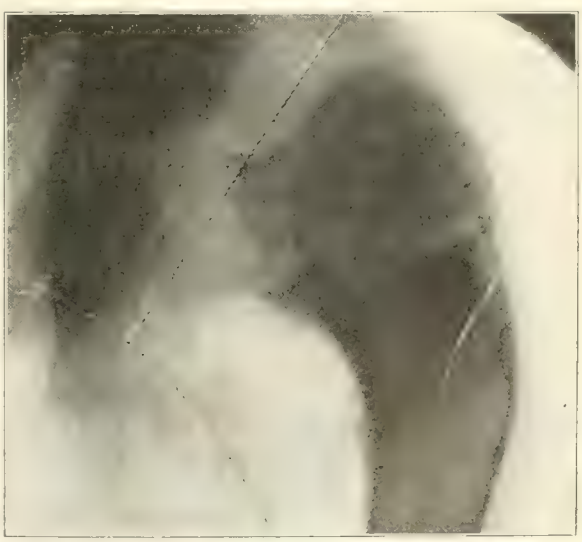


Fig. 2—The case as shown March 30, 1914, after second operation.

*Presented at a meeting of Practitioners' Society, Feb. 4, 1916.

rarely an exception, and this case I remember very well. I did not discover any lesion below the knee or I should have made a record of same. Shortly after admission an incision was made over this mass and a large cauliflower growth involving the femoral neck and part of the head came into view (see Fig. 1).

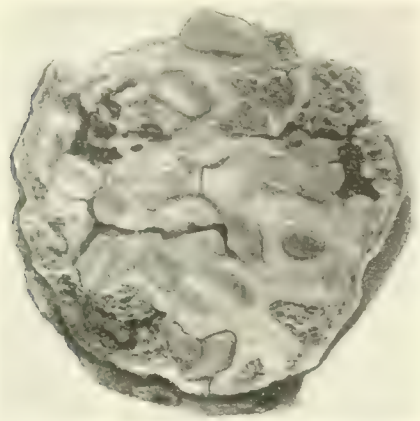


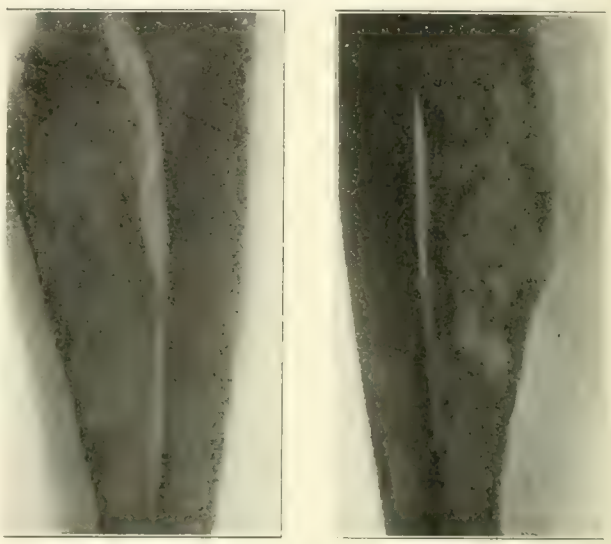
FIG. 3.—Cross-section of lesion shown in Fig. 1. (From the *Annals of Surgery*, Feb., 1915.)

A wedge-shaped portion was removed and the limb brought into abduction, closing the space from which the wedge was removed. The wound healed promptly, and on March 30, 1914, an *x*-ray was taken showing the growth much smaller (see Fig. 2) and apparently undergoing resolution rather than further involvement of the shaft. The second operation was on April 7, 1914, and more of the tissue was removed, while an osteotomy was done below the trochantor minor to correct the deformity. It is to be regretted that *x*-rays of the entire skeleton were not taken either in November or during the succeeding six months. The order was given on one or two occasions, but for some reason, such as the machine being out of order, the plates were not taken. No note was made during his residence in hospital for the first six months of any growth on his leg, and the presumption is there was no growth, for the reason that our routine examinations are made every month and are very thorough so far as the size of the limbs and the function of the joints go. It was not until a readmission to the hospital on March 12, 1915, that any involvement of the fibula of the same side was noted. An *x*-ray taken August 12, 1914, showed an involvement of the upper extremity of the

FIG. 4.—The femur after the second operation, which included the osteotomy, taken a year later.

femur for at least 3 inches, and at this time only the femur was *x*-rayed. On March 16, 1915, a long incision was made over the mass of the left fibula and a large portion of it removed with a curette and chisel; this was cartilaginous in substance and the pathologist reported chondroma, with extensively calcified areas and some cellular connective-tissue, but no signs of highly malignant process. The wound healed without incident and the boy continued to wear his brace, permitting motion at the knee joint. He was discharged July 19 and readmitted for the second time on January 28, 1916, merely for observation and for repair of his brace, *x*-rays have been taken of all the bony structures, including the spinal column and ribs, the bones of upper extremity, the lower extremities, and also of the feet; all of the plates are quite free of any lesion except those showing the hip and upper portion of the femur (see Fig. 4) and those showing the fibula on the left side (Fig. 5). In one *x*-ray it would seem that the astragalus and os calcis are involved, and the clinical signs rather confirm this suspicion. An *x*-ray of the entire foot does not show any involvement of these bones. If the fibula was not involved prior to 1915, then the metaplasm has extended; if, however, it was present at the date of the boy's first admission to the hospital, then there has been no progress of the case. The boy is quite active, his general health is excellent, and I have resisted the appeals of some of my colleagues to resect the fibula.

The argument presented for this procedure is a good one, namely, that a benign tumor may at any



A. B.

FIG. 5.—A. The fibula, same side, as shown prior to operation in 1913. B. The fibula as shown January 31, 1916, nearly a year after the operation.

time develop into a malignant one, but Dr. William B. Coley, one of my colleagues whose opinion where malignancy is involved is most valuable, advises against resection. R. C. Elmslee, in the *British Medical Journal* for November, 1912, reports a case occurring in the practice of Mr. Lawford Knaggs that lasted from adolescence up to the fifty-third year, and then a sarcoma developed in one of the affected bones and he comments as follows: "An instance apparently of an abnormal tissue in a state of ill-regulated activity which continues in this condition for many years and shows no tendency to cure."

The case which I have just reported is still under observation, and with an apparatus which protects the hip and knee the boy walks very well. His general health is excellent. Personally, I believe an incision could be made and any redundant overgrowth of this tissue could be shaved away without impairing the strength of the bone or the function of the joint, but believing as I do in the non-malignancy of the lesion, I am content to refrain from further operative interference.

The title of the paper simply illustrates my willingness to accept Dr. Barrie's view of the case and by courtesy give it precedence over my own.

5 PARK AVENUE

COMPLETE CONGENITAL ATRESIA OF THE ILEUM.

BY ROYALE HAMILTON FOWLER, M.D.

BROOKLYN, NEW YORK,

ASSOCIATE SURGEON, GREENPOINT HOSPITAL.

BABY T. was born in the Greenpoint Hospital, service of Dr. F. C. Holden, March 21, 1916. The delivery was normal and easy, no forceps. Weight at birth about seven pounds.

Vomiting commenced about fifteen minutes after birth. Vomitus was green, flaky, and thick without special odor. It continued several times during the night and the following day. The abdomen was slightly distended and tense. No visible peristalsis, no masses seen or felt. No external congenital anomalies. The rectum easily admitted the little finger, no blood escaped or appeared on the gloved finger. No masses or obstruction felt. Genitalia normal.

March 22. Vomiting still continues, same character. A soap suds enema resulted in the return of a small amount of clear fluid. An intestinal cast was expelled from the rectum about six inches long and one-quarter inches in diameter, consisting of mucus and meconium. Later a colonic irrigation was given. Two ounces of fluid are said to have entered the rectum. A considerable amount of greenish black meconium was later found upon the diaper. Several gastric lavages showed the washings consisted of the same greenish material.

March 23. Vomiting persists, the abdomen is more distended. Consultation held, operation advised for intestinal obstruction. Preoperative diagnosis: Complete

atresia of the duodenum or hypertrophic pyloric congenital stenosis. Neither of these quite explained the fact that the obstruction appeared to be a low one in the small intestine.

Operation. (Dr. Fowler.) Age of patient, 27 hours. Right rectus incision. A large amount of thin serous fluid escaped on opening the peritoneum. Small intestine presented. It was of dark color and distended six times the diameter of the neighboring loops. This distended loop of gut literally "popped" into the wound. It was blind and free, without fibrous cord connection. The mesentery down to its root was also lacking at this point. The gut above this point was less dilated than the blind pouch. The bladder was full, the stomach was distended. No stenosis or change in the pylorus. The duodenum was dilated slightly more than the commencing jejunum. In a hurried search the lower end of the ileum was not found. The appendix was normal. There was no persistence of the embryonal type of cecum. The latter was firmly attached to the posterior abdominal wall. The intestines were moderately congested. The upper free end of the small intestine was sutured to the abdominal wall and the abdominal wall closed in layers about the protruding gut. Enterostomy was then performed by the thermocautery.

March 24. Following the operation the pulse was weak, the baby cyanotic. Hypodermoclysis, two ounces given every two hours. Refuses to take the breast. Considerable brownish green discharge from the enterostomy. March 26, vomited several times during the last two days. An abundant discharge continues from the enterostomy. Feet cold and clammy, has taken no nourishment. March 27, has continued to vomit, cyanosis more marked. Profuse discharge from the enterostomy. Patient died.

At autopsy the gastrointestinal tract was removed with its attachments to the posterior abdominal wall. It was preserved in Keiserling solution, and photographed both in black and white and by the Eastman method of color photography by Dr. Nathan Beers. In the photograph above is seen the lower edge of the liver—to the right the stomach and just below it the transverse colon. Below the stomach and to the right may be seen the upper jejunum, toward the left less dilated coils of jejunum ending in an enormously dilated blind end at the extreme left. Enterostomy was performed at this point. (This dilated loop was left outside of the abdomen.) The less dilated coils of jejunum, shown below the liver, between the blind end at the left and the commencing jejunum at the right, show partial collapse and the efficacy of enterostomy. The lower blind end of the collapsed ileum is shown transfixed by a pin, below the smaller piece of cotton. The rectum is seen below on the right tied off with a piece of string. To the left of this immediately above the glass rod the appendix may be seen.

Total length of small intestine 56 inches. The ileum ends in a small blind pouch 22½ inches from the ileocecal valve, one-half inch in diameter. The wall of this is thickened and bulbous for a distance of ⅜ of an inch. It is slightly curled upon itself. The segment distal to this cul-de-sac is patent. There is a defect in the mesentery at a point opposite the situation of the atresia of the ileum. The upper blind pouch ends at a point 33½ inches from the pylorus. It is very much dilated for a distance of six inches. The widest diameter of this portion is 1¾ inches. The duodenum has no mesentery, the cecum is located in the right iliac fossa, therefore rotation of the intestine has occurred. The ileocecal valve and the pyloric sphincter show no change. The liver, gall-bladder and ducts and stomach are apparently normal. There is an accessory spleen.

Dr. J. B. Boehm, resident surgeon at the Greenpoint Hospital, who has undertaken a careful search of the literature, reports that he was unable to find a similar case. A few cases of atresia of the lower ileum have been recorded, but none in this exact location. According to Treves, the average length of the small intestine at birth is nine feet, five inches. The length of the small intestine in the above case is 56 inches, and shows a shortening of four feet, eight inches.

280 JEFFERSON AVENUE.

CARCINOMA OF THE ESOPHAGUS PERFORATING INTO THE RIGHT BRONCHUS.*

BY JOHN GUTTMAN, M.D.,

AND

I. W. HELD, M.D.,

NEW YORK.

CARCINOMA of the esophagus, according to Kraus and Ridder,[1] forms 5 to 7 per cent. of all carcinomata encountered in man, and occupies about the fourth place in frequency. Carcinoma is most commonly found in the stomach, next in the uterus, next in the breast, and next in frequency in the esophagus.

In about 50 per cent. of the cases, carcinoma of the esophagus breaks through the walls of the esophagus into the neighboring cavities, into the mediastinum, the heart, the blood-vessels, or the bronchi. While perforation of the carcinoma of the esophagus into the air passages is not very rare the diagnosis of such perforation *intra vitam* is quite rare.

The following case is of sufficient interest to justify its publication:

*Presented at the Section of Laryngology and Rhinology of the N. Y. Academy of Medicine, February 22, 1916.

S. E., sixty years of age, has been suffering from slight digestive disturbances and constipation for the last ten years. His present illness began at the end of September, 1915, when he began to cough and expectorate sputum streaked with blood. An examination by his family physician, Dr. Lesser, revealed a temperature of 101° F. and dullness, with moist rales in the supraclavicular and infraclavicular region of his right lung. The diagnosis of pulmonary tuberculosis was made, and he was sent to the mountains for rest and recuperation. After a four weeks' sojourn in the mountains at the end of October, he returned to the city much improved. In the middle of November, although not complaining of anything in particular, he was re-examined by his family physician, who then found his temperature to be 102° with the same physical signs in his chest as in September. The patient was directed to go home immediately, and to stay in bed. On his way home he was suddenly seized with a severe hemorrhage, so that an ambulance had to be called and he was removed to the hospital. There tuberculosis of the lungs was also diagnosed. Repeated sputum examinations, however, proved to be negative, and suspicion arose as to the possibility of the condition being a sarcoma of the lungs. An *x*-ray picture was taken; this showed a marked shadow in his upper right lung. A second radiograph a few days later showed the shadow to be much smaller, while a third exposure a week later did not show any shadow at all. It was therefore thought that the shadow was produced by a hemorrhage in the lungs, which had at this time been absorbed. The patient was thereupon discharged from the hospital as perfectly cured. At the end of December, about two weeks after his discharge from the hospital, he began to complain of cough after swallowing liquids, and shortly thereafter regurgitation of the ingested fluid with copious mucus set in. His family physician then sent the patient to one of us (Dr. G.) to find out whether such symptoms would be produced by tuberculous glands, or by tuberculous laryngitis. The examination of the mouth, pharynx, and larynx proved negative. Bronchoscopy under local anesthesia revealed no pathological condition. During esophagoscopy, however, at a distance of about 10 inches from the teeth we encountered a sudden resistance. The walls of the esophagus appeared smooth, but rigid and infiltrated, and in only one spot a small erosion was visible, which was attributed at that time to trauma induced by passage of the instrument. The lumen of the esophagus appeared narrowed down to a slit. We then withdrew the esophagoscope, and introduced a bougie. This also met with resistance at about the same distance, but by using slight force we were enabled to force the bougie through the narrow slit. On these findings we (Dr. G.) established diagnosis of a neoplasm of the esophagus and sent the patient to Dr. H. for fluoroscopic examination. The fluoroscopic examination was first made of the chest both in the ventro

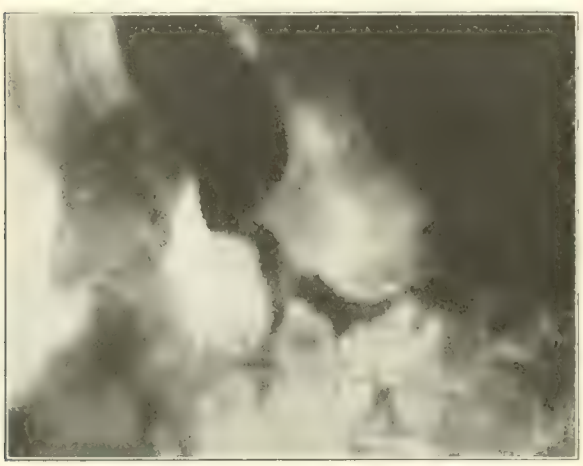


Fig. 1.—Dilated esophagus and bronchi filled with contrast material.

dorsal and dorso ventral position. The apices of the lungs were found to be perfectly clear. The shadow of the aorta normal, only the base of the right lung showed a distinct bronchiectasis. Fluoroscopy with the patient's right shoulder to the screen and left to the tube (first diagonal position) showed the retrocardiac space to be absolutely clear. The findings of this examination proved the absence of tuberculous affection of the lungs, mediastinal tumors, or aneurysm of the aorta.

A contrast emulsion, as first advocated by I. S. Hirsch, which consists of one tablespoonful of bismuth

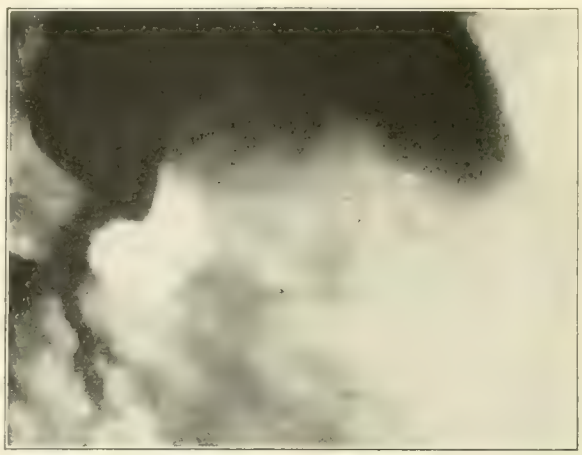


Fig. 2.—Another view of the dilated esophagus and the bronchi

subcarbonate to which enough mucilage of acacia is added until a cream-like emulsion is formed, was now given to the patient. The contrast substance reaching a point on the esophagus opposite the bifurcation of the trachea stopped dilating the esophagus above. Part of the food was seen dribbling down into the bronchi, and only a very thin streak was seen below the esophageal obstruction. The patient coughed almost instantaneously as the food was seen to dribble down into the bronchi.

Figure 1 shows the dilated esophagus above the obstruction and the bronchi filled with the contrast substance. Figure 2 shows the same condition but magnified.

Figure 2 was taken in the position first described by Held and Gross (9), which consists of placing the patient with the back to the screen and the face to the tube; then his left shoulder is rotated gradually anteriorly until a light zone is seen between the spine posteriorly and heart and blood vessels anteriorly. When the patient now swallows the contrast substance, the entire course of the esophagus from mouth to entrance into the stomach, is seen. It is true that the esophagus viewed in this position shows a somewhat less distinct shadow, but we find that this can be overcome by giving the patient a more concentrated form of the contrast substance.

This at once cleared up the whole pathological condition. Now it became evident that the patient was suffering from a stenosis of the esophagus, caused in all probability by a neoplasm, with a fistulous communication with the first bronchus.

Three weeks later, on January 22, the patient died; no autopsy could be obtained.

The interesting features in this case are as follows:

(1) The onset of the disease appeared to be at the end of September, 1915, four months before the patient's death. The primary cause of his death, the carcinoma of the esophagus, had probably existed for a long time without giving practically any symptoms whatever. There was no dysphagia, no vomiting, no *fetor ex ore*, etc., up to within a short period before his death. Price and Gibb[2] and J. G. Emanuel[3] have reported several cases of bronchoesophageal fistula, with a complete absence of the usual symptoms.

(2) The fistulous communication between esophagus and bronchus had existed for some time. As a result of this food particles passed from the former into the latter and in the course of time gave rise to bronchiectasis. The important rôle that foreign bodies play in the pathogenesis of the bronchiectasis is too well known to necessitate further re-

marks. The bronchiectasis (positive evidence of which was furnished by the Roentgen examination) gave rise to small pulmonary hemorrhages and to the cough, thus obscuring the clinical picture by simulating tuberculosis.

(3) The absence of pain and the comparative euphoria at a fever temperature of 101° and 102° Fahr. is interesting.

(4) The choking and coughing spells when the patient attempted to drink is, in our opinion, one of the most characteristic symptoms of esophagobronchial communication.

The examination with the esophagoscope, which revealed the stenosis of the esophagus with the history of paroxysms of coughing while drinking should have established the diagnosis of esophagobronchial fistula beyond a shadow of a doubt.

(5) The superficial erosion of the wall of the esophagus was observed by Hacker[4] and others, and was considered by them, at the beginning, to be due to a trauma caused by the esophagoscope.

(6) The immense diagnostic value of the fluoroscope, which, in fact, visualizes the whole pathological condition.

(7) We could find in the literature but one other case of an esophagobronchial fistula produced by carcinoma, and diagnosed in a living patient, by esophagoscopy and fluoroscopy, and that case was reported by Horner;[5] a case produced by syphilis was reported by Beebe,[6] and another case of esophagobronchial fistula caused by congenital occlusion of the esophagus was published by Losee[7] and Finkelstone and Ellis.[8]

(8) From the standpoint of differential diagnosis, the esophagoscopic picture could have been brought about by a compression from the outside, by an enlarged thyroid, byan aneurysm, by a tuberculous lymph gland, and by a mediastinal tumor. The history of the case, the age of the patient, and especially the fluoroscopic picture made the diagnosis so positive that even a post-mortem examination while desirable was not absolutely essential for diagnostic purposes.

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60 St. Mark's Place and 3 East Eighty-fourth Street.

CONGENITAL ELEVATION OF THE SCAPULA.*

By SAMUEL COHEN, M.D.,

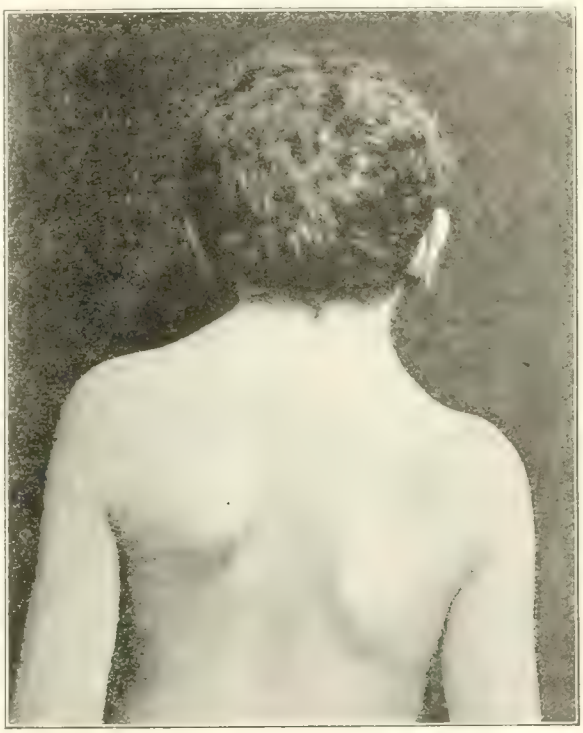
NEW YORK.

Congenital elevation of the scapula, originally described by Eulenberg[1] in 1863, consists in an upward displacement of the scapula. The condition may be unilateral or bilateral. Changes in the shape and size of the bone have been found. Associated with the deformed scapula there are one or more other anatomical defects.

The case herein reported is of extreme interest because it combines many of the phenomena found separately in cases of congenital elevation of the scapula.

The patient is a boy fourteen years of age. He presented himself originally in the Surgical Department at the Lebanon Hospital Dispensary with a Colles' fracture. His family history, as far as that could be obtained, is negative.* When he was a year old an operation upon his neck was advised; but for some reason that was not performed. The boy himself remembers that at one time his head was held very much awry. It has assumed a more and more vertical position and now it is fairly straight.

The accompanying photograph shows distinctly the deformed scapula and most of the associated conditions. The left scapula lies on a higher level than the right. The upper inner angle of this bone lies above the level of the clavicle, it appears in the supraclavicular space and it is four centimeters higher than the same angle of the right scapula. The upper inner angle of the left scapula, too, is slightly farther away from the midline than the same angle of the right scapula, and slightly farther away from the midline than the lower angle of the same scapula. The vertebral border of the left scapula, therefore, instead of being parallel to the midline, as it should be, is at an angle to it. The whole left scapula, therefore, is rotated on an anteroposterior



axis. The deformed scapula, also, is rotated in the opposite direction, making the lower angle more prominent than it should be, more prominent than the same angle of the right scapula. The upper inner angle of the left scapula is slightly more rounded than normally. In shape otherwise and in size the two scapulæ are practically alike and normal. The movements of the left shoulder joint are not interfered with in any way.

The left trapezius muscle is deficient, making the left side of the neck, posteriorly, shorter than the right. There is a distinct cranial asymmetry. On the front of the body there is noted a distinct facial asymmetry; the features on the left side are less prominent than those on the right. There is a torticollis; the left sternomastoid is shorter than the right. The left pectoral muscles are probably deficient, as is evidenced by the displaced nipple which is higher and nearer the sternum than its fellow. At the bottom of the sternum on the left side an exostosis can be distinctly felt.

The radiograph shows a scoliosis in the upper dorsal region of the spine, not toward the deformed scapula, but away from it. It also shows an elevation of the ribs on the affected side.

While this deformity was at first considered to

*A case presented before the Society of Alumni of Lebanon Hospital, March 7, 1916.

*The full photographs of fourteen members of the family were shown to the writer; these indicated no abnormalities.

be due to intrauterine causes, subsequent observation and study point toward hereditary influences. Neuhof[2] found a familial type of this affection. It seems that further observation is still necessary in order to verify or change the present conclusions.

The writer wishes to express his indebtedness to Dr. Charles Herrman and to Dr. L. M. Kahn for their valuable suggestions; also to Dr. Jacob Bower and Dr. K. Matthews for the excellent radiographic findings.

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381 SIMPSON STREET.

IS MYOPATHY RELATED TO DISORDERS OF INTERNAL SECRETIONS?

BY GRAYSON PREVOST McCOUCH, M.D.,
UNIVERSITY HOSPITAL,
AND
S. D. W. LUDLUM, M.D.,
PHILADELPHIA.
(From the Neurological Department of the Medical School of the University of Pennsylvania.)

THIS paper aims to review what is known of the relations of myopathy and of other muscular disorders with which it is frequently associated to disturbances of internal secretion; to report a case of facio-scapulo-humeral type, associated with dystrophia adiposa genitalis, and to present the results of Abderhalden tests in a series of cases.

Related Muscular Conditions.—In discussing the etiology of progressive muscular dystrophy, the consideration of other apparently related muscular affections may prove of value. Various writers have indicated a probable association of myotonia congenita, amyotonia congenita, and myasthenia gravis with disorders of internal secretion. It is an open question whether amyotonia congenita is not identical with the simple atrophic type of progressive muscular dystrophy.[1] The coincidence of myotonia and myopathy is so common that it has been recognized as a distinct type, myotonia atrophica. Oppenheim,[2] Marburg,[3] Foerster,[4] and others have commented on the large proportion of cases in which myasthenia is combined with muscular dystrophy.

Lundborg[5] has suggested that myotonia and myasthenia may be due to excessive, perverted, or deficient secretion of the parathyroid glands. After summarizing the evidence of the hypoparathyroid nature of tetany, he calls attention to the frequent coincidence of myotonia congenita and tetany, and to the resemblance of the clinical picture of paralysis agitans, on the one hand, to that of parathyroidectomized animals, on the other, to that of myoclonia. He draws an analogy between the frequent coincidence of tetany and myxedema. He contrasts the clinical pictures of paralysis agitans and myasthenia gravis and recalls the frequent combination of myasthenia gravis and exophthalmic goiter. On these grounds he suggests a hypoparathyroid origin for tetany, paralysis agitans, myoclonia, and myotonia congenita, and a hyperparathyroid source of myasthenia gravis and periodic paralysis of the extremities. Chvostek, on the basis of the clinical contrast between myasthenia and tetany, also regards myasthenia as due to hyperparathyroidism.[6]

With tetany, paralysis agitans, myoclonia, and periodic paralysis of the extremities, this paper is not concerned. It may be of interest, however, to review briefly the evidence for the endocrinous origin of the muscular conditions frequently associated with myopathy.

Myotonia Congenita.—The combination of myotonia with tetany is reported by Orzechowski in two cases of his own and twenty-three from the literature.[6] Falta[8] states that thyroparathyroidectomized animals combine the symptoms of myotonia with those of tetany. He cites Hoffman's case in which the myotonic symptoms disappeared under thyroid treatment, but the tetanic symptoms persisted. Metabolic studies lend support to a possible relation to hypoparathyroidism since the calcium balance is negative in myotonia[9] and also in all forms of tetany, including that following ablation of the parathyroids.[10] Possibly the action of sodium salts, unchecked in the absence of the normal amount of calcium, may play a rôle, since perfusion of muscle with sodium salts is said to induce the myotonic reaction.[11] Other evidence suggestive of an endocrinous origin is the frequent occurrence in myotonia atrophica of impotence and testicular atrophy,[12] loss of hair, and cataract.[13] Testicular atrophy and impotence and loss of hair lend support to the theory of thyroid deficiency;[14] cataract may be related to the possible hypoparathyroidism, since it is a frequent complication in tetany[15] and has been produced by Erdheim in rats by ablation of the parathyroids.[16] Such evidence is suggestive though it by no means proves the thyroparathyropræ vic nature of myotonia.

Myasthenia Gravis.—In the case of myasthenia gravis there is no support for the hyperparathyroid view of Chvostek and Lundborg beyond the contrast of the clinical picture to those of tetany and myotonia, and the frequent association with exophthalmic goiter. On the other hand, Tobias has reported a case of myasthenia with tetany.[17] Haberfield has shown that many cases of hypertrophy and cases of tumor of the parathyroids have no myasthenic symptoms; and, in two cases of myasthenia, no anatomical changes significant of excessive or perverted function were demonstrable in the parathyroids.[18] Finally, Biedl's dogs with parathyroids implanted in their spleens showed no myasthenic symptoms.[19]

For the part played by the thyroid there is more to be said. Drinker and Drinker[20] sum the subject as follows: "Since 1877, when Wilkes reported the first case of myasthenia gravis, we find 197 recorded cases of pronounced complication of the two conditions (myasthenia and exophthalmic goiter). If this were all we should still be in the realm of coincidence, but the fact that comparatively few nervous diseases, with the exception of hysteria, chorea, and paralysis agitans, complicate exophthalmic goiter and that many clinicians (Oppenheim, Bristowe, Ballet, Finlayson, Liebrecht, Rothmann, Marina, Camuset, Suckling, and others) have observed some of the symptoms of Graves' disease in profound cases of myasthenia gravis and vice versa, leads us rather forcibly to the idea of a closer connection. We can, therefore, as Goldflam expresses it, 'accept a certain relation between the two diseases, because the combination of asthenic palsy with prominent or mild symptoms of Basedow's disease occurs so often, rather than speak of

a mere coincidence of occurrence.' This is also the opinion of Oppenheim. Rennie has reported a rapidly fatal case of myasthenia gravis in a jockey who had been taking large quantities of thyroid to reduce his weight, but who presented no evidence of exophthalmic goiter."[21] Drinker and Drinker found that extract of sheep thyroid has a depressing effect on the voluntary muscle of frogs. Similar extracts of thyroid from cases of exophthalmic goiter gave an equal amount of depression and irregularity in the strength of contractions.[20] Administration of thyroid gland or of extract of the posterior lobe of the hypophysis increases the elimination of calcium,[22] an effect which is of interest in the light of Pemberton's finding of a negative calcium balance in myasthenia gravis.[23]

Adrenalin, on the contrary, tends to restrict the output of calcium and increases that of sodium and potassium.[24] This observation accords with the rôle Sezary[25] assigns to adrenal insufficiency in the etiology of myasthenia gravis. There is much in the clinical picture to support this view. Many of the cardinal signs of adrenal asthenia occur in myasthenia. Low blood-pressure is the rule; pigmentation of the skin is noted in several cases; lumbar pain in one case, and beneficial effect from adrenal therapy in many cases. On the other hand, myasthenia differs from typical adrenal asthenia in its selective action on the muscles of the face and in the mobility of the symptoms. Both conditions are often associated with muscular atrophy, though in myasthenia this is not the rule. Experimental removal of the adrenals, or serious injury to them, induces gastrointestinal disturbances, low temperature, atrophy of muscles, marked emaciation, and death.[26] The secretion of epinephrin is stimulated by muscular exertion.[27] Adrenalin is rendered inactive by passing through muscle.[28] Oliver and Schaefer found that it has no effect on the latent period, but prolongs the period of contraction.[29] Dessy and Grandis exhausted the power of a muscle to react to stimuli transmitted by its motor nerve, and restored it for a time by injection of adrenalin into the circulation.[30] Trerotoli[31] found that one milligram of adrenalin induces lengthening of the ergographic curve in man.*

Important as the involvement of thyroid and adrenal may be, neither has received so much attention as the thymus. Since Weigert[32] reported persistent thymus with true thymic tissue, with epithelioid cells, Hassall's corpuscles and free blood supply, with collections of lymphoid cells penetrating the smaller veins (Durchwucherung der kleinen Venen) associated with similar collections of lymphoid tissue and occasional epithelial cells in the muscles, the view that myasthenia is due to a lymphosarcoma of the thymus with metastases to the muscles has been widely accepted. The finding of Hassall's corpuscles in the lymphocytic collections in the muscles[34] and the therapeutic result from thymectomy reported by Schumacher and Roth[35] accord with this theory. On the other hand, though the lymphocytic infiltration of the muscles has been found in almost all recent autopsies thymic enlargement has been noted in only about 28 per cent. of cases.[36] In a careful review of the literature since the publication of Weigert's findings, Marburg stated that three cases had thymic tumors, three others persistent thymus, and five others normal thymus; that the liver is affected almost as often as the thymus, and the adrenals almost as often as the liver. In two cases he excised pieces from muscles, giving the myasthenic reaction. At first sight the fibers appeared normal. But sections stained by the Marchi method showed rows of fine fat droplets looking under low power like longitudinal muscle striations. Infiltration about the vessels consisted of lymphocytes, leucocytes, and a third element, almost wholly nuclear, oval in shape, frequently showing nuclear division. The presence of transitional forms between this third cell and sarcolemma nuclei incline Marburg to regard the oval elements as young sarcolemma nuclei. He considers the muscle infiltration as neither metastatic nor lymphorrhagic, but as a regenerative reaction to the degenrative process.* In the light of Marburg's[37] findings, the disturbances of internal secretion may be regarded as secondary to the foci of degeneration and infiltration present in the ductless glands. Yet such a view fails to explain why the function of one gland is stimulated and that of another depressed.

Amyotonia Congenita.—Of the etiology of amyotonia congenita even less is known. Berti[39] has suggested a relationship with subcretinism or submyxedema. Spiller and Smith[40] found sclerosis of the thymus and Boudouin[41] sclerosis of thymus, thyroid, and spleen. But in Rothmann's case[42] the thymus was enlarged and Hassall's corpuscles strongly developed. Adrenal,[43] thyroid,[44] and hypophyseal[45] therapy have all been credited with beneficial results. Yet it must be remembered that the condition tends to improve spontaneously. Thymectomy in young dogs produces muscular changes akin to those of both amyotonia and myopathy. According to Matti,[46] there is outspoken atrophy, pallor, and fatty infiltration of the muscles. The fibers range from fifteen to thirty microns in diameter compared with forty-five to seventy-five in the controls. Transverse striation is absent in places, though longitudinal striation is well developed. Some fibers are swollen and the sarcoplasm stains poorly in certain fields. There is a relative increase of connective tissue and an absolute increase of fat growing between the fibers, and of both muscle and connective tissue nuclei. The picture differs from that of amyotonia or of myopathy in the absence of large stretches where all fibers have disappeared, of high grade increase in the nuclei of the perimysium internum, of round cell infiltration, and of extensive growth of fat.

Myopathy.—In the closely related condition, muscular dystrophy, the evidence of secretory trouble is even more doubtful. In commenting on the occurrence of Miculicz's disease in myopathy, Spiller' says, "A relation of myopathy in some of its types to glandular disturbance possibly may be fully established some day. It is remarkable that in a case of the juvenile type of muscular atrophy reported by J. Mitchell Clarke,[47] there was simultaneous enlargement of the parotid glands. The submaxillary glands were slightly enlarged. This suggests the case of Schoenborn,[48] in which all the salivary glands were enlarged and at the same time there was hypertrophy of all the muscles of the body. Schoenborn thought the case was one of myopathy of toxic nature, possibly from glandular disturbance. Schlesinger[49] has reported a case associated with myxedema, and Rossolimo[49] obtained improve-

*In contradiction to Sezary's view is Marinesco's case,[22] in which the glandular condition found at autopsy indicated hyperadrenalism.

*Buzzard[38] regards these infiltrations as lymphorrhages.

ment from thyroid preparation in one case. Falta[50] had a case with infantilism in which there was cryptorchism, palpable thyroid, and a broad tongue suggestive of myxedema. The case did not respond to thyroid medication. Marinesco[49] found no benefit from thymus extract. Ballet-Delherm[49] observed the combination with scleroderma. Claude[51] reported a case with assymetric distribution of atrophy, deficient development of bone in the extremity most severely affected, and vasomotor disorders. In another case[52] he noted the association of the facio-scapulo-humeral type, the peroneal neuritic type, and acromegaly fruste. Clarke and Atwood[53] found an enchondroma of the hypophysis. Foerster[4] speaks of the frequency of adiposity and of high sugar tolerance. One of his cases showed a lipoma of the brain at autopsy, and another was complicated with dystrophia adiposo genitalis. Another case combined with Froelich's disease occurred on Dr. Spiller's service at the University Hospital in the winter of 1914-1915. Dr. Spiller discussed the case briefly at the meeting of the American Neurological Society in June, 1915. Through his kindness, I am able to report it more fully here:

L. H., a single white woman, thirty-five years of age, was admitted to the hospital December 1, 1914, complaining of weakness in the legs. There are no other cases of myopathy in the family. There are four brothers and three sisters, all of whom are stout. The patient has never been able to wrinkle her forehead or frown. When eleven years old she was told she did not laugh as others do. She could not run as fast as other girls and could not dance, but noticed no marked weakness until her fifteenth year, when she developed a gradually increasing difficulty in rising from a stooping posture, which she accomplished only by prying herself up with her hands, clasping first her feet, then her legs, then her knees, and thus pushing her trunk into the erect position. By her eighteenth year she could no longer climb the stairs without bracing herself on the bannisters. Since her thirtieth year she has not been able to go up stairs alone. At this time she first noticed difficulty in raising her arms. Since her thirty-fourth year (one year prior to admission) she has been unable to walk or even stand unsupported.

She has never menstruated, though she has had headaches, left-sided abdominal pain, and aching of the back and thighs once a month since she was sixteen years old. The patient states that at sixteen she weighed 86 pounds. When twenty-one she began to grow stout, a tendency which has gradually increased. She now weighs 165 pounds. There are no gastro-intestinal, pulmonary, or renal symptoms.

The patient is an exceedingly fat woman of good bony frame. There is slight cyanosis of the fingers. The pulses are synchronous and of fair volume. The systolic blood pressure is 145; the diastolic 95 mm. Hg. The ears are large and protruding. The bridge of the nose is flat and somewhat saddle-shaped. There is external strabismus of the left eye. There is broken up cataract in both eyes. The pupils are irregular in shape. Reaction to light is slight in the right eye and absent in the left. Ocular movements are good in all directions. There is no nystagmus. There is slight lagging of the upper lids on looking downward.

The voice is deep, almost masculine. The teeth are badly shaped; there are several decayed roots. The forehead is smooth and shiny. There is slight enlargment of the thyroid, both lobes being palpable. The lungs are negative. The cardiac outline is normal; there is a soft systolic murmur at the mitral area and the second aortic sound is accentuated. The chest and abdomen show much subcutaneous fat. The breasts are underdeveloped, the aerolæ small and lightly pigmented. Axillary and pubic hair is very scant. The hands are disproportionately small, the fingers delicate and tapering. On extension of the fingers there is marked hyperextension at the metacarpophalangeal joints and slight hypo-extension at the interphalangeal joints.

The forehead cannot be wrinkled. The eyelids can be closed, but not tightly. The lips can be puckered only slightly. Light pressure on the forehead suffices to make the head fall backward. There is winging outward of the scapulæ, and on lifting at the axillæ the shoulders hump up loosely. The rhomboids, trapezius, latissimus dorsi, and pectorals are atrophied. There is pseudohypertrophy of the infraspinati which are plump, rounded, and soft. There is marked atrophy of the thenar eminences. The grip is weak in both hands. There is marked lordosis which cannot be corrected by elevating the legs. The legs are weak, though the atrophy is masked by subcutaneous fat. The toes and ankles can be moved and the feet can be inverted but cannot be everted. There is slight talipes equinovarus. The biceps jerk is present in both arms. The triceps, radiocarpal, patellar, and Achillis jerks are absent. Tactile pain and temperature sensations are normal.

The electrical reactions taken by Dr. J. W. McConnell show responses to both faradic and galvanic currents reduced. There are no reactions of degeneration. Immediately following galvanic stimulation the posterior portion of the left deltoid remains in a condition of fine tremor.*

A skiagram showed marked enlargement of the sella turcica. A gynecological examination by Dr. Floyd Keen showed an infantile uterus. Sugar tolerance was tested by Dr. Alonzo Taylor. The patient was given 175 grams of glucose. The 24-hour specimen of urine contained 12 grams of glucose, no acetone or other ketone bodies, indicating that there was no increase in sugar tolerance. The Wassermann test was negative.

The patient was treated with electricity, massage, and during her last eight days in the hospital with 1 grain of extract of anterior lobe of pituitary daily. Her condition remained virtually unchanged, though she thinks she gained some strength during the latter part of her stay.

ABDERHALDEN TESTS

Case and Diagnosis	Adrenal	Thyroid	Thymus	Testis	Pancreas	Pituitary
"S. L." Myopathy	+	+	+		−	
	+					
"J. L." Myopathy	+	+	+	−	−	
"M. G." Myopathy	−	+	−	+	−	−
	±	+	−	−	+	−
"H. F."—Myopathy	−	−	−	−	+	±
				+		
*"H. V."—Spinal prog. musc. atrophy	−		+			
				−		
"H. H."—Neuritic musc. atrophy	+	±	+	±		
	+	−		±		
**"J. W." Syphilitic root neuritis	−	−	−		−	−
				−		
"J. T."—Syphilitic root neuritis	−	−	−	−		−
	−	+		−		
Myopathy	4/4	4/4	2/4	2/4	1/4	1/3
Spinal musc. atrophy	1/1		1/1	0/1	0/1	
Neuritic musc. atrophy	1/1	1/1	1/1	1/1	0/1	
Muscular atrophy from syph. root neuritis	0/2	1/2	0/2	0/2	0/1	0/2

+ = Positive.
− = Negative.
± = Doubtful.
Two or 3 signs indicate that 2 or 3 tests were made.
*In the case of "H. V." there is some doubt about the diagnosis. Dr. Ludlum regards it as myopathy.
**In the case of "J. W." the diagnosis is questionable.

The case combines, therefore, the adiposity, the deficient development of both primary and secondary sexual characteristics, the small hands with tapering fingers, and the enlarged sella turcica of Froelich's disease with the distribution of atrophy and pseudohypertrophy, proportional muscular weakness, diminution, and, in some cases, total loss of tendon reflexes, and the diminished response to electrical stimuli without reactions of degeneration, characteristic of the fascio-scapulo-humeral type of progressive muscular dystrophy. It also shows a common complication, cataract.

*Hoffmann[54] found in a case of Schultze's prolonged contraction of the flexor communis digitorum on direct galvanic stimulation.

A series of Abderhalden reactions was done by Dr. S. D. W. Ludlum in four cases of dystrophy, one of spinal progressive muscular atrophy, one of neuritic muscular atrophy (peroneal type), and in two cases of muscular atrophy from syphilitic root neuritis. The results are given in the preceding table.

The series is as yet too small to draw conclusions, especially since several of the cases have not been tested against all of the glands. Yet the positive reactions to adrenal and thyroid and in several instances to thymus and to testis in four cases of myopathy, one case that may be either myopathy or spinal progressive muscular atrophy, and one case of neuritic muscular atrophy (the peroneal type of Charcot, Marie, and Tooth) contrast strikingly with the almost uniformly negative reactions in the two cases of muscular atrophy from syphilitic root neuritis. The negative reactions to pituitary combined with positive reactions to thyroid and thymus suggest a possible relation to hypopituitarism.

To recapitulate briefly: Myotonia congenita and myasthenia gravis are frequently associated with muscular dystrophy. Amyotonia congenita has occurred in connection with muscular dystrophy[57] and may be identical with one form of it. There is some evidence suggesting that thyroparathyroid deficiency may bear an etiological relation to myotonia. Myasthenia is frequently associated with hyperthyroidism, hypoadrenalism, and probably with hyperactivity of the thymus. Hypothyroidism and pathological findings suggesting both hypo- and hyperactivity of the thymus have been noted in amyotonia. Myopathy has been found in association with many disorders of internal secretion, perhaps most frequently with hypopituitarism. The case reported here presents the fully developed picture of both dystrophia adiposa genitalis and the fascio-scapulo-humeral type of progressive muscular dystrophy. Abderhalden tests on a series of four cases of myopathy, one case of neuritic muscular atrophy, one case of spinal muscular atrophy, and two cases of muscular atrophy from syphilitic root neuritis showed hyperactivity of thyroid, thymus, and adrenal in the first three conditions. In the peroneal case hyperactivity of testis was also noted. The tests on the syphilitic cases were negative. Thyroid and thymic hyperfunction are frequently observed in hypopituitarism.

Whether the glandular disorders bear an etiological relation to myopathy or are secondary to it, or whether both are due to a common cause is uncertain; but the combination is too frequent to be regarded as a mere coincidence.

In closing, we wish to express our thanks to Dr. Spiller, at whose suggestion this paper was written, and through whose kindness we have been able to report the present case, and to Drs. Mills, Lloyd, and Spiller for the privilege of studying the cases on their services at the Philadelphia Hospital.

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3400 Spruce Street.
216 South Fifteenth Street

A NEW THEORY OF THE FUNCTION OF THE LYMPHOCYTES.*

By DUANE MEREDITH, M.D.,

WICHITA FALLS, TEX.

FORMERLY ASSISTANT TO THE CHAIR OF BACTERIOLOGY, T.C.U., FORT WORTH, TEX.

From my recent study of the different defensive properties of the body, both the defense against bacteria and their products and that against injury which may occur within the body from traumatism, or the natural death of certain cells after they have fulfilled their usefulness, I have worked out the following theory as to the function of the lymphocytes. This theory is based upon the study of the filterable viruses, including the cancer organism, and covers my theory of the origin of all tumor formation.

It has been proven beyond question of a doubt that the internal secretions of certain cells of the body govern the growth of the body organs. These include the thyroid, pituitary, adrenal glands, male and female generative organs, and perhaps some of the other ductless glands. That is, they govern the normal growth of organs and the body as a whole, but do not take care of the repair of the body after accident. This process is taken care of principally through the leucocytes and lymphocytes of the blood and through their action upon the other cells of the body. To understand the function of these cells according to Erlich, as given in the last edition of "Howell's Physiology," I shall give this classification:

1. Lymphocytes: No granules in the cell substance; and, though capable of ameboid changes of form, this property is not characteristic and probably not sufficient to cause locomotion.

(*a*) Small lymphocytes are about the size of the red corpuscles; the nucleus is large, symmetrically placed, stains homogeneously, and the cytoplasm is reduced to a very small amount. They form from 20 to 25 per cent. of all the white corpuscles.

(*b*) Large lymphocytes are two or three times as large as the preceding. Nucleus somewhat eccentric. The cytoplasm is relatively more abundant than in the non-granular cells. These forms exist only in small numbers, forming 1 per cent. or less of the white corpuscles.

2. Leucocytes: Granules of different sorts found in the cytoplasm. Cells characteristically ameboid.

(*a*) Transition forms (uninuclear leucocytes). Single large nucleus more or less lobulated; cytoplasm abundant and faintly granulated. The granules stain with neutral dyes and are, therefore, designated as neutrophile granules. The name "transition forms" implies that these leucocytes represent an intermediate stage between the large lymphocytes and the following variety, but this belief is vigorously denied by many competent hematologists. This form exists in small numbers, 2 to 10 per cent. of the total number of white corpuscles.

(*b*) Polynuclear or polymorphonuclear leucocytes. The nucleus is segmented into lobes connected by narrow strands. The cytoplasm is especially ameboid and is granular. The granules in most cases are neutrophilic and small in size. The typical cells of this kind form the bulk of the white corpuscles of the blood—60 to 75 per cent. Eosinophlic leucocytes form a subgroup of this variety. They have a similar segmented nucleus, but the cytoplasm contains numerous coarse granules that strain in acid dyes, such as eosin, hence the name.

(*c*) Mast cells. These peculiar cells exist in very small numbers under normal conditions. Less than 1 per cent. of the total number of white corpuscles. They have a polymorphic nucleus like the preceding group, but differ in the fact that the granules in the cytoplasm are strongly basophilic; that is, will stain only with basic dyes, such as thionin.

While Ehrlich says that he observed ameboid movement in the lymphocyte, others regard it as a motile cell, and it certainly must be to fulfill its function, as it is found in the dense tissue, as scar tissue, bone, as well as in all normal tissue, and is known as the cell of chronic inflammation where it is abundantly found, no matter what causes the inflammatory reaction.

The function of the leucocyte, according to Metchnikoff, is that of a phagocyte, being capable of taking up bacteria and other foreign material and digesting them, and it also has the function of excreting a proteolytic enzyme that is capable of dissolving dead tissue.

The leucocytes, and this includes all of the motile bone-marrow cells that are found in the blood stream in healthy individuals, are male cells, and as such perform the function, as outlined by Professor Metchnikoff, with the possible exception that eosinophiles and mast cells have the additional function of neutralizing toxins, but these take no part in the regeneration of the cells of the body. This last function is performed by the small lymphocyte. As this cell is unquestionably the male cell of the body, and brings about the regeneration of normal tissue repair, and is responsible for every true caryokinetic change that takes place within the body. It is as necessary to the body cells as the spermatozoa of man is to the ovum of the woman in the starting of a new child.

The function of the lymphocyte has never been assigned, so far as I have been able to find out from the following pathologies: Ehrlich, Ziegler, McFarland, Adami, Nichols, Brooks, Woods, Webster,

*Read before Wichita County (Texas) Medical Society, September 14, 1915.

Strümpel, Da Costa, Howell, and Tigerstedt—in physiology, a fairly representative body of investigators.

That there are both male and female cells within the body is an original theory with me, and is based not only upon my work, but upon that of our foremost investigators in their latest works upon different organs and diseases, that have a tendency in clearing up this field. I got some of my most valuable ideas from the workers in the Rockefeller Institute. That male cells existed within the body is not made mention of by any of our investigators, hence what cells carry on this function in the early life of the embryo would only be guesswork, but it is probably done by some cells connected with the vitelline circulation, and later by the placenta, until the formation of the lymph channels and glands are completed. This work will have to be cleared up by our future embryologists. De Lee says that it has been proven that the umbilical veins carry more white cells to the child than the umbilical arteries carry to the placenta, and thinks this organ is responsible for their formation, and as it is well known that the small lymphocytes predominate at the birth of the child, usually being about 60 per cent. of the total white cells, it is reasonably certain that these are mostly lymphocytes.

We do have direct division of some of the cells of the body without undergoing a true mitosis, according to Adami, when these are stimulated by some external irritant, as toxins, or bacteria, or foreign material, but these cells multiply only for a few generations, and die out as soon as stronger cells can take their place. This same phenomenon has been caused by Loeb, in the case of the ovum of the sea urchin, which is normally impregnated by the spermatozoa of this animal. He was able to produce fertilization, artificially. The cells of the body that yield most readily to such a stimulus are the fibrous tissue cells, liver and kidney cells, and probably some others, under certain conditions.

How normal repair takes place within the body can be better illustrated by the death of a single cell, one that dies within the liver, for instance. Here through the enzymes liberated by the dissolution of the dead cell, leucocytes and lymphocytes are attracted, the one to remove the dead tissue and the other to repair the damage. These same enzymes acting as a foreign body stimulate the adjoining cell, which begins to swell and get ready, as it were, for the male element, just as the ovum does for the spermatozoa, and when it becomes impregnated goes through the caryokinetic change, with a division of the cell into daughter cell, to take the place of the dead cell. I do not think that it is necessary for a lymphocyte to come in actual contact with the cell that it impregnates, as this same cycle is seen in many of the lower animals, but that it does excrete from it nuclear material, when irritated, an enzymic body, which, when it comes in contact with cells that are beginning to proliferate, impregnates these cells, bringing about a true mitosis or indirect division of the cell thus impregnated.

In my early studies with pathological specimens I wondered why this small lymphocyte should be so prevalent in all tissues unless it had some specific function, as it is found in tumors, tubercles, syphilitic gumma, and all grades of inflammation. To show how this takes place in an injury where there is death of many of the cells, one has to recall the process of normal repair after an injury. I shall endeavor to show how normal repair takes place from a cut through the skin and some of the tissue beneath it. We first have hemorrhage with the formation of a clot within the space left in the tissue by the knife, with a drawing in of the end of the blood-vessel, a blood clot closing it. Now we have a slowing of the blood current in the adjoining vessels, with the leucocytes beginning to adhere to the vessel wall and gradually pushing themselves through until, after a short time, we find the vessel fairly surrounded on the outside with these cells. This slowing of the blood stream is probably due to the action of the nerves upon the blood-vessel. These cells proceed to migrate toward the injured area. Along with the leucocytes will be found numerous lymphocytes and red blood cells. The passage of these cells are facilitated by the flow of lymph from the vessel walls. The true skin is made up principally of white fibrous and elastic tissue along with some unstriped muscle fibers that run to the hairs, beneath which lies a layer of fat cells. The blood supply to fibrous tissue is poor, as it lies dormant, but with the increased blood supply the cells begin to swell up along the injured area and to proliferate and divide by direct division; that is, if there is foreign substance left there, or if there is dead tissue cell. It has been found that cells in the resting stage, such as the fibroblast, respond much more readily to the stimulus than functionating cells. This takes place some eight hours after the injury, and these cells may continue to divide by direct division for the first twenty-four hours, but after that time they usually divide by indirect division, and it is these cells that repair the injury. Cells that are formed by direct division are very short lived and only fill in until stronger cells can take their places.

This indirect division is brought about by the lymphocyte impregnating these cells, and it is through this that the body gains its greatest resistance to bacteria, and is able to bring about the process of repair. All cells before they undergo fecundation assume the embryonal type, or nearly so (Adami). This is especially true of the fibroblast, and it is principally with these cells that all repair work is done; but it is the proliferating fibroblast and endothelial cells that are the chief phagocytes, as they will destroy leucocytes, red blood cells, and bacteria. This is brought about by the lymphocytes, as all proliferating embryonal cells undergoing mitosis are phagocytes. These fibroblasts continue to multiply so long as there is an irritant that causes them to come in heat, as it were, or to prepare them for fecundation. This gives us typical granulation tissue. After the irritating substance is removed they quiet down and resume their normal state with the formation of true fibrous tissue. Before the fibroblasts, along with the leucocytes and endothelial cells, are capable of removing all of the irritating substances, they have to have food, as the blood-vessel resumes its normal condition as soon as the pressure is as great on the outside as it is within, and as these rapidly growing cells soon use up what was liberated at first it is necessary for the formation of new blood-vessels to take the place of the old ones. Whether this is brought about by the rapidly growing cells themselves, when their nutrition is decreased to such an extent as to interfere with their function, by them throwing off an enzyme that stimulates the endothelial cells to fecundation and proliferation with the formation of new capillaries, or

through the direct action of toxins liberated from dead tissue cells acting upon the endothelial cells, is not known. This formation of new blood-vessels occurs early in an injury, while the formation of lymph vessels occurs later; the latter are probably the result of the accumulation of by-products of growing tissue cells. Where these products are altered by growing organisms or their toxins there is a lack in the development in lymph vessels. This condition we see in tuberculosis and tumor formations, as these newly-formed tissue have no lymphatics. Thus with the formation of new blood-vessels to furnish plenty of food to the leucocyte, fibroblast, and lymphocyte, nature soon closes the wound. Another reason why we say the small lymphocyte is a male cell is because of the action of the lymph gland, and what is true of the lymph gland is true also of the spleen in regard to the blood.

To understand the function of the lymphocytes it will be necessary to give the function of the lymph glands. Outside of their function of acting as filters of bacteria and their toxins, and being the seat of the development of the lymphocytes, no pathologist has gone further or shown how this takes place.

The lymph gland is made up of a fibrous-tissue capsule with numerous trabeculæ extending down into the gland, dividing it up into numerous chambers. To the outer side are packed numerous small lymphocytes, while the central portion of these chambers is filled with large endothelial cells. These cells are the mother cells of the small lymphocytes. The large lymphocytes are the daughter cells of a caryokinectic change and only occur in the blood in the proportion of less than 1 per cent., unless the lymph gland is badly irritated. These cells are supported by a fine reticular framework. The lymph vessels enter the gland through the mass of small cells to the outer side, then spread out over the large cells of the central portion. Foreign bacteria and dead tissue that may be in the lymph are destroyed by these cells, which are irritated and undergo fecundation and proliferation.

Endothelial cells undergoing fecundation and proliferation are distinct phagocytes, and will destroy any cell they come in contact with except the small lymphocyte, which seems to have the power of neutralizing the proteolytic enzyme liberated by these cells, keeping them confined within a cordon of small lymphocytes. Thus the body utilizes these cells to overcome the invading host of bacteria that constantly break in, but keeps them confined where they will do no harm to the other cells of the body. We see that the body tries to overcome these cells, when one of the serous membranes is involved, by limiting their action with plastic lymph. A careful study of the location of the lymph tissue will show that it is placed where the place of bacterial invasion is most likely to occur.

The Kupfer cells in the liver and certain cells of the spleen have the same function of destroying decaying red blood cells, or leucocytes, or bacteria. Where these glands are irritated by some toxins, as in the anemias and leucemia, we have a marked increase in the small lymphocytes, large lymphocytes, and also there appears in the blood the macrophages of Metchnikoff. The presence of these cells with their parasitic properties, the inability of the lymph gland to neutralize the proteolytic enzymes liberated by these cells, and their action upon the blood-forming organs, give some clue to the causes of this type of diseases.

Again, in typhoid fever, when there is destruction of bacteria at the close of the disease, a marked lymphocytosis takes place; this is probably the result of the cells of the lymph glands being irritated by the toxins of the destroyed typhoid bacillus.

J. B. Murphy and Morton of the Rockefeller Institute have shown in their experiments in the inoculations of mice with defibrinated blood as a prophylactic against mouse tumors implantation, that in the natural immune animals there was a marked increase in the lymphocytes, while the susceptible animal showed no such increase. Here again we have the mother cells of the lymphocytes irritated by the toxin of the destroyed cancer organism with the production of a very marked lymphocytosis, as the result of the repeated divisions of these embryonal endothelial cells of the lymph gland.

In tuberculosis there is usually a slight lymphocytosis, but in acute miliary tuberculosis there is a marked decrease in the lymphocytes. This is explained by the fact that the endothelial cells forming the tubercle undergo mitosis, and attract these cells from the blood stream in such numbers that there is a decrease of them in the circulating blood from 25 to 10 per cent.

I think Dr. Carrel of the Rockefeller Institute went further than anyone else in proving that the small lymphocyte is a male cell, when he was able to grow tissue *in vitro*. He collects human blood in a paraffine test tube, centrifuges this, mixes the clear plasma with Ringer's solution, and places his tissue in this; he noticed a very slight growth.

He next conceived the idea of making an extract from tissue and adding this to his other solution; he obtained a much more vigorous growth. If he had added an extract from a lymph gland, he would have obtained a still better growth. Henry F. Smith reports in the February, 1916, issue of the *Journal of Experimental Medicine* that he has confirmed Carel's work in a way by using an emulsion of spleen pulp upon his tissue cultures that were inoculated with diphtheria and typhoid bacilli. The culture inoculated with spleen pulp was able to overcome the bacteria with a steady growth of tissue cells, but in the culture in which spleen pulp was not used there was no growth, thus proving that the tissue cells that were supplied with a large amount of the male cells, through this spleen pulp, were able to overcome the infecting organism, while the other tissues were overcome by the bacteria.

Murphy and Morton reported 100 per cent. takes when the mice were previously *x*-rayed. This shows that the lymphocytes contained within the tumor were able to stimulate the cancer cell, while those of the host were unable to stimulate the endothelial and fibroblast cells so as to destroy this foreign tissue.

Then, again, this gives us our first insight into the causes of contracted kidney and liver, and arteriosclerosis. When functionating cells are overcome by toxins, the remaining functionating cells are unable to fecundate and divide, owing to their lowered vitality. These dead cells thus act as a foreign body and stimulate the supporting fibroblasts to fecundate, and those being impregnated by the lymphocytes cause the production of scar tissue, with the destruction of the remaining cells.

To me it seems that this function of the lymphocyte makes it one of the most important cells within the body. As to proof that it is the male cell, I have cited the works of the foremost investigators of the day, and find nothing that conflicts with this theory.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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BRONCHIECTASIS.

IT is well known that bronchiectasis is too often not suspected until some other pulmonary disease develops, and that it is found post mortem more frequently than it has been diagnosed clinically *intra vitam*. This is probably due to the fact that as a rule it is associated with other pathological conditions in the lungs. It may occur as a pure bronchiectasis due to disease of the bronchial wall and with gradual dilatation of the lumen, or as a result of a cirrhotic lung process, or in association with pulmonary tuberculosis which produces fibroid changes with infiltration and weakening of the bronchial walls. The associated fibroid condition of the lungs with the manifestations of pulmonary involvement frequently masks the bronchiectasis.

Although most frequently the disease is primarily bronchiectatic in character in the non-tuberculous types, nevertheless cavities develop later, with practically always some mucous membrane lining, and in the end resembling true abscesses with indurated cicatricial walls, of such rigidity that, despite the absence in certain cases of pleuritic adhesions, gas compression is valueless. No single germ is found in this condition, but the influenza bacillus is frequently present, especially in the smaller bronchioles, at least post mortem. Chronic, non-tuberculous suppurative bronchiectasis is commonly the result of aspiration of foreign bodies, and of septic material following tonsillectomy or the removal of adenoids, in general anesthesia, and particularly in adults. More than one-quarter of these cases have been found to be post-operative (Wessler).

The main symptoms are characteristic, appearing when bronchitis occurs, and this is usual in almost all cases before the condition has been present long. In the early stages, however, the bronchitis which precedes the development of the bronchiectasis is indistinguishable from the true condition, the first noteworthy change being the production of patches of bronchi wider than normal, with resulting stagnation of secretion, and the appearance of the main symptoms and physical signs consequent upon this. Most important, diagnostically, is the cough, with profuse mucopurulent sputum, brought up with little preliminary coughing, especially in the morning, and with practically complete remissions of from several hours' to even one or two days' duration. The character of the sputum varies, but is usually foul, though not penetrating and pungent as in acute gangrene, with elastic fibers present even in non-tuberculous cases, and, unless associated with pulmonary tuberculosis, there is an absence of tubercle bacilli, on repeated examination, even by the Loeffler antiformin method. Periodical attacks of septic fever, loss of sleep (due to cough and expectoration), resulting disturbed nutrition, with loss of strength and weight, with insufficiency of the right heart developing in the late stages and consequent venous engorgement of the general circulation, characteristically pronounced drumstick fingers (also found in other respiratory and circulatory diseases), and even pulmonary hemorrhage, due to ulcer formation, may occur during the course of the disease. Although, as Lilienthal says, post-operative cases may recover spontaneously or under hygienic and supportive therapy, still, once established, the progress of the typical case is extraordinarily chronic, in fact, progressive. As Williamson emphasizes in the March number of the *Medical Clinics* of Chicago, "small and medium-sized moist rales heard in patches, constantly present and always heard over the same spots," are the very typical physical signs, percussion yielding little or nothing in comparison. Exploratory puncture is not only dangerous but absolutely unnecessary, since the symptoms, physical examination, and *x*-ray show both the presence and the location of the pus. The *x*-ray is of the greatest importance in localizing the trouble within the lung, but the history and examination by bronchoscope are the great aids, in conjunction with radiography, in diagnosis.

The treatment of this condition from the medical standpoint consists essentially in hygienic and supportive measures. A study of the bacterial flora in the sputum may lead one to try vaccine therapy, the employment of which in bronchiectasis, at least in the early stages, we have not yet seen recorded. But unfortunately medical treatment is too frequently useless, or at least not particularly ameliorative, not to say curative. When associated with pulmonary tuberculosis, the latter condition should be treated as its improvement or cure will help considerably to clear up the bronchiectatic state. But in the pure type, the ordinary chronic, non-tuberculous, suppurative bronchiectasis, what should one do? After all, ordinary medical treatment in these conditions, after it has been given a fair trial for months, cannot be expected to offer much hope. When this is the case, when it is certain that nothing further can be expected from medical means, should we not turn to surgery in the pure forms of bronchiectasis mentioned? Lilienthal advises us not to wait too long before surgical aid is invoked in the pure types of this disease. The case should be carefully studied. The *x*-ray and bronchoscope aid one in determining the location and anatomical distribution of the lesion present in any particular individual. Surgical intervention of a radical nature is contraindicated in advanced, bilateral, chronic pulmonary infection, and even in some instances of unilateral disease which is too far advanced. Zaaijer of Amsterdam considers what Lilienthal refers to as the palliative operative treatment. He reports three cases clin-

ically cured by the subperiosteal resection of 13 to 20 cm. of four or five ribs, suturing in two tiers, with a compressing pad above. In a fourth case there was a return of the trouble following an apparent cure, and the author advises that in cases of failure or recurrence with this method removal of the periosteum and intercostal muscles should then be undertaken. Although according to Zaaijer the deformity is slight and the danger small, particularly with local anesthesia, Lilienthal, in a paper read recently before the Chicago Medical Society (published in its *Bulletin* for March 29, 1916), declares these palliative operations to be almost as dangerous as the more radical method of extirpation, resulting scoliosis not infrequently making the patient an incurable cripple. From an experience of twenty-eight cases since 1910, he advises the palliative surgical intervention in actually hopeless cases (such as bilateral involvement, or unilateral involvement of great extent and with adhesions contraindicating operation). He recommends extirpation, by pneumectomy, when a single focus or multiple foci exist in one lobe, or even when neighboring lobes are involved but in one single infected mass. The methods of procedure, including preparation of patient, position, incision, technique of operation, and after-treatment, are important. Lilienthal tried extirpation in seven cases, completed the operation in six, and obtained cures in four; one patient, who really should not have been operated on by this method, died from an exploratory operation. On the other hand, in comparison with the results obtained by the radical method of pneumectomy, the results from twelve drainage or conservative operations gave but a single cure, five so-called improvements (nothing more than a modification of the degree of invalidism), and six deaths. The surgical treatment of selected cases of bronchiectasis before the condition has progressed too far is therefore now well-grounded and should receive proper consideration at the hands of medical men, who see these cases relatively early.

CAN THE KLEBS-LOEFFLER BACILLUS CAUSE SEPSIS?

ACCORDING to most authorities uncomplicated diphtheria and tetanus furnish examples of pure toxemia and their exciting causes cannot produce virulent bacillemia or septic metastases. As a result of this characteristic both diseases are amenable to prevention and cure by antitoxins. Some data have recently been adduced to show that in exceptional cases there may develop a tetanus bacillemia and sepsis, and similar evidence seems to indicate that the diphtheria bacillus has analogous properties. Phenomena of meningism or meningeal irritation are occasionally seen in the course of severe diphtheria. In a material of over 8,000 cases of this affection, nine cases of meningitis occurred, two of which were evidently due to the Weichselbaum meningococcus, while the rest were set down as due to mixture of infection with various ordinary forms of pyogenic cocci proceeding from the pharynx.

However, diphtheria bacilli had never been noted as occurring in meningitis pus until Reiche reported a case to this effect in the *Muenchener medizinische Wochenschrift* for April 18. This case in a child aged five years was an ordinary example of mixed diphtheria and streptococcus sepsis which ended fatally on the fourteenth day. The disease began as a meningitis, the throat presenting nothing abnormal. The blood and spinal fluid were both sterile. At a later period there was bilateral purulent otitis media and streptococci were now recoverable from the cord. Next appeared a purulent nasal discharge, rich in virulent diphtheria bacilli. Autopsy showed a continuous pseudomembrane in the nasopharynx, nasal fosæ, sphenoidal sinuses, antra of Highmore, and middle ears. There was no break of integrity in the base of the skull. There was a purulent leptomeningitis but chiefly of the vertex, the pus containing both diphtheria bacilli in abundance and the streptococcus. Both organisms had evidently reached the meninges by the blood route, and certain peculiarities of the pus, such as a greenish hue and tendency to form a membrane, could have been caused only by the Klebs-Loeffler bacillus.

DEATH RATE AMONG NEGROES.

THE impression seems to prevail that the morbidity of the colored population of the United States is extremely high, in fact the idea is held by some that the negro, failing to adapt himself to this climate, is gradually dying out. It is true that, speaking generally, the death rate of the negro is higher than that of the white, but it does not necessarily follow that this is due to differences in the two races so inherent that no environmental modifications can change them. Assistant Surgeon-General John W. Trask of the Public Health Service recently conducted an inquiry into the subject and finds that in most communities in the United States where registration is compulsory the negro death rate is markedly higher, with few exceptions, the latter being in States with very few negroes and these largely young adults.

Incidentally, Dr. Trask notes some other facts which may have bearing on the question. For instance, the negro death rate in the country was as a rule scarcely any if at all higher than that of the urban white, and in communities where the negro had made marked social progress the death rate did not show the same degree of excess over that of the whites as it did among the negroes in less enlightened communities. Comparing the death rate per thousand among the negroes in the United States in a given year (1912) with the rate in the population of European countries with practically no negro population, the figures were found approximately the same. Thus among the American negroes it was 22.9, in Hungary 23.3, in Roumania 22.9, in Spain 21.8, and in Austria 20.5. Bearing in mind the figures 22.9 for America, we find further that twenty or thirty years ago in Boston that city's death rate average 23.5 per thousand and in New York City from 1888 to 1897 the rate was 23.6.

So Dr. Trask concludes that the death rate among negroes in most communities of the United

States is not discouragingly high and is gradually becoming lower. It is at present the same that prevailed in the most enlightened white communities twenty or thirty years ago. Furthermore it seems probable that with the economic and industrial progress of the negro the death rate will gradually lessen until it is approximately the same as that of the white.

Rabbits and Pellagra.

Br'er Rabbit enjoys considerable popularity throughout the South on account of his exploits, as narrated by Uncle Remus, but he will become still more popular if he is the means of ridding that section of the country of the plague of pellagra. The chief obstacle encountered in the fight against this disease is, as is now generally conceded, the monotonous dietaries prevalent in districts where the disease abounds and the economic reasons why these cannot be improved forthwith. The obvious thing to do is, of course, to improve the diet by the addition of meat, milk, eggs, peas and beans, but this is easier said than done. The expense incident to raising stock for food, slaughtering and storing it is considerable, and the class which is prone to pellagra is the very class which has not the capital to attempt anything of the sort. Dr. C. W. Stiles, writing in *Public Health Reports*, March 31, 1916, suggests that rabbits be raised for food. That animal's multiplying proclivities are proverbial and, the period of gestation being short and the births multiple, a few lively individuals of assorted sexes would soon colonize a community. Dr. Stiles argues that rabbits are easily taken care of and readily procurable, and their meat is quite acceptable. Even if the temptation to market them was too strong, the resultant improvement in the family finances would be such that the dietary would naturally improve and thus the same result would be obtained. Dr. Stiles' suggestion is so simple that it may be overlooked, but there seems theoretically, at least, no reason why it should not be adopted.

Eunuchoids.

The eunuchoid belongs to either sex and presents analogous characteristics, which resemble those of the male castrate. At a recent session of the Greifswalder medizinischer Verein (*Deutsche medizinische Wochenschrift*, March 2) Fischer demonstrated three cases, one of which was in a female. The two males represented respectively the tall and the fat types. The height of the tall subject was 6 feet, while his reach was 6 feet 9 inches, and in the fat subject the reach was also somewhat in excess of the height. The increased length of the long bones was offset by arrest of development in the primary and secondary sexual characters. The female case was in a girl aged sixteen, who showed the true eunuchoid proportions in the long bones while the fat distribution was that of the eunuch. The uterus, fetal in type, was anteflexed at an acute angle, and the tubes could not be differentiated from the broad ligaments. The right ovary was the size of a bean, and the left one still smaller, and both were against the pelvic wall. The dimensions of the uterus agreed with those in a child of six or eight years of age. In apparent contrast the breasts were very full from fat accumulation. Two of the three eunuchoids had subnormal temperature. Polyuria, alimentary glycosuria, a special blood picture, and uniform changes in the sella turcica were absent.

Progressive Lipodystrophy.

This term has been applied to certain conditions in which the deposit of fat obtrudes itself as a dystrophy which may originate in the action of certain hormones on the fat currents of the body. However, there are various familiar types of obesity in which the distribution of fat is very irregular. The excessive carbohydrate eater tends to a uniform distribution of adipose. In the all around glutton the accumulation is limited at first to the abdomen and buttocks, while later he may develop pendulous jowls and a fat neck. The paunch of the alcoholic contrasts with his relatively thin legs. In true lipodystrophy we may see a slender torso with elephantine legs. This condition is not a new one, for we learn from a recent session of the Medical Section of the Silesian Society for Fatherland Culture (*Berliner klinische Wochenschrift*, March 6) that Rosenfeld described a case of "fat-leggedness" nearly a decade ago. The progressive feature of this dystrophy is at present receiving attention. In the brief references to this affection we note the absence of any allusion to another group of fat dystrophies which comprises lipomatosis universalis, Dercum's disease and symmetrical lipoma. The two groups should have much in common.

News of the Week.

City Death Rate.—During the week ending May 27, the death rate for the City of New York was 13.89 per 1,000 of population, as compared with 13.82 for the corresponding week of 1915. This difference in the rate is equal to an increase of 8 deaths, the total number during the week having been 1,487. There was an increased mortality in whooping-cough, cerebrospinal meningitis, heart disease, lobar pneumonia, Bright's disease, and nephritis; and a decrease in the number of deaths due to measles, scarlet fever, digestive diseases, influenza, bronchopneumonia, pulmonary tuberculosis, and other forms of tuberculosis. The death rate for the first twenty-two weeks of 1916 was 15.19, as compared with 15.42 for the corresponding period of last year.

Transfer of the Baltimore Quarantine.—It is gratifying to be able to announce that the campaign for the transfer of the Baltimore quarantine station to Government control, which Dr. Nydegger of the Public Health Service has carried on for the past three years, has resulted successfully, and the station is now in course of being transferred. This is the last station in the country to go under National control.

New Har Moriah Hospital.—The directors of the Har Moriah Hospital of 138 Second Street, New York, have decided to build a new hospital, the site to be chosen somewhere south of Fourteenth Street and east of the Bowery. It is estimated that the new buildings will cost at least $400,000, and of this $50,000 is already in hand and an additional $50,000 has been promised.

Nurses' Home Needed.—An appeal has recently been sent out by the trustees of the Flower Hospital, New York, for $50,000 to be used for the construction and equipment of a home for nurses

attached to the hospital. The accommodations at present provided for the nurses are both inadequate and inconvenient, being situated at a distance from the hospital wards.

Change of Name.—Announcement is made that the name of the Long Island State Hospital has been changed and the institution will hereafter be known as the Brooklyn State Hospital.

The name of the S. R. Smith Infirmary, the oldest hospital on Staten Island, which was formed forty years ago by the late Dr. Samuel R. Smith, for whom the institution was named, is to be changed to the Staten Island Hospital.

The Park Hospital (formerly the New York Red Cross Hospital), 395 Central Park West, between 99th and 100th streets, New York, has available a number of free beds, for the care of acute, noncontagious cases among the worthy poor. Admission will be made upon the application of the family physician, and upon presentation at the hospital of a letter from the physician, containing his diagnosis and the assurance that the case is a proper one for free hospital treatment.

Milk Stations Open.—The twenty-fifth season of the Straus milk stations, which provide pasteurized milk for the children in the public parks and on the recreation piers during the summer, was inaugurated on June 1 with the opening of ten stations in addition to the eight which are maintained throughout the year. These summer stations are in the City Hall, Battery, Central, and Seward Parks, on the recreation piers at Third, East Twenty-fourth, East Eleventh, Barrow, and West Fiftieth Streets, and at the Educational Alliance Roof Garden.

Medical School Graduates.—Twelve young women received the degree of doctor of medicine at the graduating exercises of the New York Medical College and Hospital for Women held at the Waldorf on June 2. At the annual dinner of the alumnæ of the college, on the evening before, announcement was made of the collection of funds amounting to $62,000 to be used for new buildings for the institution. It is hoped that a total of $200,000 will be obtained.

The ninety-first annual commencement of Jefferson Medical College of Philadelphia was held on June 3 and the doctorate was conferred on 162 graduates. Dr. W. W. Keen delivered the valedictory address, the suject of which was "The Doctor's Duty."

Medical Schools to Merge.—Announcement has been made of the success of the plan to merge the three big medical schools of Philadelphia, the medical department of the University of Pennsylvania, the Jefferson Medical College, and the Medico-Chirurgical College, under one head, thus forming the largest medical school in the United States. Committees from the three schools are said to have agreed on the methods of consolidation, the steps have been taken, it is believed, largely on the urging of the Carnegie Foundation, the directors of which held the opinion that Philadelphia was supporting too many medical schools. The School of Medicine of the University was organized in 1765, the Jefferson Medical College in 1825, and the Medico-Chi in 1881. The total enrollment of the three schools for 1914-15 was 1,126, and the total number of graduates in 1915 was 284.

Personals.—Dr. Carroll Chase of Brooklyn, N. Y., sailed for Bordeaux on June 4. Dr. Chase will enter the hospital service in France.

Dr. Walter Baer Weidler of New York has recently been made a member of the New York State Committee for the Prevention of Blindness.

Volunteer Hospital.—From Mr. James B. Duke of New York the Volunteer Hospital at Beekman and Water Streets has received a gift of $5,000 for the establishment of a children's ward, to be known as the Doris Duke ward. The directors of the hospital announce that because of the increase of work in the district they will shortly start work on the proposed new addition. The horse-drawn ambulances of the institution are soon to be replaced with automobiles. Last year the ambulances of the institution answered 3,000 emergency calls in the district between the City Hall and the Battery and east of Broadway to the river.

Gifts to Charities.—By the will of the late Mrs. Rachel H. Pfeiffer of New York the Montefiore Home receives a bequest of $1,000, while the sum of $10,000 is left for the endowment of a bed in some Jewish charitable institution to be chosen by the executors.

By the will of the late Josephine Reissiere Monges of Philadelphia bequests are made as follows: To the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases, the residue of her estate, amounting to more than $30,000, together with clocks, furniture, books, and pictures, to be devoted to the construction of private rooms "to be used exclusively for gentlefolk who have insufficient means and are not proper patients for wards."

Appeal for Funds.—An appeal for funds to be used in the maintenance of the Ris-Orangis Military Hospital, near Paris, of which Dr. Joseph A. Blake, formerly of New York, is the medical head, was recently issued in this country. The French Government placed at the disposal of those in charge of the hospital the Jesuit College buildings at Ris-Orangis and gave $10,000 toward its equipment. It has been transformed into a modern and up-to-date hospital of eighty rooms, all well filled, and for its maintenance during the next twelve months $60,000 will be required.

Endowment of the J. William White Professorship.—By the will of the late Dr. J. William White of Philadelphia bequests are made as follows: $150,000 to the University of Pennsylvania, to be held in trust as a permanent endowment, the income from which is to be used for the establishment of a professorship of surgical research to be known as the J. William White Professorship of Surgical Research; $10,000 to the University of Pennsylvania, to be held in trust and the income to be divided in three parts, to be used by the managers of the University Hospital as a prize for nurses, as a prize for resident physicians and for the purchase of Christmas presents for child patients; $5,000 to the College of Physicians of Philadelphia.

The S. Weir Mitchell Memorial Dispensary of the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases was formerly dedicated on June 1. An opening prayer and a closing benediction were delivered by the Rt. Rev. Philip M. Rhinelander. The formal presentation of the building and its equipment was made on behalf of the donors by John Cadwalader, Esq., and the acceptance was made on behalf of the managers by C. Hartman Kuhn, Esq. An address in memory of Dr. Mitchell was made by Dr. W. W. Keen. the building cost in the neighborhood of $40,000.

West Tennessee Medical Association.—The annual meeting of this association was held at Jackson on May 18 and 19. The following officers were elected: *President*, Dr. John C. Paris, Rutherford; *Vice-Presidents*, Dr. Thomas E. Sawyer, Martin, and Dr. Robert Mann, Memphis; *Secretary-Treasurer*, Dr. Isaac A. McSwain, Paris; *Assistant Secretary*, Dr. George McSwain, Paris.

The Late Dr. Brickner.—The following minute has been adopted: The Metropolitan Medical Society of the City of New York has learned with great sorrow of the death of its friend and colleague, Samuel M. Brickner. Dr. Brickner was a physician of unusual ability, a scientist of learning, and a teacher of rare gifts. He was not merely a wise and helpful physician, but, in the last years of his life he exemplified the finest qualities of patience and strength.

We mourn his death and by this minute record our deep sense of loss in his passing out of the circle of his associates in the practice of our calling and extend to his bereaved family the assurance of our deepest sympathy.

Gustav G. Fischlowitz, M.D., President; Harold Neuhof, M.D., Secretary.

The Late Dr. Stein.—The following minute has been adopted: The Metropolitan Medical Society of the City of New York records in this way its great grief at the sudden death of a distinguished member of the medical profession, Richard Stein. Dr. Stein died as he lived, amidst the performance of his duty as a physician and scientist. He was a true physician, not only a man of high attainments, but a physician of highest character. He was a friend of men within and without his calling; his passing will long be mourned by great numbers of those who looked upon him as a wise friend, a trusted counsellor, a noble physician.

To her upon whom the burden of grief rests heaviest, we send the assurances of our deep-felt sympathy and we shall always recall his life and service as worthy of the finest traditions of our calling.

Gustav G. Fischlowitz, M.D., President; Harold Neuhof, M.D., Secretary.

Obituary Notes.—Dr. FRANCIS FOERSTER, for over twenty-five years gynecologist to the German Hospital, New York, died, after a lingering illness, on June 1, aged 62 years. Dr. Foerster was born in Heidelberg, Germany, came to this country in 1872, and was graduated from the College of Physicians and Surgeons, New York, in 1883. For ten years he served as professor of gynecology at the New York Post-Graduate Medical School, and later joined the staff of the German Hospital. He was a member of the American Medical Association, the New York State and County Medical Societies, the New York Obstetrical Society, the American College of Surgeons, the German Medical Society, and the New York Academy of Medicine.

Dr. CHARLES ZEH GARSIDE, professor of pathology and bacteriology in the Fordham University School of Medicine, New York, and pathologist to the Fordham Hospital, died in the German Hospital, on June 1, aged 37 years. Dr. Garside was graduated from the College of Physicians and Surgeons, New York, in 1903, and later served for two years at the City Hospital. He was a member of the New York Academy of Medicine, the New York Pathological Society, the Harvey Society, the Society for Serology and Hematology, and the Alumni Association of the City Hospital.

Dr. PIERRE V. ROUDIEZ of Denver, Colo., died at his home on May 13, after a short illness, aged 83 years.

Dr. OTIS LEE WINGATE died at Philadelphia on May 26, at the age of 38 years. He was graduated from Jefferson Medical College in the class of 1904, and he resided for several years at Albuquerque, New Mexico.

Dr. ARTHUR S. REEBEL of Youngstown, Ohio, a graduate of Tufts College Medical School, Boston, in 1909, died at his home on May 22, after a long illness, aged 31 years.

Dr. ISAIAH T. PRICKETT of Parkersburg, W. Va., a graduate of Miami Medical College, Cincinnati, in 1876, died at St. Joseph's Hospital on May 19, aged 69 years.

Dr. THOMAS P. KENNEDY of Union, S. C., a graduate of Tulane University of Louisiana, School of Medicine, New Orleans, in 1910, died at his home on May 21, after a long illness, aged 30 years.

Dr. ANDREW M. PEABLES of Auburn, Me., a graduate of Dartmouth Medical School, Hanover, in 1864, and a member of the American Medical Association, the Maine Medical Association, and the Androscoggin County Medical Society, died at his home on May 24, aged 80 years. Dr. Peables served for eighteen months as a surgeon in the Civil War, and was one of the founders of the Central Maine General Hospital.

Dr. JAMES F. COSTELLO of Quincy, Mass., a graduate of Tufts College Medical School, Boston, in 1913, died at his home on May 24, aged 26 years.

Dr. HENRY HARDENBERGH of Port Jervis, N. Y., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1859, and a member of the Medical Society of the State of New York and the Orange County Medical Society, died at his home on May 29, aged 81 years. He retired from active practice a number of years ago. At the time of his death Dr. Hardenbergh was the oldest physician in Orange County.

Dr. EDWIN A. GOODRIDGE of Flushing, N. Y., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1871, formerly surgeon to the Flushing Hospital, and a veteran of the Civil War, died at his home on May 31, aged 76 years.

Dr. FRANK C. CLARKE of Catskill, N. Y., a graduate of the University of Buffalo, Medical Department, in 1873, died at Palenville on May 30, aged 64 years.

Dr. S. M. LE CRONE of Tacoma, Wash., a graduate of Starling Medical College, Columbus, in 1878, died at his home on May 17, aged 70 years.

Dr. ALBERT C. PERVEIL of Brooklyn, a graduate of New York University Medical College in 1895, died in Roosevelt Hospital on May 30, after a long illness, aged 40 years. Dr. Perveil was surgeon of the Offin River Gold Mining Company in the Congo for some time, and it is thought that while there he contracted sleeping sickness which was the cause of his death.

Dr. THEODORE COLE of New York, a graduate of New York Medical College in 1879, died at his home on June 1.

Dr. JOHN L. DURYEE of Orange, N. J., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1868, died on June 1, aged 70 years.

Dr. HENRIK G. BLESSING, who was physician and botanist with the Nansen polar expedition, 1893 to 1896, died on May 22 in Christiania, Norway.

Correspondence.

NAUHEIM BATHS AT SARATOGA.

To the Editor of the Medical Record:

Sir:—Referring to your editorial on the Nauheim baths at Saratoga Springs, it may interest your readers to learn that in reply to an inquiry I have received a letter signed by Mr. George D. Pratt, commissioner, and Mr. J. H. Jones, superintendent, stating that "under specific prescription from a physician of good standing the commission is ready to administer mineral baths with any additions which that physician may see fit to make to our natural mineral waters and with the express understanding that the responsibility for these additions shall rest solely with physicians prescribing them." This clear exposition of the commissioner's policy removes all doubt regarding the matter of obtaining the correct Nauheim bath formula in Saratoga Springs.

The method I worked out facilitates the latter, and it would prevent any miscarriage at the hands of the attendants at the bath houses if the manager would keep on hand a supply of packages containing 12 pounds sodium chloride and 1 pound pure (not crude) calcium chloride for baths of full strength and packages of one-half and one-fourth of these quantities for the weaker baths that may be prescribed in the beginning. This calculation, made for the Saratoga bath house supplied with Hathorn No. 1 water, equals within a few ounces the average saline content of the three Nauheim springs. Such an arrangement would facilitate prescriptions of one-quarter, one-half, or full strength Nauheim baths, and these being kept on hand would prevent delay in filling the prescription. The saline solutions should always be poured into the tub before the CO_2 water is allowed to run in, as the attendants at the Saratoga baths understand. A loss of CO_2 ensues if the practice is reversed. This addition of salines is of the utmost import in cardiac cases, because they enhance absorption and prevent the escape of CO_2 from the bath water, in the artificial and probably also in the natural CO_2 bath.

That cardiac cases sent to Saratoga should always be placed under the care of local colleagues goes without saying, for each new prescription of one or more baths must be based upon the effect of the previous bath. It is, indeed, a blessing to our patients suffering from organic heart affections, to be at last able to obtain baths of which they have been deprived for two years. Greater still will be this boon offered by the wisdom of our State authorities to those whose means have hitherto precluded their participation in the therapeutic advantages of the great German Spa

Simon Baruch, M.D.

THE *X*-RAY TREATMENT OF TINEA TONSURANS.

To the Editor of the Medical Record:

Sir:—Owing to the fact the we failed to receive the issue of the Medical Record for March 18, 1916, our attention has but recently been called to a letter and published in your issue of the above date in which Dr. H. G. Adamson criticises our article on the "*X*-ray Treatment of Tinea Tonsurans" published in your issue of August 7, 1915. Adamson thinks he was not given sufficient credit for his publication on the same subject in the *Lancet* for May 15, 1909.

We began to treat ringworm of the scalp with the *x*-ray soon after the publication of Sabouraud and Noiré's articles in 1905. For several years we employed a static machine, a "hard" tube, the platinocyanide of barium pastilles, and the Sabouraud radiometer. With this technique, however, we never attempted to depilate the entire scalp. When we read Kienböck's article in 1907 we attempted to follow his technique, but our efforts were not crowned with success. We never succeeded in successfully depilating the entire scalp until we had carefully studied Adamson's excellent article in 1909. Adamson's explanation of the method was so clear and concise that we had no further trouble so far as concerned the placing of the tube and the measurement of the head for the five-exposure method. However, not yet being satisfied, one of us (MacKee) visited Howard Pirie in Montreal (about 1912 or 1913) and obtained personal instruction. In the meantime we had discontinued the half-distance method and established the skin distance as advocated by Hampson in 1911 and we utilized the Holznecht radiometer, instead of the Sabouraud instrument, and adopted several other modifications. Later, of course, the Coolidge tube displaced all other therapeutic tubes. Therefore, the technique used by us was not based upon Adamson's work alone, but was the sum total of the work of many other observers, as was mentioned in our article. In this article we began by stating that "there is nothing original about the method, it being the result of the work of many investigators in the same field—Sabouraud and Noiré, Holzknecht, Kienböck, Adamson, Sequeira, Hampson, Pirie, Corbett, Coolidge, Macleod, and many others." Later, in the article, we said that "this method of treating the entire scalp by five exposures was originated by Kienböck and is exceedingly accurate, as shown by Adamson, Pirie, Sequeira, and many others." The part of our technique that deals with the measurement of the head and the placing of the tube is the Kienböck-Adamson method and in the preparation of our paper we employed Adamson's article as a guide in explaining this part of the technique. We thought that in disclaiming originality and mentioning the names of the men to whom we were indebted for the technique and in including their articles in the bibliography we were giving sufficient credit. We certainly had no idea of belittling Adamson's work and now regret exceedingly that we did not definitely state that we had depended upon his article for certain parts of the technique employed by us. We shall have occasion to refer again to the *x*-ray treatment of tinea tonsurans in another communication and will take pleasure in giving Adamson full credit for his work.

Adamson seems to think that our statement, "there is nothing original about the method," refers to his lack of originality. We referred, of course, and fail to see how anybody can misconstrue the meaning, to our own lack of originality. We acknowledge gladly that Adamson modified and improved Kienböck's five-exposure method, that he proved the accuracy of the method by successfully treating a large number of cases, and that his article brought this to the attention of the medical world and stimulated dermatologists and Roentgenologists in all parts of the world to perfect the

technique. We acknowledge also that we made liberal use of his article in the preparation of our own paper. And to be perfectly fair to other authors we must also admit the liberal use of articles by Hampson, Holzknecht, Macleod, and others already mentioned. If the technique employed by us, which we, at the clinic, designate as the Kienböck-Adamson method (a phrase based upon the title of Adamson's article "A Simplified Method of *X*-ray Application for the Cure of Ringworm of the Scalp: Kienböck's Method") is to be given a name that will give credit to all who have been instrumental in its evolution, it will have to be designated as the Sabouraud-Noiré-Kienböck - Adamson - Holzknecht-Benoist-Coolidge method, and even this long title would not give full credit.

GEO. M. MACKEE, M.D.
JOHN REMER, M.D.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

SHAKESPEARE AND MEDICINE—MUSEUM OF THE SOCIETY OF MEDICINE—DERMATOLOGY, CHEMOTHERAPY.

LONDON, May 13, 1916.

SHAKESPEARE is just now the absorbing topic of study and conversation. It is therefore only natural for his references to medicine to be again studied, though it may be thought that nothing new is likely to reward the most diligent student. Sir St. Clair Thomson, however, took it for the subject of his oration at the Medical Society, remarking that it was only right amid the tercentenary commemorations, for the profession to pay its tribute of recognition, for probably no matters were more frequently dealt with by our greatest master at any rate after the great poetical subjects of love, hate, ambition, and war. And there was a special reason why the Medical Society of London should take a particular interest in the most many-sided man the world had known, for its library contained the only authentic record of his death. That is in the commonplace book of the Rev. John Ward, Vicar of Stratford-on-Avon, and that was begun only 32 years after the death of the poet. In one of its volumes occurs the following entry: "Shakespeare, Drayton, and Ben Jonson had a merry meeting and it occurs drank too hard, for Shakespeare died of a fever there contracted." We need not suppose that Shakespeare ever studied medicine, but he certainly had a comprehension and knowledge of it which was most remarkable. His profound knowledge of human life and human nature explained why he will always be, said the orator, one of our greatest masters of medicine. His astonishing acuteness of observation, his familiarity with the ways and thoughts of frail humanity, his discrimination of disease according to age, sex, and circumstances, his sensitive regard for our "brutal life," his human sympathy and his knowledge of that part of physiology and pathology which might be studied in the daily life of the street, the market, the tavern, the court, the camp, or the town illustrate the poet's medical and scientific insight.

Shakespeare's familiarity with many technical medical matters was surprising—he employed terms which no modern playwright would know how to introduce. The diseases referred to were many—among them ague, rheumatism, plague, pestilence, fevers, measles, leprosy, sweating sickness, and many others. Their mere mention was not much, but the flashes of genius revealed that he had such acquaintance with the science of his time and knowledge of human life and character as to make him one of the greatest masters of medicine. By the marriage of his eldest daughter to a medical man Shakespeare would have had the opportunity of acquiring some knowledge of the practice of medicine in his time. There are six representatives of medicine in his plays—none of them a surgeon. Quacks and mountebanks were numerous in his day and of course were mentioned. The diseases named were rather numerous, but what seems more important, as showing the extent of the poet's observation, is the surprising insight revealed here and there into the character and progress of some patient's malady. He had a clear knowledge of the opinions held in his time on various pathological questions and reasonable views on such medical and sanitary problems as were then discussed.

The Wellcome Medical Museum showed a number of Shakespearean exhibits at the Medical Society on the 1st instant—articles of materia medica mentioned in the plays and references to the uses made of them at that period. They were, so to say, on a par with many other subjects treated by the great, some would say the greatest or most comprehensive, mind in all literature. There were portraits of Shakespeare, of his house at Stratford-on-Avon, of the Glove Theatre, a copy of the bust on his tomb, a photo of a London apothecaries' shop of the period, oil paintings, portraits, a cross made from Shakespeare's crab tree, medicine jars, book-plates, and other memorials.

At the Royal Society of Medicine the Section of Dermatology has been to the front with a discussion on chemotherapy. At the Harveian Society, Backward Displacements of the Uterus. For this condition it was stated in the course of the conversation that 100 different operations had been employed. One member described two he had successfully used. Another remarked that congenital cases were common, but seldom caused any symptoms and were of no importance, if without complication.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

THE ESKIMO MEDICINE MAN.

ST. MICHAEL, April 5, 1916.

FROM the earliest times the subject of abnormal states of health and their treatment has been shrouded in mysticism with the Eskimo. They do not believe in healing through the medium of herbs or any form of medicine and they have the greatest horror of any form of surgical interference, but believe that certain persons are born with the gift of calling into play certain invisible powers by means of which the disease is driven out of the patient's body. These certain persons are the Medicine Men and the invisible powers are believed to be and are called Spirits by the Eskimo.

There are three distinct classes of natives inhabiting Alaska; the Indian of southeastern Alaska, the Aleut of western Alaska (in the region of the Aleutian Islands), and the Eskimo of northwestern Alaska. All three classes have about the same belief in regard to the medicine men but differ somewhat in their method of carrying out their line of treatment. They have a profound belief in the actions

of good and evil spirits in the prevention, cause, and alleviation of disease.

The present letter is based on observations among the Eskimos, and the medicine man is described as seen to-day in this portion of Alaska.

There are about 18,000 Eskimos (Innuits) in Alaska and they inhabit principally the coast, so it is not surprising that their food and habits are associated with the sea. The natives are gathered in small settlements called "villages," each village having a chief and one or more medicine men. There is also in each village a council house called the "Kashim" or "Kasga," which is open to every one alike for work or play. It is the common meeting place where the natives gather for their dances and "pow-wows" and is also the place where the medicine men treat the sick.

As above stated the medicine men are born and not made. They usually descend from families long known in this vocation, although occasionally a medicine man develops from other sources. In this same connection it may be of interest to note that there are a few medicine women.

Shamans, conjurers (tungaks) and medicine men are looked upon as mediators with the invisible world. They claim to be able to call the spirits into their environment, to see them, and to converse with them. They also claim that there are several kinds of spirits and that each spirit has a separate and distinct power of its own. The medicine man here tells me that there are five and that each one has the power to heel a certain kind of a disease (he recognizes five diseases); that when he calls the spirits and the wrong one comes, he must drive this one away and continue calling until the right spirit comes and that this may take as long as ten hours or as short a time as ten minutes. The writer thinks that the prosperity of the sick one is in direct proportion to the length of time required to call the *certain* spirit.

No two medicine men are alike because they associate with different spirits, however there is always rivalry in a village where there is more than one medicine man. One tries to get rid of the other and this results in ill feeling. As soon as the ill feeling becomes manifest, the Eskimo stamps the one with the most manifest malice as a fraud and the then preferred medicine man attempts to shorten the life of the "fraud" so, as a rule, we find but one active in a village, but the sick will often go from one village to another seeking treatment.

The sick may be treated at home or in the kashim, the latter being much preferred by all and believed to be more effective. In order to understand thoroughly this procedure it is necessary to know the plan of the kashim. It is a building constructed in the side of a bank if one can be found, about 20 x 20 feet, with a 10-foot ceiling. The sides and top are built of logs and are covered with dirt. In the center of the flat top there is a hole about 2 feet square and covered with a seal-gut covering. This is the only opening through which air and light can enter. The seal-gut window or covering is translucent and, as it is usually fastened down tight, there is little or no ventilation. All around the interior, about 4 feet from the floor, there is a shelf upon which the men sit (the women sit on the floor under the shelf). The floor is of dirt or boards; the center boards can be removed, exposing a hole 18 inches square. This hole is about 5 feet deep and is the inner opening of a tunnel, which tunnel leads to another vertical hole, which in turn leads to the storm entrance through which all persons must pass on coming into and passing out from the kashim. Some of the modern kashims have a door from the storm entrance, thus avoiding the underground passage, but the older natives and those far away from civilization believe that the crooked passageway will keep out evil spirits, therefore they will not allow the ground level door. The walls are as black as tar from smoke. This smoke comes from the seal oil lamps the Eskimos use and from the fire that they build in the inner vertical hole after all persons have entered.

When the Eskimo is taken sick and desires the services of the medicine man, the medicine man is notified. He in turn notifies the whole village, stating the hour, day, and place for the performance. At night, just after dark and in the kashim, is preferred. The natives collect in the council house and seat themselves, the men on the shelf and the women on the floor. The spectators are made up principally of men; however, all ages and sexes are at times present. The medicine man makes his entrance through the underground passage. He is nude with the exception of a rain parka and a pair of short reindeer muclucs. A parka is a one-piece garment with hood and sleeves and slips over the head and falls to the knees. A rain parka is a parka made of seal gut. When finished it is translucent and will turn rain. This garment rustles like paper and is used by the medicine men on account of this property. Reindeer muclucs are short boots made of reindeer skins with the hair on them.

After the medicine man enters the kashim he calls for the patient. The patient is brought in, usually lowered through the opening in the roof, and placed in the center of the room. Selected men then sing (accompanied by the tom-tom of improvised drums) the medicine songs of this particular medicine man. The medicine man begins his dance, shaking the rain parka violently. From time to time he rapidly shakes his head from side to side, making a peculiar noise with his lips—"bluba luba luba lub—a!" The dance consists of standing in one place, leaning first on one leg and then on the other, throwing the arms around violently in a manner to show off the muscles and making various gruesome facial expressions. There is nothing artistic or pretty about the dance. The rustling of the parka and the songs are to call the spirits. From time to time the medicine man will stop and converse with a spirit. If this is the wrong spirit he will tell it to go away and the performance will begin all over again. This is kept up until the right spirit arrives. He then tells the audience and patient that he sees and is conversing with the invisible spirit. He will ask what is the matter with the patient and after a pause will state that the spirit says that this sick person did so and so, describing something that happened possibly many years ago, such as killing a female reindeer just before calving, or slapping a certain child (usually mentioning some act of which the medicine man knows). He will then ask the patient, "Is that so?" The patient will say "Yes," and the audience is then spellbound. The medicine man again converses with the spirit and asks what will heal the patient. After a few moments' pause he will turn to the sick man and tell him what to do to be healed. This treatment consists in prohibiting a certain kind or kinds of food, as, for example, the eating of seal oil, whale blubber, or dried fish; it may also forbid "the use of the knife." By this expression is meant that he must not chop any wood and at times this ap-

plies to the whole family. Sometimes the medicine man will hold a piece of fish or something else to eat, in his hand and ask the spirit to give this piece of food the power to heal the sick and will then make the patient eat it.

After the medicine man has finished his instructions there is much singing and rejoicing and the sick man is taken out of the kashim through the opening by which he was brought in. This ceremony may last from a few minutes to an all-night performance, regardless of how sick the patient is.

The medicine man usually states that the sick person will rise from the bed at a certain time. If the patient gets worse or cannot get up at that time the medicine man claims that his instructions have not been carried out and will at times become very much enraged about it or he may administer another treatment. The fees of these native doctors vary a great deal. Some few will not charge as they claim that in charging for their treatment they anger the spirits. However, this is not the rule as they get all they can. They may charge ten pounds of fish, so many gallons of seal oil, a dog, sleigh, furs, or anything. They get as much as they can and many of them do not work at all. The medicine man, next to the chief, is the most important and most respected Eskimo in the village. He is sometimes a "sleight-of-hand" performer and if successsful is always one of the brightest of a settlement. This is necessary in order to gain the native confidence, as they look upon him as supernatural. The natives consult him and pay him for other things than treatment. For example, they consult the medicine man about the coming fishing, whaling, and sealing seasons and will often pay him so many furs to ask the spirits for a good catch. He also presides over the "Feast of the Dead," which will be described in a subsequent letter.

Progress of Medical Science.

The Boston Medical and Surgical Journal.

May 25, 1916.

1. Pediatrics as a Specialty in the Smaller Cities. Alexander C. Eastman.
2. The Management of Gonorrhea. J. Dellinger Barney.
3. Opthalmus Neonatorum. George H. Thompson.
4. The Problem of Ringworm in Children. E. L. Oliver.
5. Results of Open Air Treatment of Pneumonia in Children. A. R. Cunningham.
6. The Problem of Tuberculous Infection in Children. Harold W. Dana.

1. Pediatrics as a Specialty in the Smaller Cities.—Alexander C. Eastman points out that owing to the large percentage children constitute in the general physician's practice, the pediatrist must, of necessity, come into daily contact with the general practitioner, and he is obliged to become very circumspect in defining the limits of his specialty. The general physician may be glad to turn over a feeding case to the specialist, but at the same time be very loathe to give up a case of bronchitis. Because of the large educational propaganda concerning child welfare, people are demanding more and more special training in the physician who cares for their children. This is daily making the chance for the pediatrist's success much greater, but it is also complicating his relationship with the general practitioner. Much of the work in the smaller cities must be clinical in character, the scientific research work coming to us from the medical centers. The educational work is, however, just as important and should be carried on just as thoroughly in the small as in the large city. Pediatrics is primarily a specialty of preventive medicine.

2. The Management of Gonorrhea.—J. Dellinger Barney says that their experience with gonorrhea in the Genito-Urinary Clinic of the Massachusetts General Hospital has led them to agree on the following standard as a cure of the infection. The patient must meet these requirements at least once, preferably twice or three times, at intervals of at least two weeks and not less than a month after treatment. In the male there must be absence of gonococci; a negative gonococcus fixation test; the urine must be clear, and there must be no pus in the prostate or vesicles after three examinations, or pus present, but a negative blood test. In women they require a negative gonococcus fixation test, absence of clinical evidence of the disease in the lower tract, and a negative pelvic examination. In female children they require absence of gonococci, little or no pus in the vaginal smear, and a negative gonococcus fixation test. The writer believes that the average general surgeon or practitioner is incompetent to undertake the treatment, and especially to determine the cure of a gonococcus infection of the urethra, and that it is only proper that the State Department of Health should cooperate in seeing not only that the layman who wishes private treatment can get it from a reliable physician, but also that he should be able to know where to turn for this information. Public health authorities should keep on file a list of such physicians throughout the State who by their training and experience and hospital and teaching connections are competent to handle venereal disease.

4. The Problem of Ringworm in Children.—E. L. Oliver reviews the older methods of treating ringworm of the scalp and concludes that they are inefficient. He finds that the treatment of this disease by the *x*-rays, according to the method of Sabouraud and Noire, has proved to be highly efficient. In Paris it has shortened the course of the disease from two years to three months. The objection to the use of the *x*-rays in ringworm, on account of the possibility of producing permanent baldness, owing to inability to measure the rays properly seems to be answered by the introduction of the Coolidge tube, with which the amount of rays absorbed can be measured with great accuracy. Radiologists as well as dermatologists have been slow to grasp the importance of the *x*-ray treatment of this disease, but it is to be hoped that before long all cases will be treated by this method, which should make it much less frequent in the future than in the past.

6. The Problem of Tuberculous Infection in Children—Harold W. Dana calls attention to the large proportion of children (90 to 95 per cent.) infected with tuberculosis during childhood and that from this early infection most of the active tuberculosis of later life is supposed to spring. He believes that the general practitioner has not been interested in the diagnosis of these cases and he has not awakened to the importance of such cases in the fight against tuberculosis. In fact he tends to deny the existence of such cases. In dealing with this problem there are certain things that are possible to do: we can probably abolish that part of the infection with tuberculosis which is acquired through the use of milk as a food; we can diminish the contact between children and active cases of tuberculosis; we can follow up any child exposed by association with any known case of tuberculosis; we can, to a greater or less extent, pick out those children who have become infected; and we can watch these infected cases to prevent them from becoming active cases, treating those whose general condition fails to improve by more energetic measures. Such cases should be sought for by the school physician, and when found should be followed up by the school or district nurse, who can take

such patients to the local tuberculosis dispensary at stated intervals for examination. The writer emphasizes the fact that the x-ray does not distinguish, in general, between active cases needing active treatment and the latent or healed cases.

New York Medical Journal.

May 27, 1916.

1. Hysterical Mutism. G. Hudson Makuen.
2. The Treatment of Muscular Rheumatism. William Fitch Cheney.
3. The Treatment of Tuberculous Adenitis by Röentgen Rays. Russell H. Boggs.
4. Chorea: Its Treatment. Morris Grossman.
5. Tetanus; a Surgical Complication in the Present War. E. Kilbourne Tullidge.
6. Antimeningococcic Serum in the Joint Manifestations of Gonorrhea. Félix Malleterre.
7. Addison's Disease of Syphilitic Origin. Philip M. Schaffner and Tasker Howard.
8. The Curatelle and Modern Psychiatry. George W. Jacoby.

1. Hysterical Mutism.—G. Hudson Makuen believes that hysteria is essentially a disease of the mind. He reports several cases and says that hysterical mutism is a somewhat rare affection; it occurs at all ages, in all races, in both sexes, and even in animals. Hysterical mutism is usually of sudden onset and is the result of some severe psychical or emotional shock. It is characterized by the complete absence of the physical representations necessary to the production of speech. Heredity is an etiological factor so far as it furnishes the neuropathic or psychopathic soil for the development of the affection. The mutism generally occurs in conjunction with other hysterical phenomena, although it may be the only hysterical symptom. Hysterical mutism may occur in conjunction with organic nervous diseases which themselves simulate hysteria, and it can be distinguished from them only by actual discovery of the pathological conditions giving rise to the particular affection. Hysterical mutism differs from hysterical aphonia in that the former evinces a more extended disability of the mechanisms of speech, and it differs from aphemia or motor aphasia in that the mutism is absolute. If physicians were better practised in the art of psychotherapy there would be fewer so-called miraculous cures reported outside the pale of the regular profession.

2. The Treatment of Muscular Rheumatism—William Fitch Cheney considers this subject and says that the remedies of most avail are the following: (1) Rest. Nature usually enforces this management if the attack is sufficiently acute. Sometimes absolute rest of the whole body in bed is demanded, as in lumbago; sometimes rest of one portion, as an involvement of the deltoid. (2) Heat. Cold increases the pain and heat is always grateful and gives relief. It seems probable that the virtues alleged for certain antiphlogistic pastes depend even more upon their retention of heat than upon their chemical constituents. (3) Purgation. He believes with others that there is a close relation between abnormal intestinal chemistry and attacks of muscular rheumatism. Relief is afforded by thoroughly emptying the bowel and best by some mercurial. One other drug particularly efficacious is colocynth. (4) Salicylates: They are as rational remedies for muscle rheumatism as for joint rheumatism. Just at present aspirin is the one most commonly prescribed. (5) Opiates. It should be thoroughly understood that all opiates are out of place because they check elimination by skin and bowel and because they have in general bad effects that outweigh the good.

3. The Treatment of Tuberculous Adenitis by Röentgen Rays.—Russell H. Boggs says that cases of tuberculous adenitis formerly were referred to the Röentgen ray treatment on account of the operation leaving unsightly scars, but today this is not the chief reason. It is because operation is followed by frequent recurrence, as well as more danger of producing general tuberculosis. Besides, many believe the end results of radiotherapy are much better. Radiotherapy stands on a different plane than it did two years ago. The same massive radiation is not indicated in the treatment of tuberculous adenitis as in the treatment of malignant disease. The Roentgen ray is the best method of treatment when the glands have become widely scattered and are broken down. Where there is pulmonary involvement, the writer believes the Röentgen ray, together with good hygienic treatment, is the only method to be considered.

4. Chorea: Its Treatment.—Morris Grossman tells of the value of muscular relaxation and reeducation, in addition to general treatment, based on the study of fifty cases, with a detailed report of one case of chorea mollis. He offers the following conclusions: (1) Relaxation and reeducation have a distinct value in the treatment of chorea. (2) The course is favorably modified and the danger of complication lessened; the duration of the disease is shortened by their use. (3) Residual chorea and other conditions of muscular unrest are obviated. (4) We reduce to a minimum the drain on the motor centers, due to prolonged and continuous muscular activity. (5) With this systemic exercise treatment, we increase the mental stability and will power of the patient, thereby diminishing the danger of subsequent tics and other functional neuroses that flourish in such a soil.

Journal of the American Medical Association.

May 27, 1916.

1. A Study of 1,153 Cases of Scarlet Fever, with Special Reference to Their Sequelæ. Louis I. Dublin.
2. The Municipal Hospital as a Factor in Clinical Teaching. Hanau W. Loeb.
3. A "Group Study" Plan for a Diagnostic Team Acting as a Laboratory for the Profession. Fayette Watt Birtch.
4. The Treatment of Internal Hemorrhoids, Bleeding Spots and Villous Tumors of the Rectum by the High Frequency Cautery. John A. Hawkins.
5. Acute Pelvic Appendicitis: With Cases in Point. Edmund A. Babler.
6. Circumscribed Purulent Leptomeningitis Due to Frontal Sinusitis. Samuel Leopold.
7. Free Tumor Diagnosis as a Function of State Public Health Laboratories. Leverett Dale Bristol.
8. Vesical Drainage: Historical Review and Presentation of a New Apparatus. Edwin G. Davis.
9. The Supernumerary Ureter: Report of a Case of Complete Unilateral Duplication. A. R. Simon and H. O. Mertz.
10. The Treatment of Gonorrheal Folliculitis by Cauterization with the d'Arsonval Current. Edgar G. Ballenger and Omar F. Elder.
11. The Duration of the Nursing Period in Women of the United States. A. Graeme Mitchell.
12. The Etiology of Typhus Fever in Mexico (Tabardillo): Preliminary Communication. Peter K. Olitsky, Bernard S. Denzer, and Carlos E. Husk.
13. Elective Localization in the Bronchial Musculature of Streptococci from the Sputum of Cases of Bronchial Asthma: Preliminary Report. Sverre Oftedal.
14. Mercuric Cyanide Poisoning with Recovery. A. O. Gettler and Willis Baker.
15. Notes on Grip Epidemic in Chicago. A. M. Moody and J. A. Capps.
16. Prescription Writing in English. Bernard Fantus.
17. A Case of Torsion of the Spermatic Cord with Teratoma of the Testicle. J. W. Babcock.

1. A Study of 1,153 Cases of Scarlet Fever, with Special Reference to Their Sequelæ.—Dr. Louis I. Dublin, Statistician of the Metropolitan Life Insurance Company, presents this study. These patients were all policy holders of the company, and their whereabouts and subsequent physical condition could readily be traced in the years subsequent to their having the disease. Nearly 80 per cent. of all the cases were among children between two and ten years of age. The greatest disposition to the disease is found among children from three to seven years of age, 55.2 per cent. of the total being found within these years of life. The period eleven to fifteen years presents an appreciable number of cases, but after this age the cases are few. Not only are children at the youngest ages more susceptible to

scarlet fever, but it appears that these children take the disease in the severest form. The lethal rate for the 1153 cases is 7.8 per cent. The younger the children the higher has been the death rate. The lethal rate also varies considerably with time and place, depending on the severity of the epidemic. The ninety deaths that occurred in this series showed complications in sixty-two cases; in eleven of these there was a distinct kidney involvement. In tracing the history of those who survived there were only eighteen deaths in the following four years; three of these showed a record of endocarditis; there were five deaths from respiratory diseases, and four from tuberculosis. The remainder were scattered among a number of causes having no relation to the scarlet fever. Strangely enough, there were no deaths from kidney disease. Apparently among the survivors of the primary disease, the kidneys were not sufficiently impaired to cause early death. The sequelæ of scarlet fever are apparently not an appreciable factor in the mortality of the survivors, but it should not be overlooked that the disease itself still constitutes an important factor in child mortality. The disease has not shown the same amount of decrease in the last fifteen years that has been observed in connection with other infectious diseases, the death rate in the registration area being about 10 per 100,000. A study of these figures with reference to seasonal distribution shows that from January the frequency of the disease rapidly rises until May, when the maximum number of cases occurs. Thereafter there is a rapid drop in the number until September, which is marked by the minimum. The largest number of deaths occur during April and May and the fewest in September.

3. **A "Group Study" Plan for a Diagnostic Team Acting as a Laboratory for the Profession.**—Fayette Watt Birtch states that the type of group study as now practised in general hospitals is unsatisfactory. The assignment of patients to different departments for treatment is often determined by the patient's complaint without previous investigation by the various departments, which is comparable only to the methods of the general practitioner. Realizing these limitations the profession in the vicinity of San Francisco three years ago organized the San Francisco St. Luke's Hospital Clinical Club for the purpose of remedying such conditions. After trying various plans the following method was adopted: A section was organized consisting of ten men, each having special training along some particular line. The members of the profession refer obscure cases to this section for diagnosis. These patients are placed in the hospital for observation, and each member of the diagnostic team makes an individual examination and a written report of his findings. At noon each day the team meets to discuss the cases. If the case is not clear at the first consultation, further investigation is recommended, and any new discoveries are reported the following day. This method of procedure is continued day after day until some conclusion is reached. The physician who referred the case is asked to be present at all the consultations. Finally, the patient is referred back and a written report of the findings and recommendations for treatment are mailed to the attending physician. All of this work is done for a fee commensurate with the patient's income, though the amount collected is not sufficient to pay for the time of the clinicians. The results to be expected from such a scheme are: The general practitioner will gladly accept it; the good influence of the family physician will be preserved; medical men in the community will take advantage of the daily discussions and gradually broaden their point of view of medicine; this method of group study will maintain the advantages of specialism and do away with the disadvantages. Clinical reports from this work bearing on these predictions are now being prepared for publication.

7. **Free Tumor Diagnosis as a Function of the State Public Health Laboratories.**—Leverett Dale Bristol publishes the results of an investigation in regard to the existing facilities for the laboratory examination of specimens of suspected cancerous tissue, the information having been collected through a questionaire sent to the directors of the various State public health and hygienic laboratories, and in some instances to the State boards of health. This investigation shows that twenty-four States have facilities for the diagnosis of suspected cancerous tissue, while twenty-four do not attempt such work. On the basis of the data collected the following recommendations are submitted as worthy of consideration in the campaign against cancer: 1. So far as consistent with local conditions, facilities should be offered under public auspices in each State for the diagnosis of tissue suspected of being cancerous. Preferably, these should be made free of charge. 2. The logical place for the doing of such work is the laboratory of the State health department. It is not to be supposed that such work will be given the preference over other work now being done by these laboratories. 3. To cover this work, in those States which have no such facilities, additional money should be appropriated. 4. Judgment must always be used by surgeons in the removal of suspected cancerous tissue for diagnosis, and the value of a microscopic diagnosis should appear to outweigh the risk involved before such a procedure is adopted.

9. **The Supernumerary Ureter.**—A. R. Simon and H. O. Mertz report a case which serves to emphasize the frequency of supernumerary ureter, the surgical significance the anomaly may assume, and the possibility of its recognition as a factor in the production of a pathognomonic condition early in the process. The authors point out that an otherwise benign condition may be rendered malignant through the association with a supernumerary ureter. The recognition of this condition is possible in every case. The clinical history of a constant incontinence associated with periods of normal urination at once suggests the existence of a supernumerary ureter with an extravesical opening. When the opening is intravesical this symptom does not obtain. Many such anomalies will at once be recognized by the cystoscope, and there is always some irregularity in the bladder picture. Should the opening of the third ureter be among the folds of the trigon or vesical neck chromo-ureteroscopy may be necessary, and mucus covering the opening may prove confusing and add to the difficulties of diagnosis. In the case reported there was a complete duplication of the right ureter, with separation of the two pelves, the cephalic one being rudimentary. There was evidence of infection of this supernumerary pelvis and in this case the anomaly had a direct bearing on the progress of a pathological process, namely, a small papilloma situated on the posterior margin of the trigon.

10. **The Treatment of Gonorrheal Folliculitis by Cauterization with the d'Arsonval Current.**—Edgar G. Ballenger and Omar F. Elder report several typical cases selected from a series of fifty-four patients treated with the high frequency current for persistent or recurrent urethritis. Some had been treated for as long as six years by a number of physicians and specialists, but the discharge and urethral shreds still continued. Two or three treatments were the average required after the authors had learned the value of inserting the electrode to the bottom of the pocket and applying the current until the mucosa overlying it

turned white. A number of these patients returned home and allowed their physicians to continue mild irrigations. During the two or three weeks interval it was most gratifying to note the improvement in some of these patients who had been treated for years unsuccessfully by the usual measures. The authors state that in suitable cases they have never been able to secure such definite and prompt results by any measure or remedy hitherto advised for this class of patients. Acute and subacute conditions naturally should not be treated in this manner.

11. The Duration of the Nursing Period in Women of the United States.—A. Graeme Mitchell presents an analysis of about 3,000 cases taken from the records of the Children's Hospital in Philadelphia during the past fifteen years, from which he concludes as follows: 1. There has been no decline in breast feeding in the last fifteen years. 2. The women of the poorer class compare favorably in the period of lactation with the women of the more prosperous class in this country. 3. The women of this country compare favorably in the period of lactation with European women. 4. The average period of lactation in children entered at the hospital was six months. 5. Twenty per cent. of the women did not nurse their children; 80 per cent. nursed one week or longer; 55 per cent. nursed three months or longer; 42 per cent. nursed six months or longer; 34 per cent. nursed nine months or longer; 27 per cent. nursed a year or longer; 9 per cent. nursed eighteen months or longer, and 2 per cent. nursed two years. 6. For the reason previously pointed out, namely, the greater susceptibility of artificially fed babies to gastro-intestinal and nutritional disturbance, the infants brought to the hospital were, in the large majority of cases, bottle fed at the time of their entrance there. The conclusion is inevitable that the figures given represent the minimum of lactation.

12. The Etiology of Typhus Fever in Mexico (Tabardillo).—Peter K. Olitsky, Bernard S. Denzer, and Carlos E. Husk present a preliminary report of work begun in February, 1916, in Matehuala, Mexico, and interrupted in the early part of March because of the necessity of Americans leaving the country. They state that the organism found in the blood of typhus patients is an obligate, anaerobic, Gram-positive bacillus which in morphology and cultural characteristics, including acid production in various carbohydrates, is identical with the *Bacillus typhi exanthematici*. The injection into a guinea pig of a colony taken directly from the blood culture tube proved the organism to be pathogenic. Agglutination tests performed with serums taken in different stages of the disease showed negative results during the early part of the illness, an occasional positive reaction at or near the crisis, and uniformly positive results after the crisis. In cultures made from lice taken from the clothing of typhus fever patients, the same organism was obtained. The injection of lice into guinea pigs produced a febrile reaction, and at necrospy the characteristic splenic lesion was found. In cultures from the spleen, an organism was recovered showing the morphological characteristics of the *Bacillus typhi exanthematici*.

The Lancet.

May 6, 1916.

1. The Milroy Lectures. Infantile Mortality and the Relative Practical Value of Measures Directed to Its Prevention. S. G. Moore.
2. Some Factors in the Pathology of Gas Gangrene. W. d'Esta Emery.
3. The Visual Standards Used in the Medical Examination of Recruits in the British Army and Continental Armies. J. V. Paterson and H. M. Traquair.
4. Spinal Anesthesia with Special Reference to the Use of Novocaine. C. Colgate Holman
5. The Clinical Manifestations of Gas in Military Lines. C. E. Sundell.
6. On Foreign Bodies in the Bladder Resulting from Gunshot Wounds. G. Grey Turner
7. Ulcerative Stomatitis. Kenneth Goadby.

3. The Visual Standards Used in the Medical Examination of Recruits in the British Army and Continental Armies.—J. V. Paterson and H. M. Traquair recall the fact that, owing to the difficulties attendant on the provision of spectacles and their us by men in active service, glasses have been prohibited altogether in the British army. A recruit who failed to pass the test without glasses was finally rejected, no matter how good his corrected vision might be. At that time and during the early stages of the present war the standard was 6/24 with each eye, or 6/6 with one eye and 6/36 with the other. With the increasing need for men a modification was introduced in September of last year requiring 6/24 in each eye, or 4/24 in the right eye with 6/60 in the left. The use of correcting glasses was permitted in home service and garrison service at home and abroad. The continental powers take the view that it does not matter very much what a recruit's vision is without glasses provided that he gets 6/12 vision in the better eye with spectacles. After collecting data with reference to sight tests in other countries the writers conclude that the present sight test for general service for recruits for the British is by far the highest in Europe, and excludes from the fighting line large numbers of men who are freely used as combatants in the armies of the chief continental powers. In view of the present want of men there is urgent need for the immediate adoption of a remodeled sight test based on corrected vision, on the lines of the military visual standards in use on the continent of Europe.

4. Spinal Anesthesia with Special Reference to the Use of Novocaine.—C. Colgate Holman has used a 5 per cent. solution of novocaine and mannitol, the dose for an adult varying from 6 to 8 cg. of novocaine, in 300 cases in which the site of the operation was below the level of the umbilicus, as hernia, hemorrhoids, varicose veins, etc. He says the symptoms sometimes occurring during the operation are faintness, often accompanied by nausea or vomiting during the first ten minutes. This was usually relieved by one-half an ounce of brandy or a hypodermic injection of strychnine. Serious symptoms never occur in patients under fifty years of age. Bachache and retention of urine appear to be less common than after a general anesthetic. Headache is often troublesome during the first forty-eight hours. The author emphasizes the fact that spinal anesthesia is a method which must be employed with scrupulous care and attention to detail. It is more suitable for use in hospitals, where the nursing staff is familiar with the technic and the after-treatment than it is for casual operations in private practice. Whether novocaine has any special advantage over stovaine he is not prepared to say. Its lower toxicity is neutralized by the fact that a somewhat larger dose is required. It seems to be generally admitted that it is less irritant to the tissues.

7. Ulcerative Stomatitis.—Kenneth Goadby states that ulcerative stomatitis is appearing sporadically among the troops of France as well as in some of the English camps. The disease is characterized by the gradual onset of general malaise, red congested fauces, and acute inflammation of the gum margins; mastication and deglutition are painful, the cervical lymph glands are enlarged, the tongue furred, and the breath fetid. In the course of two or three days the gum edges become necrotic and a white false membrane may develop in the throat, the removal of which leaves a raw bleeding surface. The necrotic process may spread

to the cheeks. A smear preparation made from the gums, cheeks, or throat, and stained by Giemsa's method shows innumerable bacteria of two morphological forms, *Bacillus fusiformis* and spirochetes. Dilute chromic acid relieves the pain and promotes the removal of the necrotic tissue. Its use should be followed by a wash of chloretone and glycerin. Potassium chlorate, 10 to 15 grains with perchloride of iron and magnesium sulphate should be given internally. The disease commonly yields to this treatment. Ulcerative stomatitis is easily differentiated from scurvy, pyorrhea alveolaris, pneumococcal ulceration, and lymphatic leucemia by the white necrotic gums, the pain, and above all by the smear examination.

British Medical Journal.

May 6, 1916.

1. Notes on Military Orthopedics. Robert Jones.
2. A Case of Congenital Atresia in the Duodenum Treated Successfully by Operation. N. P. Ernst.
3. Some Hints on Time Saving in Operations. Edward Harrison.
4. Dressings Used in a Casualty Clearing Station. A. Don.
5. Acute Urinary Infection with Paratyphoid B Bacillus. C. Worster-Drought and Alex. Mills Kennedy.
6. A Case of Ganglio-Neuroma of the Sympathetic. David Rutherford Adams.
7. The Therapeutic Value of Hypochlorous Acid. Raúl Flores Córdova.
8. A Simple Method for the Intravenous Injection of Eusol. James M. Graham.

2. A Case of Congenital Atresia in the Duodenum Treated Successfully by Operation.—N. P. Ernst reports this case because there is only one other instance of this condition known to him in surgical literature in which a surgical operation was successful. He says that Petrograd Theremin reports having found nine cases with this deformity among 150,000 children and he himself has found two cases among 41,000 children in the Royal Lying-in Hospital at Copenhagen. The child under consideration was operated on eleven days after birth. The incision was made a little to the left of the middle line and was between 7 and 8 cm. in length. After the anterior sheath of the rectus had been laid bare, Mosetig batiste was sewn to the edges of the skin with continuous silk suture so that the integuments were completely covered. On opening the peritoneum, the duodenum was uniformly of about two fingers breadth as far as it could be traced to the upper side of the transverse mesocolon. But below the colon where the intestine reappeared at the flexura duodeno-jejunalis, it was seen to have collapsed to the caliber of an ordinary lead pencil. The remaining portion of the small intestine showed no stenosis. The writer made a duodeno-entero-anterior anastomosis; that was, a coil of small intestine about four inches below the flexura duodeno-jejunalis was drawn up in front of the transverse colon, and united to the duodenum about the junction of the pars superior and pars descendens. The child was little affected by the anesthetic or by the operation which lasted about an hour and a quarter. The patient took 35 c.c. of ether. In reviewing the literature the writer notes that in an astonishing majority of the cases only enterostomy has been performed, and it has always resulted in sudden death, associated with an enormous rise of temperature. It cannot be supposed that failure was due in every instance to defective personal aspesis on the part of the surgeon; we must therefore direct our attention to the special source of infection in the child itself. There is risk from two sources, the skin and the contents of intestines. The integuments of the child during the first weeks of life are always infected from the umbilical wounds and the delicate skin cannot stand any strong disinfectants. In order to eliminate this danger the writer first dressed the umbilical wound with cotton wool moistened in 1 per cent. solution of silver nitrate, before the putrefaction of the cord and, what was more important, sewed the Mosetig batiste to the margins of the wound.

4. Dressings Used in a Casualty Clearing Station.—A. Don writes his observations after ten months' experience in a clearing station, where the various methods of dressing wounds that have been suggested from time to time have been tested and their efficacy in cleaning damaged tissues, in preventing the spread of infections, and in adding to the comfort of the patients, has been compared. He concludes that it is not so much the antiseptic dressing used as its intelligent application that matters. Almost any one of the methods tried, hypertonic solutions, hypochlorous acid, iodine, methylated spirit of glycerin, carbolic acid, sterile or double cyanide gauze, hydrogen peroxide, or continuous irrigations, would give average good results, but there were cases in which one application was more suitable and more easily applied than any of the others. The surgeon in a casualty clearing station should never become an enthusiast in any one method of dressing, as he is then a danger to his patients and an embarrassment to his colleagues, to whom freedom of choice is as necessary to secure their intelligent interest as a change of method of dressing may be to the patient.

5. Acute Urinary Infection with Paratyphoid B. Bacillus.—C. Worster-Drought and Alexander Mills Kennedy report this case of acute urinary infection with the *B. paratyphosus B.*, which presents little in common with ordinary paratyphoid infection as hitherto recognized and presents several additional interesting features. There was a pyuria due to pure infection with *B. paratyphosus B.* The usual signs of paratyphoid fever were absent. A perusal of the literature shows that it is by no means common to find paratyphoid bacilli in the urine during the course of an ordinary attack of paratyphoid fever. This patient was successfully treated with autogenous vaccines and hexamine. The patient had not been abroad.

7. The Therapeutic Value of Hypochlorous Acid.—Raúl Flores Córdova publishes the results of experiments made during the past nine months to determine the antitoxic and antiseptic power of hypochlorous acid *in vivo*. He presents tables showing the efficacy of 10 c.c. doses of the hypochlorous acid solution in certain artificially produced infections and toxemias. These show that in rabbits 10 c.c. intravenous doses of 0.5 per cent. solution of the acid, even when repeated two or three days in succession, produce no ill effects, that they may delay or prevent the onset of symptoms due to the injection of the animals with diphtheria and tetanus toxins and with cultures of *Bacillus perfringens* and *Staphylococcus pyogenes aureus*, the rabbits recovering from the infection or remaining healthy. He concludes that hypochlorous acid intravenously administered is to be regarded as of therapeutic value; the antiseptic apparently delays the development of the bacteria and destroys their toxins. It is suggested that the destruction of the toxins is in the nature of a protein coagulation.

Complete Syphilitic Alopecia.—Loyd Thompson calls attention to the fact that complete syphilitic alopecia is not mentioned by most text-books, or is dismissed with the statement that it is a rare condition. He refers to several instances that have been reported in the literature and reports a case. The most striking feature in this case was the absolute complete alopecia, there being not a single hair on the entire body. Even though the Wassermann test, which at first was strongly positive, became negative under treatment, he still continued to show a condition of complete alopecia.—*Journal of the American Medical Association.*

Book Reviews.

THE TREATMENT OF ACUTE INFECTIOUS DISEASES. By FRANK SHERMAN MEARA, M.D., Ph.D., Professor of Therapeutics in the Cornell University Medical College in New York City. Attending Physician to Bellevue Hospital, New York. Price, $3.50. New York: The Macmillan Company, 1916.

THE chief faults of textbooks on treatment are that they are often mere compilations and that the methods of treatment are outlined in a broad, general way that leaves much to the imagination of the student or practitioner who uses them. These faults are avoided in Dr. Meara's book. Based entirely on his own wide experience it describes tried remedies and methods. In addition all methods are described in detail, even to the proper making of a bed, so that the work is also a manual of therapeutic technique. It contains thirty-five chapters, each devoted to a single disease, and while the author's practice of detailed description has led to a good deal of repetition, the space so used is not wasted. At the end of each chapter there is a summary of its contents, convenient for ready reference or review. It is a pity that such a useful volume has suffered so much from inadequate proof-reading. There are many instances of obscure or even ungrammatical construction which would have been eliminated by a more careful inspection of the proof. On page 28 Rosenau is made to defend the doctrine of the transmutation of the streptococci; it should read Rosenow, of course. In the chapter on Diphtheria, hardly enough importance is given to the Schick test, which is merely mentioned. It is, however, a valuable book and can be recommended especially to students.

INFANT HEALTH. A Manual for District Visitors, Nurses, and Mothers. By J. (SHAWNET) CAMERON MACMILLAN, C.M.B., A.R.San.I.; Lecturer (First Class Diploma) Sick Nursing and Popular Health, Edinburgh; Inspector of Midwives and Health Visitor, Oxford; Formerly Senior Health Visitor, Aberdeen. Price, 75 cents. London: Henry Frowde, Oxford University Press; Hodder & Stoughton; New York: Oxford University Press, American Branch, 1915.

THIS is a small manual of 128 pages in which there are described in simple language the physiology and hygiene of pregnancy, and the care of the infant. There is a foreword of endorsement from Sir William Osler and one cannot but agree with him that this book is "full of sound knowledge and common sense"—a virtue that is sadly lacking in many similar books of greater size and pretension.

A MANUAL OF HYGIENE AND SANITATION. By SENECA EGBERT, A.M., M.D., Professor of Hygiene and Dean of the Medico-Chirurgical College of Philadelphia; member of the Academy of Natural Sciences of Philadelphia. Sixth Edition, Enlarged and Thoroughly Revised. Illustrated with 141 Engravings and 5 Plates. Price, $2.25. Philadelphia and New York: Lea & Febiger, 1916.

IN this edition due attention has been given to changes and advances in sanitation during the past few years. At the same time, since the author's purpose is to provide a textbook, he has exercised a wise conservatism regarding new ideas. He has added an entirely new chapter on Industrial Hygiene and Occupational Diseases, embodying in a general way present views on these subjects. He gives special attention to the changing views regarding air pollution and ventilation, water purification and sewage disposal, military hygiene, and to the demonstrable achievements in life-saving and health conservation in recent years. The book is admirably adapted for use as a text-book in high schools or colleges, or for the lay reader who wishes a succinct and comprehensive view of this subject.

AN INTRODUCTION TO BACTERIOLOGY. For Nurses. By HARRY W. CAREY, A.B., M.D., Former Assistant Bacteriologist, Bender Hygienic Laboratory, Albany, N. Y.; Associate in Medicine, Samaritan Hospital, and City Bacteriologist, Troy, N. Y. Price $1.00. Philadelphia: F. A. Davis Company, 1915.

THIS little work is based on the lecture notes used by the author in teaching bacteriology to nurses during a period of eight years. There is no attempt to do more than present such of the principles of the science as are necessary for the nurse to know. The author is to be congratulated on having performed a difficult task with much skill; and the volume, while small and unpretentious, is authoritative and well written. The book is commended to the notice of those in charge of our training schools for nurses.

MEDICAL LECTURES AND APHORISMS. By SAMUEL GEE, M.D. Fellow of the Royal College of Physicians, Honorary Physician to H. R. H. the Prince of Wales, and Consulting Physician to St. Bartholomew's Hospital; with Recollections of Samuel Gee by J. WICKHAM LEGG, Hon. D. Litt. in the University of Oxford, F. S. A., London; Sometime Assistant Physician to St. Bartholomew's Hospital, Lecturer on Pathological Anatomy, and Demonstrator of Morbid Anatomy in the Medical School. Price $2.00. New York: Oxford University Press, American Branch, 1915.

THIS is the fourth edition of some of the more important lectures, papers, and articles published in his lifetime by Dr. Samuel Gee, together with a collection of aphorisms culled from his books and lectures. The fact that this publication has passed through four editions in a comparatively short time is witness to the interesting character of this record of personal experience. The "Recollections of Dr. Samuel Gee," as presented by J. Wickham Legg, picture him as a man of prodigious learning, not only in medicine, but in philosophy, history, and literature. The value of the book lies perhaps more in the delineation of a personality embodying the ideals of the highest type of physician than in the value of the medical knowledge with which most physicians conversant with medical literature are already familiar.

BANDAGING. By A. D. WHITING, M.D., Instructor in Surgery at the University of Pennsylvania; Surgeon to the Germantown Hospital and to the Southern Home for Destitute Children; Assistant Surgeon to the German and the University Hospitals, Philadelphia. Price, $1.25 net. Philadelphia and London: W. B. Saunders Company, 1915.

IT is refreshing to find a book on bandaging that is just what is purports to be—namely, a book that teaches bandaging and does not also dabble in the diagnosis and treatment of fractures and dislocations, or present an incomplete, and hence more or less useless, discussion of subjects belonging to the realm of minor surgery. In this book Whiting is concerned solely with bandages and the methods of their application. The various materials used for the roller bandage and the best ways to prepare them for use are first discussed; then the cardinal priciples in bandaging are enunciated; the fundamental bandages—circular, spiral, reverse, figure-of-eight, recurrent—are described and illustrated; and finally all the special types of bandages in common use in the various regions of the body are taken up in detail. There are also short chapters on the use of the many tailed and handkerchief bandages, these latter being especially useful in emergencies.

While some of the descriptions might profitably be clarified a bit, as, for instance, that concerning the application of the Velpeau, as a general rule the reader can scarcely mistake the directions, especially as the illustrations are often sufficient in themselves to indicate the course which the roller must take. We fully agree with the author in the statement that the muslin roller should be used by one who is learning the art of bandaging; and would add that while bandaging has not yet declined to such an extent as to be called a lost art, it is unfortunately true that the larger percentage of doctors and nurses of the present day and generation put on so-called bandages of which graduates of twenty or more years ago would be ashamed. Even if the young doctor has no pride in the matter, he should understand that a neat, comfortable and skillfully applied bandage makes an impression on the average patient and is thus an asset that will often put extra dollars in his pocket. This is a valuable book for those who wish to become proficient in the art of bandaging.

SEXUAL IMPOTENCE. By VICTOR G. VECKI, M.D., Consulting Genito-Urinary Surgeon to the Mount Zion Hospital, San Francisco. Fifth Edition, enlarged. Price, $2.25. Philadelphia and London: W. B. Saunders Co., 1915.

THE previous edition of this book appeared in 1912. We note that the section on psychoanalysis contains double the amount of matter in comparison with the fourth edition; and the entire text on psychicohygienic treatment has been increased by eighteen pages. In his latest preface the author calls attention to advances in instrumentation. He thinks the meddlesome surgery of the ovary of past days may be repeated in connection with the colliculus seminalis and seminal vesicles.

Society Reports.

THE MEDICAL SOCIETY OF THE STATE OF NEW YORK.

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, N. Y., May 16, 17, 18, 1916.

(Special Report to the Medical Record.)

(*Continued from page* 1024.)

SECTION ON GYNECOLOGY AND OBSTETRICS.

Tuesday, May 16—First Day.

DR. GEORGE GRAY WARD, JR., NEW YORK, IN THE CHAIR.

A Further Report on the Technique of Abdominal Cesarean Section. — Dr. WILLIAM M. BROWN of Rochester read this paper. This subject had been presented by him before, when he had proposed a modification of the Davis operation into an extraperitoneal one. The present technique had been evolved on account of the evil effect of manipulation of the intestine, which accompanied most abdominal surgery. Every operator recognized the need of packing the cavity with gauze to keep the uterine contents from spilling into it, and also the need of keeping the abdominal firmly against the uterus. Assistants experienced great difficulty to hold these together till the child was safely delivered. It was found that patients who suffered from most shock, distention, and pain were the ones who had had most traumatism and handling in the peritoneal cavity. To avoid the slipping down of the uterus into the pelvis before the incisions were closed, Dr. Brown had devised at first a method of temporary suturing of the uterus to the abdominal wall, so that an assistant could be dispensed with. This prevented emptying of the uterine contents and protected the viscera from handling. It was at first feared that excessive hemorrhage might result from this method, but it was found that the bleeding was more easily controlled than in pelvic delivery. Later a procedure had been introduced which simplified the procedure still more; this was to use from four to six of the ordinary towel clamps of Moynihan or Backhaus, and clamp the uterus firmly to the abdominal wall, instead of using sutures. Dr. Brown gave an analysis of 15 cases treated in this way, in which there had been no deaths, and recovery had been remarkably comfortable and free from vomiting and distention. His conclusions were therefore, that (1) fixation of the uterus to the abdominal wall before delivery possessed distinct advantage to the patient, protecting both from infection, and from subsequent pain and discomfort; (2) patients who underwent this operation did not suffer more hemorrhage than under the old form of operation or of pelvic delivery.

Dr. MILLER of Syracuse said that nothing particular was gained by fastening the uterus to the abdominal wall. Infection was not likely here, it might do harm in the endometrium, after the placenta had been removed and would be more serious than in the peritoneum.

Dr. BRYAN said that he had used a similar technique, but he had better results since he had been doing the Davis operation with high incision, and he had paid very little attention to the contents of the uterus and whether they escaped or not. He made a special point of telling the assistant to keep his finger in the upper angle of the uterine wall and let the operator do the rest. He had attempted to suture the uterine wall to get a mechanical grip, but it cost extra time and traumatism. If one succeeded, one had not accomplished much.

Dr. BROWN, in closing, said that he had one case of infected uterus in a hysterectomy case. He did not know the patient had elevation of temperature, and she was already on the operating table and he was not told until the operation was finished. He was impressed with the fact that while the woman had a severe sepsis, chills lasting 25 minutes, temperature 106 deg., there was no infection of the peritoneum whatever, it was a pure septicemia. She got perfectly well.

The Influence of Luetic Invasion in Gynecology and Obstetrics.—Dr. J. WESLEY BOVEE of Washington, D. C., read this paper by invitation. He stated that prior to 1905 the diagnosis of syphilis was based entirely on clinical evidence. The discovery of the *Spirochæta pallida* in that year, and the Wassermann test in 1907, made scientific diagnosis of the disease certain. Arsenic having been found in the endometrium and menstrual blood, its use promised well and it had been found efficacious in treatment; Ehrlich's announcement of "606" in 1909 was therefore received with rejoicing. While this had not proven entirely specific, it was undoubtedly of great value. The foremost evidence then of the presence of syphilis rested upon the finding of *Spirochæta pallida*, although its absence did not prove absence of the disease. The Wassermann reaction might be stated to be about 84 per cent. specific, though not absolutely diagnostic. Care in the technique might make it more certain, and reliable tests were very desirable, especially in the negative histories and "denied" class. The disease was found to be about eight times as frequent as admissions would state. There was found to be an alarming prevalence of lues among those who denied having it, or who presented no symptoms of it. Morrow and Neisser stated that 5 per cent. of the German population, and 2 per cent. of the population of the United States had been infected. In 619 cases collected from gynecological and obstetrical clinics by the reader, there was a probable total of 38 per cent. infections; about 60 per cent. of these were white women. Luetic infection in females was much more obscure and easily overlooked or mistaken for other conditions than in the male. Cervical chancre closely resembled erosions and infiltrations. In one case seen, there was marked resemblance to cervical cancer. Local manifestations of luetic invasion of the female genital tract were slight, evanescent, and disappeared without leaving trace, and commonly escaped detection. Tertiary lesions of the cervix, however, were sometimes seen. Possibly spermatozoa carried spirochaetes into the ovaries and tubes, but thus far this was unproven. Dr. Bovee then considered the relationship of lues, as regards, which he said was highly important. He discussed the probable routes of infection from mother to child, and also the reliability of Colles' law, which he said should be subject to revision. Dr. Bovee felt that there was no such thing as a healthy mother with a syphilitic child, and *vice versa*. Infection was latent in one or the other. He felt that once a diagnosis of lues was established treatment should be as vigorous as was compatible with safety. It would seem beneficial perhaps to regard all patients as at least mildly luetic and to apply antiluetic treatment. Short of this activity patients were not receiving due care on the part of the obstetrician. Should compulsory diagnostic laws be enforced, immeasurable benefit might be hoped from them, and the capacity of insane asylums would not be so severely taxed. Tuberculosis was a harmless disease as compared to syphilis.

Dr. T. J. WATKINS of Chicago said that all gynecological and obstetrical cases should have the Wassermann test. Two papers had appeared which brought out very emphatically the need of this test. A man who had made examination of 4,000 cases found that of those who had a positive Wassermann 50 per cent. were women in whom syphilis was not suspected. The importance of that was very evident. In a paper recently read before the American Gynecological Society it was stated that the Wassermann test was found positive in 50 per cent. of unsuspected cases. Recently in Chicago they had been making a Wassermann test of all ward cases and had been very much impressed with the frequency of the positive reaction where it was not suspected.

Dr. G. G. WARD of New York said the matter was of interest in regard to the question of Colles' law which they had been led to believe was proven incorrect. At a recent meeting in Washington, however, Dr. William Whitridge Williams read a case which seemed to prove that this law might hold good. He had a case in his service of a negro woman who had had 11 labors, under his control. She had had repeated Wassermann's but all negative. The first five labors were perfectly normal, the sixth was twin birth, and one child was markedly syphilitic and one not. This was probably a case of superfecundation. Subsequent labors under observation gave no evidence of syphilis. The woman never showed syphilis. If the woman had two lovers at the time of conception, it would be the strongest evidence that there was reason to believe in the validity of Colles' law.

Diagnosis in Gynecology; What a Routine Physical Examination of the Female Pelvis Should Be, and What It Should Accomplish.—Dr. THOMAS J. WATKINS of Chicago read this paper by invitation. He apologized for presenting an elementary subject to the meeting. He felt, however, that standardization of methods was very necessary. Palpation should mean comparison of pal-

pation of one part with another. Such comparisons must have some value. Kidneys should be palpable in a very large number of cases, except where there was heavy deposit of fat. They should be palpated by putting one hand under the ribs in the usual position, elevating slightly, and putting a delicate vibratory pressure, just as one would engage the uterus or ovary between the hands. If one was not certain, the hand should be shifted to a point where no palpation was obtained, and then by going back. Palpation of an enlarged lobe of the liver, or of an enlarged gall-bladder, had to be carefully distinguished from the kidney palpation. Dr. Watkins found the normal appendix a thing of the imagination, but of the chronic appendix he said that, on palpation, there should be more tenderness over the appendix than over the corresponding point on the opposite side. It was often important to let the patient do the palpation, as the amount of pressure that could be borne could be judged and there was no stimulus to contraction of the muscles. The facial expression of the patient was also important.

Dr. MILLER of Syracuse said he had listened also to Dr. Watkins' paper with pleasure, but he would like to go a little further than Dr. Watkins in the subject of abdominal palpation. Dr. Watkins had told them the necessity of appreciating the position of these organs in their normal and pathological positions. The touch should be educated to appreciate these. This work was not easy and could only be acquired by those who were constantly doing it. To them it was simple and familiar. Cases were constantly seen, however, that varied from the supposed condition. Many diagnoses erred. There was a page in the *American Journal of Obstetrics* where there was a picture of a hand and in the index finger there was placed an eye. If it were possible, the speaker said he thought that surgeons should have an extra eye in the index finger, so that they could reach conclusions in pelvic palpation.

Torsion of the Pedicle of Ovarian Cysts Complicating Acute Appendicitis.—Dr. ROSS G. LOOP of Elmira read this paper. This condition, he said, was first mentioned by Rokitawski, in 1841, and in 1855 thirteen cases were reported. A large literature had since grown up on this subject, dealing mostly with conditions in pregnancy and the puerperium. It was three times as frequent in pregnant as in nonpregnant women. Operations had been reported on children as young as three years. As a complication of acute appendicitis, torsion of an ovarian cyst must be so common that it is not reported, or it must be very rare. Dr. Loop had been able to find eight cases in the literature and he could add four cases from personal observation. In all the cases the appendix was clearly and primarily involved. The diagnosis of cyst should be made before acute symptoms supervened. The causes of torsion were many: the tendency for organisms to grow spirally; the length of the pedicle, the freedom from adhesions, the heavy lobular state of the cyst, all were predisposing causes. Emptying or filling of bladder or rectum, violent peristalsis, increased pressure, coughing, vomiting, lifting, falls, or jolts might all cause rotation in a cyst, which often was insecurely balanced. Muscle spasm, vomiting, and distention, so often accompanying appendictis, were frequent features that would favor torsion. The results of sudden strangulation were gangrene, infection and peritonitis, without any increase in the size of the cyst. The cyst became edematous, dark, with thrombosis of the veins, with more or less bloody contents.

Wednesday, May 17—Second Day.

Results and Technique of Vaginal Subtotal Hysterectomy for Procidentia and Cystorectocele, Associated with Fibroid Growths or Fibrosis Uteri.—Dr. HIRAM N. VINEBERG of New York presented this subject. In a method described before the New York Academy of Medicine in February, 1913, Dr. Vineberg said he had dealt with amputation of the body of the uterus at the internal os, and the use of the cervical stump to hold up the bladder by anchoring it to the subpubic fascia. He claimed that this method possessed several advantages over total hysterectomy, in supporting the bladder. It was also attended by less hemorrhage. At that time ten cases had been thus treated, but since then twenty additional cases had been operated upon. The technique was as follows: (1) Longitudinal incision of the anterior vaginal wall, extending from near the urethral meatus to within an inch or an inch and a half of the cervical os; (2) separation by sharp or blunt dissection of the vaginal walls from the underlying bladder; (3) pushing of the bladder up from the uterus and base of the broad ligament by gauze dissection; (4) transverse incision of the vesicouterine peritoneal fold; (5) delivery of the body of the uterus through the vaginal incision; (6) if the ovaries were to be preserved a ligature was passed round the ovarian ligaments and the tissues cut between the ligature and the uterus. If they were to be removed, the ligature was passed around the infundibule pelvic ligament; (7) a ligature was passed at the level of the os internum; the body of the uterus was amputated at the desired level by a wedge-shaped incision, the thin edges of the wedge toward the cervix; the edges of the wound then brought down by continuous cat gut suture and the raw area of the cervix sutured laterally in the same way; (8) the cervical stump was then sutured to the subpubic fascia and anterior vaginal wall. Further modifications of this operation would be the shortening of the utero sacral ligaments to prevent the cervical stump from pushing downwards. Of 32 cases 25 had given excellent results. One was a failure.

Technique of Vaginal Plastic Operations for Cystorectocele and Prolapse of the Uterus.—Dr. R. T. FRANK of New York said that this was an attempt to standardize technique in order to obtain more uniformity of results. The technique was described which in ten years had given most uniform results and which was most readily taught to house surgeons. The operation for cystocele was as follows: Anterior lip of cervix seized with volsellum and pulled to vulva; mucosa seized with artery forceps half inch below mucosa; mucosa incised between the two fixed points and reflected on both sides for one-half inch along line of incision superficially; neither deep or wide reflection being permissible; narrow flaps on each side seized with two forceps by assistant at lowest angle of wound, bladder freed from cervix in median line by snips of scissors; the bladder freed by pushing firmly upward against the cervix until lateral fibers become plainly demarcated; after exposure of these bladder pillars, vaginal flaps to be separated more widely; a thin line of fascia continuous with the pillars to be preserved. The repair was to be done as follows: Two transverse sutures of medium chromic cat gut passed, taking in first one pillar then the cervix, then the opposite pillar; upper suture passed at lower border of peritoneal reflexion, the next one-half inch below it; pillars united firmly in the median line by tying, thus raising the bladder to a higher level and making it flat instead of bulging. For rectocele the repair was as follows: After exposure, the rectum should be pushed away from lateral structures, with the finger. The approximation should take place at the descending rami of the pubis. The rectum should be held aside and a mass of tissue grasped and a heavy chromic cat gut suture should be passed, taking in lateral fascia and underlying muscle on one side, then forming a partial purse string suture, grasping the rectal fascia between rectum and mucosa, around the upper part of the rectocele, and again grasping the lateral structures on the opposite side, the suture being tied. The rectum was thus firmly held fixed and back. The gap in the mucosa should then be sutured with interrupted silk sutures as this region later became less accessible.

The Usefulness and the Definite Limitations of the Pessary Treatment of Retroversion and Prolapse.—Dr. R. L. DICKINSON of Brooklyn read this paper. He said that the pendulum had swung from one extreme to the other in the treatment of retroversion, in former times it had swung too much towards pessary treatment, and now it swung too much to the surgical side. One often heard sweeping condemnation of pessaries but it could be safely said that there were a great many cases of retroversion, that were practically symptomless, that could well be left alone. In the group that might be taken care of by pessaries could be included: (1) The retroversions of early pregnancy; (2) postpartem retroversions; (3) "bad risks"; (4) a few cases where retroversion affected the bladder. To the operative class belonged the cystocele and rectocele grup. Dr. Dickinsen said that he was more inclined than formerly to operate upon elderly women. They stood operation well and might have twenty years to live after an operation. They should be given a choice of operation or be told that they would have to wear a pessary for the rest of their lives. Working women as a rule should be operated upon. They had no time to keep coming to the physician's office to be examined. In the case of young girls it was better to do an operation rather than give them the "office habit." There was distinct use for a pessary for a few months after operation, until the organs had had time to recover tone.

Dr. J. Riddle Goffe of New York said that the usefulness and the definite limitations of the pessary in the treatment of retroversion and prolapse had been very clearly and convincingly presented by Dr. Dickinson. In his mind and in his practice the pessary had a definite place in the treatment of these conditions, but speaking broadly, it was only a temporary device, to be discarded and supplanted by operative procedure when the time and place served. Age was rarely a contraindication for surgical procedure in a woman who was able to be upon her feet. He found that old women stood vaginal operations surprisingly well, and the age of women in the sixties or seventies, in itself, did not forbid the surgical procedure. Passing to the discussion of Dr. Vineberg's paper, Dr. Goffe said he had a very limited experience with the operation described, and then more for the purpose of testing it out than because of its appeal to him as a rational and desirable operation. He was a great stickler for following Nature, in her arrangement and physiological function, in dealing with all human organs and indeed with every part of the body.

Dr. Thomas J. Watkins of Chicago said the pessary was tending to go out of use on account of its abuse. It had a very important field, even if a limited one. As regards prolapse operations, he felt that Dr. Dickinson had mentioned a very important thing in regard to cystocele and rectocele, that was that conditions got worse especially menopause so that rectocele and cystocele conditions should usually be corrected before they became extensive, so that operative procedures in this class of cases gave better results. In regard to the transposition operation, considering the results after 8 or 10 years, the more he studied the subject, the more and greater problems he encountered. There was, he felt, no one operation that was best for prolapse of the uterus or of the bladder. Operative procedure should be modified to suit the case. In the transposition operation there was danger of protrusion of the fundus. That might be the fault of the operator, the fault of the selection of the case, or the fault of the technique. If one removed the uterus, and sutured the broad ligaments and thus supported the bladder, there might be failure of good union and the cystocle would recur, then it was impossible to do anything for that patient short of obliterating the vaginal canal. If, however, one did transposition operation, it was easy to do a second procedure to correct any difficulty.

Dr. E. Montgomery of Philadelphia said that he heartily agreed with Dr. Watkins that the operation should be adapted to the condition rather than that the patient should be adapted to the operation. There was no one operation adaptable to every class of patient.

Dr. H. S. Crossen of St. Louis said that he wanted to express appreciation of the papers and demonstrations he had seen presented that morning. He was especially pleased to see the subject of the pessary so clearly demonstrated by Dr. Dickinson. There was just one class of cases that he had hoped to hear Dr. Dickinson speak of, but he had not. That was the class of cases in which there was no shelf left for support. The ball pessaries would slip out in half an hour. The Smith pessary and other forms would slip out. In that type of case he had used the double horse shoe pessary. This should come into the hands of the general practitioner. It would be more and more used when understood.

Dr. J. W. Bovee of Washington, D. C., said that the further one got away from any one particular operation, or from any one form of treatment, the safer one was. Those that were addicted to one form of operation would find that they would have to use pessaries after operation, not as some noted surgeons had done, shortly afterwards as precautionary measures, but months later as reputation-savers. He felt that the best time to use a pessary was before operation. A large proportion of cases could then be helped. If the pessary was the right one it should not give symptoms. If it gave pain, it was not the right one.

Dr. R. R. Smith of Grand Rapids said that he indorsed most heartily what Dr. Dickinson had said in regard to the indications for the use of the pessary and of operations in cases of retroversion; especially what he had said in regard to cases which should be left without treatment in any form. In young girls and young married women before child-bearing there was nearly always a neurotic element and the less attention called to the pelvis the better. In older women operation alone should be used in certain complicated cases. But it would be well to bear in mind one thing. In women during the child-bearing age there should be no operation done which would interfere with this important function.

Dr. LeRoy Broun of New York said there were two ways of dealing with large uteri: Taking a wedge out of the uterus and bringing it down so that it would not protrude from the vagina, and Dr. Vineberg's method, of taking the uterus up in the anterioposterior diameter, and making it shorter instead of narrower. There was only one objection to this, and that was that by passing the structures anterior to the anterior wall, there would be a predisposition to pushing down of the cervix, as Dr. Vineberg mentioned occurred in two or three cases. The cervix should be well imbedded so that there could be no fulcrum action. He would not recommend such an operation in complete procidentia. He felt that the operation which would give the best result would be complete hysterectomy, sewing together the broad ligaments and putting the bladder on the top of them.

The Genital Reflexes and Their Rôle in the Production of Symptoms Arising in the Pelvis.—Richard R. Smith of Grand Rapids, Mich., said that the study of function had recently become as interesting as that of pathology, and that the relationship of both must be considered, so that the capacity of a crippled organ for work and recovery of its functional equilibrium might be estimated. Careful study of the physiology of the pelvic organs led to establishment of a fact, sometimes neglected, that perfect function depended upon integrity of the parts and also upon certain ductless glands, constitutional conditions, and the behavior of the nervous system. It would be the work of the future to distinguish between disturbances due to disease or injury to the pelvic organs, and the so-called functional disturbances. There were rich fields for investigation, such as the menorrhagic conditions associated with hyperthyroidism, the amenorrhoea of tuberculosis, or conditions arising from disturbance of the nervous system. He would particularly deal with the latter group. The genitourinary reflexes might be divided into two groups, first, those belonging to the spinal and sympathetic system, second those of the higher cerebral centers. The first group were automatic, simple and unconscious, and were designated as subcortical, and the latter were psychic. The first group of reflexes were able to maintain normal generative functions, for women with transverse lesions of the cord were able to menstruate and conceive, and had normal labors. Dr. Smith then dealt with various sympathetic reflexes, such as contraction of the anus and perineum which was protective in character, contraction and retraction of the uterine musculature and production of secretion from the Bartholinian glands. The psychic reflexes belonged to the higher development of the brain. Their stimuli was physiological, the psychological beginning when the impressions had reached the cortex. Perceptions varied with the quality of stimuli. Only exaggerated processes reached consciousness. The mental make up and sum total of experience determined mostly the manner of the reflex. The purpose of some reflexes was clear, such as contraction at the fear of some object, or the production of the secretion of the Bartholinian glands, but some reflexes were more obscure, such as blushing under embarrassment, or violent movements of the intestines under fright, or cessation of menstruation after shock or grief. These were all conscious reflexes, but some were not under the direct control of the will. The mechanism of emptying a full bladder illustrated the employment of both psychic and subcortical impulses. The application to gynecology was this, that the mental make up of the patient might produce irrational ideas and distortions in the presence of a perfectly normal pelvis. It was the misrepresentation of very slight functional disturbances which led to a lot of harmful and useless surgery. When but slight lesions were present the mental picture must be considered as the direct cause of symptoms arising from the pelvis. The stress of patients living under emotional unbalance produced great exhaustion and fatigue, even under conditions that would seem to be conducive to normal life.

Gynecological Surgery in Hysteroneurasthenic Patients.—Dr. H. S. Crossen of St. Louis said there were three questions to be asked. (1) Was operation indicated? (2) If indicated, what was the preferrable time for operation, before or after the course of neurologic treatment? (3) When operating should more or less conservatism be practiced than in an individual with a normal nervous sustem? In regard to the first

question he said that where the pelvic condition was seriously depressing the general health through blood loss, or pain due to lesion, the lesion should be removed, irrespective of the co-existing nervous disease. Cases had to be carefully studied as there were two types to consider, first, those in which the chief symptom was pelvic pain, with a lesion which accounted for this; and second, those in which the symptoms were extra-pelvic, but were supposed to be due to intra-pelvic lesion. In markedly neurasthenic patients, where pain was of secondary importance, operation was contraindicated; but, if prolonged treatment with all ordinary measures failed to relieve pain, then operation was indicated. In the second group operation would relieve only in so far as nutrition was affected by the lesion, and in so far as general nervous irritation might be allayed. To the second question as to when operation should be performed Dr. Crossen said that when it was necessary sooner or later, it had better be done before neurological treatment. Rest in the hospital might give a good start to the recovery of the patient. But, if the influence of the lesion was questionable, the neurologic treatment should come first as, with treatment, operation might be rendered unnecessary. This treatment should be by a competent neurologist. As regards to the amount of conservatism necessary in operation on these nervously unstable patients, the safest rule to follow was "Radicalism until the last ovary is reached and then great conservatism." Instability of the nervous system made the complete removal of the ovarian influence exceptionally hazardous, consequently, every effort should be made to preserve an ovary or a functionating part of it. This rule should be modified in regard to young patients or when a patient had very strong wishes on the preservation of menstruation. When menstrual function was accompanied by so severe and prolonged pain as to indicate elimination of the function, hysterectomy with preservation of an ovary was better than with double oophorectomy.

Practical Aspects of the Internal Ovarian Secretion.—Dr. W. P. GRAVES of Boston said that he intended in this paper to point out certain matters of clinical importance in the bearing of physiology of the pelvis on modern gynecology. The importance of the ovarian secretion was shown in its influence on the external genitalia. Ovarian extract was shown to have great effect on castrated animals, though it was not known exactly how this influence was exerted, nor the exact source of the important element in the substance, whether from the whole ovary or from the corpus luteum. The importance to the gynecologist was its relation to deficient genital development as hypoplasia and infantilism, and secondly natural cessation of ovarian function, namely, atrophy. In considering the general bearings of this subject from the standpoint of gynecology Dr. Graves came to the following conclusions: (1) That in genital atrophy there might occur abnormalities of great importance to the gynecologist. (2) That circulatory disturbance of the external genitals, such as kraurosis and furunculosis of the vulva, might be greatly relieved or cured by the administration of ovarian extract. (3) That ablation symptoms were, in the great majority of cases, markedly relieved by administration of ovarian extract. (4) That after hysterectomy, vasomotor smyptoms followed transplantation of ovarian tissue and also leaving of the whole ovary in situ, occurred similar in degree and frequency to those following total ablation of the ovaries. This condition and (5) functional amenorrhea in the young were often relieved by the administration of ovarian extract. (6) In the experience of the writer, extracts of the whole ovary were more efficacious than extracts of the corpus luteum in organotherapy.

A Review of Five Hundred Cases of Pelvic Infection with End Results.—Dr. JOHN O. POLAK of Brooklyn read this paper. He said he found the end results of pelvic infection very illuminating, in regard to records of conservatism, operative and non-operative. They had made a careful study of cases treated surgically and non-surgically, with regard to etiology, clinical course, pathological findings, condition on discharge, and anatomic symptomatic cures, after re-establishment of pelvic function. Cases included: Non-operated cases; cases operated on for sterility, after symptomatic cure; cases where infected structures were removed, but with preservation of menstrual function; cases in which uterus and tubes were ablated; and last, cases in which panhysterectomy and double salpingo-oophorectomy was done. Study of results of conservation of ovaries, with resection or suspension had caused them to swing toward more radical treatment, because it had been found that it was useless to conserve ovulation without menstruation, and that a conserved ovary behaved badly in cases of pelvic infection. It tended toward cystic formation and pain, and the trauma and circulatory disturbance disturbed the functional activity. Another important point was that no operation should be undertaken during the acute stage of infection, or when exudate was present. Bacteriology of the infection was important as different organisms had different histories. Gonococcus and streptococcus infections differed widely, the former causing suppurative salpingitis, oophoritis and peritonitis, the latter lodged almost always in the parametrium. In non-operative cases, patients suffering from post abortive infections, the women were very ill on admission. They were put in a high Fowler position, a rectal tube was inserted, ice bags were applied to the lower abdomen, and absolute gastric abstinence was enforced. Later, whenever possible, the patients were kept in the fresh air. Some cases required drainage by posterior colpotomy. Of 104 patients 101 recovered. Another class of 168 women wished to be cured of sterility. They presented a similar history, of poor health since marriage, and if they had been pregnant, birth was followed by pain, leucorrhea, or some menstrual anomaly. Examination of the husband generally showed evidence of former indiscretion with presence of infective cocci in the prostatic urethra. In few of the women were gonococci found. Sterility, dysparunia, and leucorrhea were the symptoms. Of the 168 cases, only 20 could be relieved of sterility. The next class consisted of 107 women, with gross pelvic masses, in whom infected structures were removed, yet menstrual function was conserved. Eighty of these women remained well. Others returned for reoperation for metrorrhagia, menorrhagia, or cystic ovary. The fourth group comprised 89 cases, in some of whom a portion of the ovary was conserved. These results were among the most disappointing, and 15 had been reoperated, as headaches, flushes, sweats, etc., and burning pain over the ovary had followed. The final class comprised 22 women in whom such pathological destruction had taken place that any conservation was out of the question. These women all recovered. Climacteric symptoms were prominent in four; the others had good general health. One important conclusion from this work was that total extirpation was better than conservation of vitally impaired structures.

Infection of the Uterine Appendages; Its Sequelæ; Its Non-sacrificial Treatment.—Dr. E. E. MONTGOMERY of Philadelphia said that infection of the appendages was favored by any condition that favored congestion of the pelvic structures. These conditions lowered resistance of the tissues and promoted nurture of the infecting elements. The infection spread by the mucous surface, accentuated by the disturbing influence of menstruation. The most usual organisms were gonococcus, staphylococcus, streptococcus, colon bacillus, tubercle bacillus, pneumococcus, and influenza bacillus. The gonococcus was most superficial in its effect, but prepared the ground for other organisms, and was thus more baleful in its work. Nature endeavored to protect herself by closing up the tubal ends against the invader. Sometimes the infection was so virulent as to prevent this, sometimes so slight that it did not take place. The peritoneum was sometimes directly infected through the wall, causing an extensive abscess involving the tube and ovary. Such effects necessitated the sacrifice of the organs. Causes of infection might be impure sexual relations, want of care in labor or abortion, or severe pelvic inflammation from infection, in which sometimes relief could be obtained by drainage through the vagina. In these acute infections the plugged up tube became a sac filled with serous, bloody, or purulent contents. All the adjacent structures might become involved, and the ovary might become a mere abscess cavity filled with pus. Should such a case fall into the hands of a surgeon who advocated prompt surgical treatment for all pelvic inflammation, sacrifice of the appendages would be made. This procedure would break down the barriers raised by nature and even more dangerous extension might take place. The limited number of gynecological beds in hospitals and the urgent desire of patients to go home, frequently hurried the resort to surgery, but the frequent cases of women who had had pelvic peritonitis justified careful revision of the procedures. It required moral courage to contest the brilliant results obtained by surgery,

but preservation of function was of highest importance to the woman. To do this absolute rest, promotion of elimination, establishment of early immunity and perfect cleanliness were essential. If pus collected in the pelvis it could be reached by vaginal incision and drainage. Finally even in abdominal exposure the structures should be preserved unless absolute destruction and extensive invasion existed.

Resection of the Pars Interstitialis in Diseases of the Fallopian Tubes, with the View of Preserving the Uterus.—Dr. L. K. P. FARRAR of New York read this presentation. Dr. Farrar said that to the thoughtful surgeon, one of the most difficult problems that gynecology presented was what to do with diseased fallopian tubes. If drainage through a vaginal incision, or if salpingostomy could be performed, that should be done, but if one or both tubes were hopelessly diseased their removal would seem imperative, and that of the uterus also, because the stumps of the tubes left would be a source of metritis and discharge, or the site of intestinal adhesions. Also, without the tubes, the uterus served no purpose. The stump of the fallopian tube, or the pars interstitialis, might be the seat of various growths or polypi, due, according to Chiari, to old gonorrheal salpingitis. It seemed true, owing to the pouch-like form of the pars interstitialis, that it was a source of continued infection, most frequently gonococcal. This was not always the case. Many uteri recovered after resection of the tubes. Possibly with the removal of the primarily infected part, the immunes developed in the rest of the pelvis were able to take care of the rest of the infection, but this could not always be hoped for. Therefore, resection of the entire tube was considered. The operation consisted of the following steps: (1) Preliminary curetting and disinfection of the uterine cavity; (2) laparotomy incision, inspection of ovaries (oophorectomy only to be done where imperative); (3) ligation of the ascending branch of the uterine artery; (4) excision of tube down to the uterine mucosa; (5) closure of wound with interrupted sutures. Twelve cases were quoted with good results and return to menstrual habit. The question then was was the uterus a useless organ after removal of the tubes? Dr. Farrar stated that a definite cycle of changes took place in the uterine mucosa in the menstrual cycle. Menstruation rightly considered, was the ultimate excretive expression of the internal secretory phenomena which occurred in the whole organism, and not only a local function of the uterus and its adnexæ. As Vigne expressed it, it exercised "a therapeutic effect on the health." The whole system had been planned for this periodic outlet and with difficulty the life of woman learned to adjust itself to its loss. Dr. William Polk, in 1893, in opposition to Lawson Tait and Robert Battey, had protested against the removal of the tubes and ovaries. He had defended his position with a broad knowledge of pelvic surgery and deep discernment into the needs of his patients. To quote the closing of the discussion he had said, "I can say that the woman has the right to have the operation tested. None of the patients I have operated upon has died. . . . The operation is a simple one, and I can assert that it is efficacious. . . . My wish is simply to give the woman a chance to retain organs which she values if we do not."

Renal Tuberculosis.—Dr. HENRY DAWSON FURNISS of New York read this paper. He said the presence of pus or red cells in the urine of women with leucorrhea, or bloody discharge, was not apt to be attributed to the right condition. Every such symptom should be accounted for. Sins of omission were many, and he had known patients who had had symptoms for years, which should have suggested correct diagnosis. Of 33 personally observed cases, in 20 per cent. there was history of other tuberculous lesions, of these 15 per cent. were associated with pulmonary tuberculosis. In 50 per cent of cases cystitis was the first symptom; in 15 per cent. microscopical hematuria, this was followed by cystitis. He thought that the hematuria was vesical rather than renal in origin. Renal or ureteral colic pain was seen in 15 per cent. of cases. The cystitis was found to be the most distressing symptom, and engendered loss of sleep from frequent urination. Nephrectomy was advised for this, before extensive bladder involvement had taken place. Pyuria was present in every case. Tubercle bacilli were found in slide in 85 per cent. of the cases. This appeared high, but was probably an understatement. Very early and very late lesions often showed no tubercle bacilli. A method of Crabtree of centrifuging urine at low speed to throw down the pus cells, and the supernatant fluid at high speed, rendered finding of the bacilli easier. Temperature did not seem to play an important part in this infection. The affected kidney was rarely found enlarged. In all except early cases there was bladder involvement, characteristic of tuberculosis. By the time patients applied for treatment the lesions were advanced enough to show characteristic changes. These were redness and induration of the ureteral orifice, often with nodular irregularities. With progress of the disease the induration increased, the meatus became more involved, the trigonum retracted, the ureter Shortened. Later ulceration occurred and finally the whole bladder became lined with granulation tissue. In cases of long duration the ureter was involved, and in catheterized urine the finding of tubercle bacilli was evidence of tuberculosis of at least one kidney. General health of these patients was usually good. Most cases were nephrectomized, with ligation and division of the ureter. The percentage of post operative fistulae was about the same whether drainage was used or not. Perhaps undrained cases gave better results. It seemed better to excise the ulcer through an extra incision, extraperitonally. Only one death had occurred as a result of operation, but this was a case complicated with pulmonary tuberculosis. About 30 per cent. of post operative fistulae had been reported, but this did not seem detrimental to the health of the patient, even though it lasted for as long as two years. Patients with long involvement seemed to do better and to have developed better immunity than those who had had the disease for a short time. After the operation there seemed to be a typical tuberculin reaction, exacerbation of other tuberculous processes, and rise of temperature, this being apparently due to liberation of tuberculous material into the body. About half of the patients seen were between 20 and 30 years of age. It was essentially a chronic disease and seemed to be rather frequent. The prognosis in operated cases was good.

Thursday, May 18—Third Day.

Some Mistakes in the Diagnosis of Ectopic Pregnancy.—Dr. C. C. LYTLE of Geneva, N. Y., said that this was a condition that was rarely recognized, and in spite of the fact that some writers asserted that it was a condition in which the diagnosis was written all over the face of it, it was a fact that diagnosis was frequently not made until rupture had occurred. Very divergent opinions had been expressed on the subject, some asserting that 40 per cent. of hospital cases were diagnosed incorrectly and that 50 per cent. of private physicians failed to recognize the symptoms, until after hemorrhage had occurred. It seemed, however, certain that physicians were not sufficiently alert to discover the condition which was frequently mistaken for acute appendicitis. The cases could be recognized as acute abdominal conditions. There was abdominal pain, vomiting, rigidity, and often overdue catamenia. Often other conditions, such as pyelosalpingitis, hydrosalpinx, gallstone disease, or cholecystitis were mistaken for ectopic pregnancy. In some cases of ectopic pregnancy the symptoms were not so severe as in acute appendicitis. It behooved the physician to think about, write about and talk about these cases, to find out just what were the characteristic symptoms. Considerable suspicion should be attached to a menstrual flow from five days to a month overdue, and the character and amount of the flow should be observed carefully. Pain was present in 80 per cent. of all cases, and a great diversity of symptoms which made diagnosis a difficult matter. This should, however, not be deferred until the classical rupture symptoms occurred, but when the symptoms were mild and before the disease had become urgent.

Dr. MILLER of Syracuse said that the subject which had been presented was of too great importance to pass by without making some comments upon it. It had given him great pleasure to listen to the paper. In the first place, in discussing this subject, he had come to feel that certain diseases were like pictures hung in memory's halls. They were so vivid on account of associations with them that they would be recognized under all conditions. The picture given by Lawson Tait was one of the noblest things ever given to the surgical world. Although ectopic pregnancy was a frequent condition, there were many physicians who had never met with a case, in the course of a long experience. That was because many cases had not been appreciated and some deaths had taken place without the discovery of the true pathology. The conditions found localized in the pelvis would never be known by any one symptom

at all times, and one saw cases where there were no symptoms until after hemorrhage had taken place, and then early death might ensue. It would depend upon which part of the tube gestation had occurred and the patient might die before interference sould take place. Physicians of the present day were better educated to recognize the symptoms than in the past, although the specialist saw more of these cases than other men because the cases were referred to him when met with. The fact that the ordinary physician received two dollars for diagnosis of these cases, instead of one hundred dollars as did the specialist, was no reflection on the diagnostic ability of the general practitioner. Nor was it a reflection on the hundred dollar man. A man had to do the best he could for the patient and money should not enter the question. It was a very difficult matter to diagnose ectopic pregnancy before rupture, although there might be certain characteristic symptoms. If the patient was under observation, and then rupture occurred, the physician might well know that something definite had taken place, but clinical pictures differed so materially that the physician had to reach conclusions by physical findings. Finding a lump on one side of the uterus might mean salpingitis, or it might mean ectopic gestation. In the presence of ectopic pregnancy there might be a rise of temperature, but the temperature takn by mouth did not record a very low grade of temperature, and a low grade inflammation in the tube might be due to salpingitis. These two conditions might well be found in association, the ectopic pregnancy on the one side and the salpingitis on the other. Unfortunately the case was often not brought to the attention of the physician until after rupture. Thus there were in the pelvis physical findings, confirmed by clinical history—a condition threatening the life of the patient which could not be absolutely foretold. Where there was lateral enlargement, there might be pain and spotting, but sometimes all symptoms were absent. The condition, however, might be very serious, and when there was doubt it should be put up to the patient that she should have operative work, if it was salpingitis the operation would do no harm; if it was ectopic the life would be saved and the patient would recover. He said he had operated on one hundred cases without any mortality, and then unfortunately the next three cases died.

Accidental Hemorrhage and Its Treatment.—Dr. JAMES K. QUIGLEY of Rochester, N. Y., discussed in this paper the opinions on the frequency of this condition and its treatment. Many writers considered it very infrequent, but in a small service he had had experience of four cases. In these cases there was a coincident albuminuria. Williams in 1915 published a monograph reporting two cases, in which he found microscopical infiltration of the uterine wall with blood, due to arterial changes with thrombosis. It seemed probable that toxemia caused both hemorrhage and a nephritis, the latter being the effect rather than the cause. The symptoms were usually sharp, constant, abdominal pain, sometimes followed by collapse. When the hemorrhage was concealed, and not free, it seemed to occasion more shock to the patient. The uterus was extremely tender and the fetal heart difficult to locate. Rupture might occur into the amniotic sac. The danger of a post partem hemorrhage later was present when the patient might die in shock. The operator should be ready to pack the uterus, as, in the external hemorrhage cases, the shock was proportional to the blood loss. In these cases the mortality was the highest for both mother and child, of any obstetrical complication, being variously estimated by different writers, but apparently averaging 80 per cent. for the mother and 73 per cent. for the infant. Cesarean section often proved the best means of delivery in these cases, but in very severe uterine bleeding hysterectomy had sometimes to be resorted to in order to save the patient's life.

Dr. G. G. WARD said that he would like to say a word on this subject. He had had a case a few months before of external hemorrhage. The patient was a primipara, 27 years of age, in poor general condition. She had evidence of Graves' disease, though it was apparently quiescent. She had slight exophthalmos and enlarged thyroid. She was waiting in the hospital until term and at term she started in labor. The head was engaged in the pelvis, when almost immediately she started in with a profuse hemorrhage of great quantity. She was attended by an assistant, who thought it was a case of placenta previa, but there was no evidence of this; it was purely external hemorrhage. On careful consideration of all the circumstances—the woman being a primipara, and having no dilatation of the small canal—Dr. Ward decided to do cesarean section. The case had a good result, the child and the mother both recovering. The cause was found to be an interesting one. It was due to shortening of the cord, not a short cord, and the cord was wrapped about the body three times. There was a typical "battledore placenta," and the hemorrhage was mechanical, the cord being so short that it caused a pull on the edge of the placenta where the hemorrhage came from. If operation had not been quickly done in this case, and if they had waited to deliver the child by the vaginal route, both child and mother would have been lost.

Dr. WILLIAM BROWN of Rochester said that he would like to call attention to one point of diagnosis in a doubtful case. Most of the grave cases were definite, but Williams called attention to the milder cases where bleeding was going on. That was one of the most valuable diagnostic aids. These cases, after extreme hemorrhage, might still have slow pulse, out of proportion to the degree of hemorrhage. Here, if a hemoglobin estimation was quickly done, it would be of great value. Moderate bleeding would bring down the hemoglobin to 60 or 70 very quickly.

Dr. QUIGLEY said that he was glad Dr. Brown spoke of hemoglobin estimation. Blood pressure was also important. He had not taken time to mention the mortality in ten cases of cesarean section. All the mothers recovered, and the fetal mortality was 50 per cent., which was better than the average.

The Treatment of Procidentia Uteri.—Dr. GEORGE CHANDLER of Kingston said that treatment for this condition was often of no avail unless aided by a suspension apparatus. The uterine ligaments were powerless to hold up the perineum. He had been doing the operation of Kocher, as modified by Murphy, in the Trendelenburg position, with a low transverse incision in the crease above the pubis. The recti abdominis were separated to the pubic bone; the uterus was pushed up from the outside through the vagina; if very small it was pulled up and turned to the right. The peritoneum was sewed tightly round the vagina to shut off the peritoneal cavity. The skin and superficial tissues were pushed upward from the fasciæ, the fasciæ were stitched together with cat gut, and skin and superficial tissues with silkworm gut. The uterus was let fall into this bed, and sutured, and the incision was closed. The tubes and ovaries might be freed from the uterus and dropped back into the pelvic cavity. Following this operation the patient might have pain in the bladder for some weeks, but the technique was very simple and the repair good. It was necessary to do the operation as near the pubic bone as possible in order to avoid future hernia. This operation had given good results after two and a half years. It should not be done until after the menopause and not in a fleshy woman.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, Held April 7, 1916.

DR. JOHN DOUGLAS IN THE CHAIR.

Chronic Intestinal Stasis.—Dr. FORBES R. MCCREERY presented a patient upon whom he had operated one year ago for chronic intestinal stasis. He stated that this patient was 41 years of age, unmarried, and had never had a normal movement of the bowels. Since having typhoid fever six years before her condition had been worse. Two years previously she had been sent to Saranac Lake for tuberculosis. She complained of abdominal pain, weakness, emaciation, shortness of breath on exertion, chilly and feverish sensations, and night sweats. Physical examination showed some old signs of tuberculosis, but no active lesion and no heart lesion was found. There was a slight goiter, but no exophthalmos or other signs of Graves' disease. Gastroptosis was present. The urine contained large amounts of indican, but was otherwise normal. The stools showed a very high grade of intestinal putrefaction, the predominating organism being the bacillus of Welch. The blood examination showed hemoglobin, 78 per cent.; red cells, 5,256,000; white cells, 9,200; polymorphonuclears, 79 per cent. Sigmoidoscopic examination showed only congested mucous membrane. The pelvic examination was negative. The eyelids and ankles were puffy. The patient was put on a low protein diet, given colonic irrigations of different solutions, boric acid, nitrate of silver, sugar, etc. Cultures of

lactic acid bacteria and Russell's emulsion were also given. After six weeks of this treatment she had improved immensely. The improvement, however, did not last, and except when receiving colonic irrigations she had no evacuation, save as the result of drastic catharsis and with great pain. Having become convinced that the cause of the stasis was a mechanical one, *x*-ray photographs were taken by Dr. Archibald H. Busby. These showed retention of the bismuth in the upper part of the sigmoid after ninety-six hours and after purge and irrigation. One quart of bismuth was then injected by rectum. It did not pass into the descending colon, but remained in the sigmoid. Operation was then decided upon and the abdomen was opened through a left rectus incision. The sigmoid was voluminous, but there was no constriction or point of obstruction found. There was, however, a peritoneal fold extending from the iliac fossa to the sigmoid and in effect shortening the outer leaf of the mesosigmoid about 2 inches. This was divided at right angles for a depth of about an inch or an inch and a half. The incision immediately gaped into a diamond-shaped figure, showing the tension that had existed. This was sutured at right angles, the result being to lengthen the fold 2 inches, or in fact to obliterate it entirely, making the mesosigmoid about 4 inches at the site of the fold, as elsewhere. A somewhat deformed appendix was removed. No other lesion was found in the abdomen or pelvis. The wound was closed and the patient made a very satisfactory convalescence. In about ten days she began to have spontaneous movements, and up to the present time, a period of one year, she had required no laxatives. All of her symptoms had disappeared, her general condition had improved, and she was now able to lead an active and a useful life. Dr. McCreery exhibited the *x*-ray photographs showing the condition before operation in this patient.

Dr. FRANK C. YEOMANS said that the case reported merited discussion, as it represented the type that went from one physician to another and made the rounds of the hospitals without obtaining relief. Cathartics of all varieties were prescribed, but no thorough examination was made to determine the point or points of intestinal delay or stasis. Serial radiograms were of prime importance as an aid in diagnosis, and even more helpful were the radioscopic findings. The speaker said he had had many cases of sigmoidal stasis. For proper treatment distinction must be made between cases of disturbed physiology due to abnormal size of this segment of the bowel, its atony or displacement, and delay due to purely mechanical conditions, as from bands, adhesions, etc. Only recently he had had a patient in whom the only lesion was strong adhesions between the abnormally long sigmoid and the right tube and ovary. Division of the bands gave prompt relief. Further aid in the diagnosis could also be frequently obtained from the employment of the sigmoidoscope when introduced 10 inches or more. Then by maneuvering the tube from side to side definite pain was produced by the traction on bands or points of adhesion.

Submucous Lipoma of the Ileum Causing Ileocolic Intussusception.—Dr. ANTHONY H. HARRIGAN reported this case. The patient was a man 50 years of age, and was admitted to the Fordham Hospital on December 22, 1915, and discharged on February 2, 1916. The family history was negative. He said he had had no diseases of childhood and denied any venereal diseases. There was no previous history of serious illness and no history of a similar attack of gastrointestinal disease. He was moderately alcoholic. His present trouble began two weeks before his admission with sharp, cramp-like pain in the abdomen. The pain was localized in the epigastrium and radiated to the right iliac fossa. At the onset the attacks were infrequent, occurring but two or three times a day. They increased daily in frequency until, on the day of admission, they occurred every half hour. The pain increased in severity. The patient vomited on the day of admission. He was admitted to the hospital late in the evening and was examined by the admitting physician and the senior interne; they made the diagnosis of chronic appendicitis, for there was apparently at this time a temporary lull in the symptoms. Dr. Harrigan saw the patient on the following morning. The examination revealed a well-developed man suffering from severe abdominal pain from which he was crying aloud, and seemed to be intermittent in character. He pointed to the epigastrium as the origin of his pain and to the lower quadrant as the point where the pain radiated and ceased. He was perspiring freely and was suffering greatly. The abdomen was moderately distended, but there was no rigidity. There was found a definite and tender mass in the right lower quadrant which laid obliquely and appeared to be about 4 inches long and 1 inch wide. The rectal examination was negative. The specific gravity of the urine was 1028; there was a trace only of albumin and a few hyaline casts. The eyes, throat, heart, and lungs were negative. The liver, spleen, and kidneys could not be felt. The leucocyte count was 14,600; polymorphonuclears, 85 per cent.; the lymphocytes, 13 per cent.; the large mononuclears, 1 per cent. His temperature was 100° F., pulse 104, and respirations 28. Immediate operation was decided upon, although no definite diagnosis had been made. Two possibilities were discussed: (1) Acute gangrenous or perforative appendicitis; (2) a perforated gastric or duodenal ulcer. Upon operation the appendix was easily delivered and presented a normal appearance. A mass was found occupying the right iliac fossa and pelvis. This was delivered and found to be an intussusception of the ilium into the colon. The terminal ilium was edematous and appeared about three times its normal size. The small intestine could be felt lying in the cecum and ascending colon. Palpation of the cecum revealed the presence of a movable body within the lumen. The intussusception was reduced by traction with difficulty. Several feet of intestine had been involved. The invaginated intestine, at first quite dark, quickly assumed a normal color. At a point about 2½ feet from the ileocecal valve could be felt the round body previously felt through the cecal wall, and this laid within the lumen of the ileum. It could easily be pushed up and down. The bowel was held by an assistant and opened transversely. A small, soft, submucous pedunculated tumor was found attached to the mesenteric border. The excision was simple and the base was sutured with catgut. The intestine was closed with interrupted linen. The abdomen was closed without drainage. The postoperative course was extremely stormy. A severe pneumonia nearly proved fatal. He spent a few weeks in the Burke Foundation at White Plains. He had now returned to work and was feeling all right. The tumor measured 6.5 x 6.5 inches. The pathological diagnosis was lipoma. Dr. Harrigan believed that the best paper in English was the one by Dr. Stetten in which were reported sixty-six cases of lipoma, intussusception taking place in 60 per cent. The most recent article was by Huesel, who reported seventy-one cases of gastrointestinal lipomata. Intestinal resections had been done several times on the supposition that malignant disease existed.

Fecal Concretions of the Appendix Demonstrable by the Roentgen Ray.—Drs. JOHN DOUGLAS and LEON THEODORE LEWALD made this presentation. Dr. Douglas said that concretions in the appendix, formed as they were of hardened, more or less inspissated fecal matter, were rarely opaque to the Roentgen ray, and were therefore usually not demonstrated by radiographic examination. If bismuth or barium had been previously given for gastroenterological examination a persistent residue in the appendix might sometimes be due to the coating of the concretion with the opaque substance. When, however, on account of the inflammatory reaction of the tissues calcium salts were deposited on the surface of the fecalith it might become demonstrable. The condition was similar to that occurring in cholelithiasis. Gallstones forming as a result of pure cholesterin precipitation caused no shadow; those in which infection and resulting inflammation of the gall-bladder had caused a deposit of calcium salts to coat or become mixed with the cholesterin became opaque. Dr. Douglas said the following two cases were reported to demonstrate the possibility of such a fecalith being mistaken in a radiogram for a ureteral calculus on the right side, unless the radiogram were taken with opaque ureteral catheters in the ureters; even this did not afford an infallible means of differential diagnosis.

CASE I.—This patient, 21 years of age, a painter, had been ill for three weeks before admission to the hospital with pains in the right iliac region, vomiting, and fever. The pain had persisted up to the time of his admission to St. Luke's Hospital. At this time his temperature and pulse were normal. His leucocyte count was 15,000, with 78 per cent. polymorphonuclear cells, which on the following day fell to 10,000, with 66 per cent. polymorphonuclears. Physical examination revealed slight rigidity and tenderness in the lower part of the right inguinal region. On rectal examination a sense of resistance was felt in the right side of the pelvis above the prostate and there was a slight mucopurulent discharge from the rectum. Radiograms

showed a shadow in the right side of the pelvis and a diagnosis of acute appendicitis with abscess which had probably perforated into the rectum was made. On operation it was found that the appendix had sloughed off about 1 cm. from its base and a fecalith about 2 x 1.5 cm. in diameter was found in the cavity below the cecum between the rectal wall and the right pelvic wall.

CASE II.—Dr. Douglas presented this patient, 23 years of age, who was admitted to St. Luke's Hospital with a history of acute appendicitis of three days' duration. On operation a gangrenous appendix was found which had perforated but still contained a large, hard fecalith. A spreading peritonitis was present. The concretion was so hard that its density was compared with that from Case I and that of two ureteral calculi which had been demonstrated by radiographic examination before removal from the other patients. This concretion would also have appeared on a radiographic plate.

Dr. Douglas reviewed the literature, which showed that only a few isolated cases resembling these had been reported. After briefly reviewing these cases, he said that they showed that in a small number of instances a fecalith of the appendix might be demonstrated by radiographic examination and that this fact must be taken into consideration when making a diagnosis. Usually the passage of opaque ureteral catheters would be of the greatest assistance in differential diagnosis, but two cases reported by Eastmond and Seelig demonstrated that even with this assistance a mistake might be made. As a further aid in the Roentgen diagnosis the writers suggested that when the shadow was above the crests of the iliac bones a lateral stereoscopic radiographic examination be made, preferably with an opaque ureteral catheter in the ureter on the suspected side. The Roentgen examination combined with an opaque meal or enema might be of further assistance in showing the relationship of the suspicious shadow to the appendix or cecum. Finally there was a possibility of one encountering a left-sided appendix, due either to a non-rotation of the colon or to a complete transposition of all the viscera. Dr. Douglas exhibited the two specimens.

Dr. LEON T. LEWALD showed the lantern slides of roentgenograms and specimens for comparison with ureteral calculi.

Postoperative Heatstroke. — Dr. ALEXIS V. MOSCHCOWITZ read this paper, in which he said that he had been on active service at the Mount Sinai Hospital regularly every year from 1899 to 1914 and he had often had the impression that, particularly during the hot weather, some of his patients suffered from a mild insolation. Several such cases were reported in detail. The literature dealing with the symptom complex, caused either by exposure to the direct rays of the sun or to high degrees of artificial heat, was exceedingly voluminous. The references appended to Steinhauser's monograph, "Nervensystem and Insolation," Aug. Hirschwald, Berlin, 1910, covered over twenty-two closely printed pages, and in addition the statement was also found that only the newer literature, approximately that after 1880, had been considered. However, even with such a wealth of material there existed no unanimity of opinion regarding the disease. After a very careful study of the more important contributions to the subject, Dr. Moschcowitz had arrived at the conclusion that their knowledge as to the etiology, symptomatology, pathology, and treatment of the disease was in a chaotic state. If this was true of heatstroke or sunstroke in a general sense, a disease so common as to be at times epi- or en-demic in nature, how much more likely was it to be true of that small and selected group which particularly interested them at present, namely, post-operative heat or sunstroke? Barely twelve cases, scattered through more than fifteen years, were all that was available for study. The most prolific contributors to the subject of insolation had been the military and naval surgeons of the United States, Great Britain, and Germany. All appeared to be agreed that there existed various forms of insolation. All writers differentiated clinically at least two forms, "sun or heatstroke" and "heat prostration"; a few authors described as well a third form, "heat exhaustion." Sunstroke was characterized by the following: There was always a history of direct exposure to the sun, an abrupt onset, with complete loss of consciousness. The skin was as a rule hot, dry, and flushed. The body temperature was very high, the pulse full and of high tension. On the other hand, in heat prostration these symptoms were either lacking or their exact antithesis was present. Thus they found that there was no history of direct exposure to the sun, but a history of being confined in a close, poorly ventilated room, and perhaps to exposure to artificial heat. The best examples of this form of insolation occurred in stokers on steamers, and might occur even when the outside temperature was far below what was usually termed hot. The onset was gradual and consciousness was usually retained. The skin was not dry, hot, or flushed; on the contrary, it was cold, clammy, and pale. The temperature in these cases was variable, but never attained the height it attained in cases of sunstroke, rarely going over 102° F. The pulse was weak and thready. Assuming that the symptomatology discussed was correct, it should follow that cases of postoperative insolation were not cases of heatstroke but of heat prostration. For the sake of argument he mentioned the following hypothetical case: A patient was operated upon for an acute gangrenous appendicitis with abscess. Six hours after operation the temperature might be either normal, subnormal, or slightly elevated. The skin was cold, clammy, and pale. The pulse was weak and thready. The operation took place on a hot day. On the day following the operation the condition either persisted or had improved. Ultimately the patient recovered without any sequelæ or died within the first forty-eight hours. No one ever thought of making any other diagnosis than that of mild postoperative shock or postoperative reaction; yet the history and course were characteristic of so-called heat prostration. He wondered how often these cases were overlooked. Was it not possible that this was the most frequent form of postoperative insolation, more particularly as it was the form which was most likely to occur in the absence of direct exposure to the sun. Cases of postoperative insolation had been recorded in Boston, New York, and Philadelphia, and it was possible to account for the greater frequency of heatstroke in these three cities by the fact that they were more compactly built up and many of the inhabitants lived crowded together in tenements. Again, the people had not been instructed how to dress properly during the summer; they wore too much, too heavy, too dark, and too woolly clothing, all of which were conducive to the production of heat insolation. The real hot days of the year were in the very smallest minority in New York City; the great majority of the days of the year were either cold or verged at least upon coolness. On this account surgeons had learned to fear so much the occurrence of postoperative pneumonia; they tried to avoid it by instructing their nurses to cover well the patients in the operating room, upon the transportation to and from the operating room, and upon the arrival in bed. He believed that this needless superheating of the patient was conducive in a great measure to the occurrence of postoperative insolation. Dr. Moschcowitz believed that whenever the atmospheric conditions were favorable for the production of insolation, all operating room activities should cease with the exception of those of an urgent nature. In all cases operated upon during a hot wave the greatest regard should be had for the comforts of the patient. All needless swathing in blankets and the use of hot-water bottles was to be prohibited. Coolness and the lightest of covers were then indicated. Motor fans were desirable. Cooling drinks should be permitted much earlier than was generally the custom after operations. In heatstroke the temperature was so high that every effort should be made to reduce it and recourse must be had to physical measures rather than to the coal-tar products. The best was hydrotherapy in the form of sponge baths with iced water, ice caps applied to the head, enemata with ice water, etc. This form of treatment, however, would be contraindicated in that variety of insolation which they called heat prostration. The exact opposite form of treatment was here indicated. In a certain number of cases of insolation there had been found a peculiar degeneration of the blood which manifested itself by a laking. This suggested the possibility of venesection and blood transfusion, provided a suitable donor could be found at short notice.

Veronal Habit.—Otto Glaser asserts that the continued use of this drug, even in small doses, may lead to an intoxication of the cerebellum and the vestibular apparatus. The veronal when continually or too frequently used produces habit through its causing a condition of euphoria or well being. It inhibits the functions of the intestinal tract as well as those of the kidneys.—*American Medicine.*

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Original Articles.

SOME OF THE LARGER PROBLEMS OF THE MEDICAL PROFESSION.*

BY RUPERT BLUE, M.D.,

WASHINGTON, D. C.

SURGEON-GENERAL, U. S. PUBLIC HEALTH SERVICE; PRESIDENT OF THE AMERICAN MEDICAL ASSOCIATION.

THE profession of medicine enters into and touches every human activity from the first kindling of the vital flame until life's candle flickers out. The joys of being and the sorrows of life, the travail of labor and the relaxations of idleness, the opulence of riches and the meagerness of poverty have running through their web and woof the fine blue thread of the calling which has as its ideal the physical salvation of mankind. Throughout the nearly seventy years of its existence the American Medical Association has clung with unfaltering fidelity to the doctrine of the prolongation of human life and the relief of the miseries of man. In peace and in war, in prosperity and in public calamity, in crowded city and on isolated frontier, despite all opposition, it has moved steadily forward toward the goal of health, recognizing neither creed nor sect, neither school nor system, but solely the sacredness of its objects. The catholicity of its principles, the high altruism of its ideals, and the broad basis of its humanity have preserved it inviolate against the attacks of those who would revert to primeval incantations, ignorance, and chicanery in the prevention and remediation of disease. The passage of the years is marked by a trail of discarded superstitions on the one hand and by the monuments of scientific progress on the other, and the very obstacles which have been thrown into the path which we have trod have proved stepping stones to higher ground.

To-day, as we look back over the achievements of this association, we receive inspiration from the work of those who have gone before us. The researches of our medical forebears are a priceless heritage, entailed for all future generations. But as we review the triumphs of the past and plan fresh victories for the future, our happiness in the joy of this pleasant reunion in the bonds of scientific fellowship is not without its note of sadness.

Since our last annual meeting death has called from our midst a number of the strong men of the profession of medicine. In the loss of that lovable and kindly gentleman, Dr. Edward L. Trudeau, the world has been deprived of a great leader in the anti-tuberculosis movement. In the death of Surg.-Gen. George M. Sternberg our profession and the nation have lost an officer eminent in science and a pioneer in the field of military hygiene. In the passing away of Dr. Henry B. Favill the country has been robbed of a powerful intellect which was being more and more devoted to the cause of good government, clean politics, municipal improvement, and sanitary progress. In the untimely death of Dr. William L. Rodman the Association has been bereaved of its president, and America has lost a distinguished surgeon and a public-spirited citizen. We would also remember at this time the members of our profession and Association who, through love of their fellow men, volunteered to serve mankind in those countries unhappily divided by war and stricken by pestilence, and who by so doing sacrificed their lives to the ideals of our profession.

By reason of their relation to the Association, we glory especially in the accomplishments of Rodman and Favill, and extend our condolences to their sorrowing relatives and friends with whom we mourn. In the solemnity of this moment let us take inspiration from their lives, that their ideals may pass on to us, and that we may more faithfully discharge our duties to mankind.

The limitation of time does not permit the recitation of the scientific accomplishments since our last meeting, neither does it suffice to enumerate the fields of activity which lie fertile before us. The movement for race betterment, the increase of child hygiene, and the restriction of child labor deserve and receive the approval and assistance of this body. The necessity for the advancement of the campaign for mental hygiene, the cure and prevention of tuberculosis and cancer, and the improvement in the collection of vital statistics, particularly morbidity statistics, is so great as to require no argument.

Medical and Sanitary Education.—Since its inception the American Medical Association has endeavored in every way to raise the standard of medical education, and as the result of its labors there has been constant improvement, particularly in recent years. Not only are the graduates of today better qualified in the science of medicine than those of ten years ago, but they have a broader grounding in the general sciences as well. These are decided improvements, but should not satisfy us. As an Association, we should continue to urge and adopt every means which will better qualify medical men for their calling. Improved laboratory and hospital facilities are now being made available to medical students in greater degree, and the standard of medical practice is accordingly raised. Not enough attention is being paid, however, to the subject of hygiene, in either undergraduate or postgraduate courses. Thus far the members of the medical profession have been looked to as the natural conservators of individual and community health. With the increasing interest in this subject, however, and the facilities for giving instruc-

*President's address before the American Medical Association, at the Sixty-seventh Annual Session, Detroit, June, 1916.

tion in public health work being established in institutions other than medical schools, there is likelihood that in the future medical graduates will have sharp competition in a field which they should naturally occupy. The time is at hand when localities and States will demand the services of full-time health officers, and the medical profession should look forward to meeting this requirement. It is suggested, therefore, that the Council on Medical Education and the profession generally give greater attention to this growing need.

Medical and Sanitary Preparedness.—The American Medical Association, as a national body, has come to bear an important relation to everything medical which affects the nation as a whole. It has, therefore, interested itself in the improvement of the medical departments of the Army and the Navy and the Public Health Service.

The medical department of the Army is charged with the duty of preserving the sanitary condition of the Army and with certain important functions of administration and organization. In its relation to the people of this country by far its most important activity is along educational lines. Some thirty to fifty thousand young men join the Army each year, and a similar number annually pass back to civil life. During the period these men remain in the Army they come into direct contact with the medical department. Their ideas and standards as to housing, food, clothing, ventilation, and lighting are all materially influenced by their sojourn in the Army, and even more definite impressions are acquired from the medical department with reference to such matters as disease and its treatment, preventive medicine, temperance, and recreations. At almost every point in his new environment the recruit comes into contact with the ideas and teachings of the army medical department, and he returns to civil life with a much broader and more enlightened view of hygienic principles.

The great lesson of the European war which we as medical men should take to heart is the importance of thoroughly preparing the medical and sanitary forces in time of peace, so that they may be ready to take their proper place and to efficiently relieve the sick and wounded and prevent disease in time of actual conflict. Not only must the land forces be put on the footing of highest efficiency, but it is perhaps even more important that the medical department of the Navy receive the active support of the entire citizenship. The multifarious character of the duties of the medical corps of the Navy requires officers of broad training. This Association should continue in the future as in the past to afford to the medical departments of the Army and Navy every assistance in its power.

The problems which confront the Public Health Service are of a different character from those of the strictly military arms of the Government. This organization is rapidly expanding to meet its duties in the protection of the health of the civilian population of the United States. The crying need of the Public Health Service at the present time is men and money. Congress has never been slow in imposing functions on the Public Health Service, but it has been extremely conservative in the matter of appropriations and increased personnel to discharge the added duties. As yet Congress has not seen fit to establish a national department of health, and pending the creation of that much-needed department, the Public Health Service must perform the public health duties of the nation. It is incumbent on every citizen of this country who is interested in the conservation of human life to assist and cooperate with the Public Health Service.

Enlargement of Usefulness of Hospitals.—One of the extremely important matters in which this Association should take an active interest is the utilization of hospitals in order that they shall not only have greater application in the relief of illness, but be of greater utility in times of national stress.

In many general hospitals there is opportunity to increase efficiency through organization. It is probable, for instance, that the most accurate knowledge of the distribution of certain preventable diseases could be obtained by regular reports from hospitals and dispensaries if these were comparable. Moreover, it should become possible in greater degree to admit many cases of illness, such as tuberculosis and venereal infections, now excluded, but which profoundly menace the public health. Hospitals are public servants and as such should be utilized to the fullest extent, not only in the relief of illness, but also for educational and public health purposes.

Improvement and Standardization of Remedial Preparations.—Further effort should be made to determine the availability and use of remedial preparations. The remarkably valuable work of the Council on Pharmacy and Chemistry is well known to you. As a result of its untiring efforts for more than a decade, our knowledge of useful remedies has been increased, the pharmacopeia improved and the physicians' armamentarium made more serviceable. Much, however, remains to be done. The determination, for instance, of the value of biologic products used in the prevention and treatment of the diseases of man and the elimination of those which are without worth is a matter of urgent need, meriting the earnest consideration of this Association. While it is the province of the federal government to promulgate standards for these preparations, the determination of their therapeutic value is a function of the medical profession.

In the enforcement of the law regulating the propagation and sale of viruses, serums, and toxins, it is possible for the Public Health Service to guard against the sale of contaminated preparations. It insures to physicians the full strength of those preparations for which standards have been devised, but it cannot guarantee the potency of preparations for which standards have not been fixed, and which practitioners generally are being urged to use in greater degree. In order to determine this potency, the medical profession has a duty to perform.

By encouraging therapeutic research along broad lines through hospitals and clinical laboratories, the Council on Pharmacy and Chemistry would facilitate the standardization of useful biologic preparations and restrict the exploitation of doubtful ones, thereby saving millions of dollars annually to the country. I would accordingly suggest that this be made the subject of intensive study, thus supplementing the researches already under way in respect to other preparations.

Through its helpful attitude, the medical profession has contributed to the enforcement of the anti-narcotic law. As a result, a multitude of data are being recorded to show not only the public health importance of the control of habit-forming drugs, but the additional measures that are necessary to this end. I doubt if any of us here present comprehend fully the social and sanitary significance of this vast problem and the relation of individual practitioners thereto. It should be our

earnest effort to aid in restricting the use of narcotics for other than medicinal purposes, and thus aid in overcoming an evil of the gravest menace. While as an organization we may not influence specific legislation, it is entirely within our province to strive to mold public opinion, which will beget wise laws and proper provisions for their enforcement.

Health Insurance.—As a result of recent workmen's compensation laws and the increasing interest in the health of wage-earners, the subject of health insurance is rapidly coming to the front. This is a question which we as a profession will be called on to face in the not very distant future.

Studies of the economic and sanitary conditions affecting the health of the industrial population have shown the urgent need for more effective methods for the relief and prevention of disease among the 30,000,000 persons who comprise this group. The unskilled, low-paid workers in every community have an excessive morbidity and mortality rate, which is largely accounted for by their economic status and living environment. A large proportion of this class have incomes insufficient to maintain healthful standards of living, much less to provide adequate medical and surgical care. This places a serious handicap on the medical profession, as well as a financial burden on the poorly paid wage earner, which neither should be wholly required to bear. The public, industry, and the workers themselves are at least partially responsible for the faulty conditions, and in consequence should share in the remedial measures.

To meet the situation, there are unmistakable signs that health insurance will constitute the next great step in social legislation. Experience has shown that an adequate health insurance system should distribute the cost of sickness among those responsible for conditions causing it and thereby lighten the burden on the individual. Financial incentive may thus be given for the inauguration of comprehensive measures for the prevention of disease. I would accordingly suggest that the American Medical Association continue the studies, which have been so splendidly begun, of the results of health insurance in all its aspects in this and in foreign countries, so as to decide on a program which would properly coordinate any proposed health insurance system with existing agencies for the cure and prevention of disease.

Industrial Hygiene.—Closely allied to this is the study of industrial hygiene, a subject which will receive careful consideration in the Section on Preventive Medicine and Public Health at this session. Too many safeguards cannot be thrown about the health of operatives in industry, but we should consider the problem as it relates, not only to the workshop and factory, but to home conditions as well. Factory sanitation will fail of the highest accomplishment unless the workman is educated in the hygiene of his body and the sanitation of his home. The relation of the wage to disease, the housing problem, and the health training of operatives are therefore matters which I would commend to the attention of the Council on Health and Public Instruction.

Rural Sanitation.—Rural sanitation is a matter of even greater importance. Over 53 per cent of the population of the United States dwells in communities of less than 2,500 inhabitants, in many cases under most insanitary conditions. This is a menace not only to the health of the rural dweller, but also to that of the urban resident. The next great point of attack against infectious diseases is the small town and village. The work which the Public Health Service has been carrying on in cooperation with State and local health authorities in rural counties shows not only the necessity for increased and more widespread activity in this direction, but also that great good may thus be accomplished at relatively little cost. It is incumbent on this Association, possessed as it is of the machinery for popularizing health movements, to undertake a definite campaign for bringing health education to our rural population. If this is well done there will be a direct result in the reduction of typhoid fever, malaria, and hookworm disease in the country and an increased safety in the food supplies of cities. I cannot too strongly urge on this body the necessity for intensive efforts toward the improvement of rural sanitation.

Public Health Organization.—In the accomplishment of this purpose, however, we cannot stop with the sanitary enlightenment of the country inhabitant. Much he can and must do for himself, but lasting good cannot be accomplished in the absence of adequate State and local health organizations. An examination of existing laws and regulations shows that some of the States have an abundance of public health legislation. In fact, in many instances the powers and duties of the sanitary authorities far exceed the appropriations for their execution. Still others have defective laws and low appropriations, while some have little law and almost no appropriations.

In many instances considerable improvement in organization will be necessary before health authorities can functionate properly. These defects are being remedied, and many States are rapidly approaching a high degree of efficiency in their public health administration. In the counties and small municipalities, however, the greatest need for reform exists, and this Association should cooperate to the fullest extent in creating a public sentiment for thoroughly prepared, adequately salaried, full-time health officers. Indeed, it should not only create such sentiment, but, as previously stated, it should take active steps to provide without delay a large share of these public servants. The production of well-qualified men for such positions is not keeping pace with the demand. Sanitation is as much a specialty as is surgery, and simply because a physician is a successful practitioner is no guarantee that he will make a qualified health officer.

Through improved medical education and the cooperation of health departments with universities, properly qualified physicians should become available to meet this growing need. It is important also that States and localities should be able to secure the services of sanitarians without reference to legal residence. It is equally as important that medical hygienists, as well as physicians generally, should be able to practise their profession anywhere within the confines of our country without undue restriction as to academic examinations. It is not at all improbable that this thought imbued our late president in founding the National Board of Medical Examiners. This body, which promises so much benefit both to the medical profession and to the American public, stands as a monument to the industry and clarity of vision of our lamented colleague, Dr. William L. Rodman. I would commend to the Council on Medical Education the study of the problem of devising some uniform means of

certifying and training prospective health officers.

The great effort of the future must be in the direction of the improvement of the internal health of the nation. We are possessed of an adequate coast defense against disease from abroad, and what we must now do is to control those diseases which are already with us. In this we require the qualified health officer and the educated public. A part of this education may be secured by the printed and the spoken word, but the great agent in public education is demonstration. This association is in a position, touching as it does every stratum of society in this broad land of ours, to carry this work forward to ultimate fruition. This is an obligation on our profession, a sacred duty laid on the followers of the healing art. Though we minister to the sick and bind up the wounded, though we bring sight to those who see not and alleviate the suffering on the bed of pain, yet our duty is not done until we have put forth our best endeavor to the end that sickness and pain and blindness be not. Poverty and ignorance, squalor and intemperance, cruelty and greed, these are the enemies which we as individuals and as a profession must combat. As citizens who would maintain our nation in a condition of preparedness against its greatest enemy, disease, it is our duty not only to perform our legal obligations as physicians, but to bend our every energy to the prevention of disease. No selfish or half-hearted service will suffice. Nothing short of whole-souled devotion to this duty will satisfy the ideals which have been passed down to us by generations of self-sacrificing, public-spirited physicians who love their fellow men. The American Medical Association represents the crystallization of these ideals. If it permits no self-seeking interest to dominate its actions, if it maintains its plane of high altruism, if it devotes itself with strength of purpose to the betterment of the public weal, it will prosper in the future as in the past, serene and sure in the satisfaction of work well done. Let our deliberations be so imbued with that broad spirit of charity and brotherhood that the name of the physician shall be revered.

THE NAUHEIM METHOD.*

By SIMON BARUCH, M.D.,

NEW YORK.

CONSULTING PHYSICIAN TO KNICKERBOCKER HOSPITAL; HYDROTHERAPEUTIST TO SEA VIEW HOSPITAL FOR TUBERCULOSIS; CONSULTING HYDROTHERAPEUTIST TO BELLEVUE AND ALLIED HOSPITALS, NEW YORK CITY.

My reasons for presenting the Nauheim method as a subject for discussion are

1. The success of this method of managing cardiac diseases has been established, during the most enlightened period of the history of medicine, not by the statement of patients, which are often unreliable, but by observations of specialists, who have demonstrated their confidence by continuing to send their patients to this mecca of heart cases.

2. The mineral springs of Saratoga and certain California springs furnish the most important component of the waters that have made Nauheim famous, viz., carbonic acid gas, and require only the addition of certain salines to be equal to those of Nauheim.

3. I have been surprised to discover that the large proportion of baths, ordered as Nauheim baths, are given with simple carbonic acid water from a cylinder of gas or artificially produced, by mixing a definite solution of bicarbonate of soda with either muriatic acid or sulphite of sodium cakes, or formic acid. The salines are either omitted or a few pounds of salt, or a natural brine or sea water, or, as in one institution, sodium chloride and bicarbonate of soda, which actually counteracts the desired irritating action of the salt, misrepresent them.

4. It is my aim to obviate this unfortunate substitution, which may be due to the prevailing lack of agreement upon the rationale of the Nauheim method, by offering an explanation of the action of certain elements of the latter, which, though novel, has a rational basis.

5. My warrant for venturing upon this subject may be found in the historical fact that the method consists, as is well known, of the application of baths, in which the patient is submerged entirely, excepting the head, in water containing carbonic acid gas and certain salines, chief among which are the chloride of calcium and sodium, which in concentrated form would produce a decided hyperemia. These baths are given methodically, according to the indications of each case and the effect of the bath, and they are accompanied or followed by certain passive or resisting movements, which offer a systematic but mild exercise of the principal voluntary muscles of the body. Success of the Nauheim method depends upon faithfully following a *method.*

Artificial CO_2 Bath.—In 1896 I brought from Germany the Sandow tablets, consisting of cakes of sodium sulphite, and a package of bicarbonate of soda, for the artificial preparation of carbonic acid baths. In 1902 I visited the Virchow Hospital at Berlin. Here Dr. Laquer used the "Zeo" bath, which consists of a solution of formic acid and a package of bicarbonate of soda. From experiments in the Vanderbilt Clinic I ascertained its advantages, not being corrosive and more quickly prepared. The CO_2 bubbles were more abundant and the consequent hyperemia of the skin more pronounced. Neither one of these preparations had ever been used in this country, as far as I know.

In 1896 I visited Nauheim for the first time, and since then I have made two visits, the last being in 1913. It has been my good fortune to come in contact with Drs. Heineman, Groedel, Schott, and Honan during these visits. The Nauheim method has passed through a gradual evolution in regard to its theory and practice. Without entering into details, I desire to emphasize that the entire series of baths and exercises is a methodical training of the insufficient heart to enable it to resist *definite* attacks made upon the cutaneous periphery by the baths and exercise alternating with rest. Indeed, we have here the same principle which I have so frequently dwelt upon in the application of water in health and disease, viz., that water below the temperature of the skin produces an effect upon the blood vessels and nerves of the skin, which I have termed "neurovascular training," by means of which the heart and central nervous system are raised in functional efficiency, so that the organs supplied by them are restored to normal activity, which has been disturbed by toxic agencies, or by products of abnormal tissue change, due to faulty modes of living. Precision is demanded for this achievement.

In the most recent publication of Prof. J. M. Groedel, this veteran of Nauheim confirms my view

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when he writes, "We have it in our power to put into action the excitations which drive the heart to higher activity by gradual approach. We may stimulate the heart to a greater or lesser degree, within definite limits, through the intensity of the thermic excitation, namely, low temperature of the water."

Formerly the Nauheim doctors began with baths of indifferent temperature, about 34° C. (93.2° F.), with small saline and carbonic acid content. This was followed slowly by a gradual decrease of the bath temperature, until 30° C. (86° F.), while at the same time the saline and carbonic acid content was increased and the duration of the bath raised from eight or ten minutes to fifteen or twenty minutes, giving at first the bath two days in succession or every second, third or fourth day. Recently this course has been abandoned for a more individualizing scheme, which is based upon the actual effect of each bath, or small series of baths, upon the patient and the type or character or the cardiac insufficiency.

In Nauheim no treatment is administered for the higher grades of circulatory insufficiency in persons who, for instance, when at rest or under the slightest movement, suffer from dyspnea or who present large dropsical effusions. I have in mind a case of the former type in which I advised against a journey to Nauheim, but was not sustained by an eminent specialist, who had advised him to consult me about the Nauheim trip, although I had endeavored to neutralize his obstinacy by telling him that he would return in a coffin. He arrived in Nauheim, but was advised not to remain longer than necessary to recuperate from the journey. He did arrive home in a coffin—dying one day before the ship arrived.

It was the merit of Beneke to select cases that were promising and to discourage others from remaining in the vain hope of recovery. His successors, though not so rigid, have followed this course, with the result that Nauheim has established a reputation for the amelioration and cure of heart disease. Let me counsel colleagues practicing in Saratoga to follow Beneke's example.

Rationale of the Nauheim Bath.—This may be divided into two essential elements, (*a*) effect of the carbon dioxide, (*b*) that of the salines.

Action of Carbon Dioxide.—From experience on my own person, together with observations made upon many other individuals in Bad Nauheim and in Saratoga Springs, the following are the notable objective and subjective effects: On entering a bath with Hathorn No. 1 water, at 90° F., my first impression was one of decided coolness, with contraction of the scrotum. This coldness disappears so soon as bubbles of CO_2 gas begin to accumulate upon the skin. A prickling sensation begins, sometimes painful, or touching in the scrotum, which feels as if covered by a very thin layer of dry varnish. If these bubbles are disturbed on large surfaces, coolness is again felt, quickly, however, replaced by warmth, so soon as the gas bubbles again are seen on the skin. The skin shows decided hyperemia wherever it is in contact with the gas bubbles. Decided warmth is felt, together with a sense of comfort and bien aise, that is not felt when plain cold water produces reaction redness. In fact, the latter only reaches such intensity of redness after very cold procedures in vigorous subjects, but never the same intensity of warmth. Certain it is that I have never seen a patient in the condition which is met in the majority of cardiac cases that could bear a cold procedure with plain water of sufficiently low temperature to produce a hyperemia equal to that which the most depreciated cardiac case can be trained up to bear with the CO_2 bath of 90° F.

Local Action of CO_2 Water.—The hyperemia, which is invariably manifested when the individual lies in a CO_2 bath, by redness of the skin, cannot be due to reflex action, through the vasomotor system, because it is confined only to the parts exposed to the CO_2 water. A careful study of the experiments and observations made by others confirm my conviction that the hyperemia is due to a specific mechanico-chemical irritation by the CO_2 gas. (Oxygen bubbles in the Ozet bath do not produce hyperemia.)

Ottfried Miller and his school have demonstrated by painstaking observations the absence of decided vasomotor action, because of absence of resistance at the periphery. There is no plethysmographic volume increase in the arm made red and hyperemic by CO_2. This has been successfully refuted by Arthur Hirschfeld of Brieger's Clinic, who shows that Miller's plethysmograph rested partly in the bath water. Nevertheless, both agree upon the most important fact that the peripheral arteries are contracted slightly. May this not be due to the constringing action of the absorbed CO_2 upon their muscular coats, which come in direct contact with the gas? More of this later on. The almost invariable slowing of the pulse and its somewhat heightened tension find in this theory a more rational explanation.

Another undeniable effect of the CO_2 upon the skin is a heightening of cutaneous sensibility, which has been referred to. I regard this phenomenon as explaining the intensifying effect of CO_2 on temperature sensation, whether below or above the point of indifference, which averages in a plain water bath for ambulant patients about 33° C. (91.4° F.), and in persons warmed by lying in bed previous to coming in contact with plain water 35° C. (95° F.). O. Miller states that this neutral point in the CO_2 bath for ambulant patients is about 34° C. (93.2° F.). Despite the fact that the skin feels a sensation of warmth, the action of the CO_2 bath is equivalent to that of water of lower temperature in its influence upon the vasomotor system.

The first time I had occasion to utilize this singular fact was in a case of typhoid fever I saw with Dr. Joseph Fraenkel of New York several years ago. The doctor had been advised by two consultants against using a cold bath and to rely upon alcoholic stimulants to rescue the patient from desperate toxemia, which blunted all reflexes. Believing that it was imperative to arouse the reflexes by refreshment with cold water, and fearing to advise the Brand bath, a tubbing in water at 80° F. was advised, with the Nauheim salts, to add a chemical to the thermo and mechanical peripheral excitation. Though there was not the slightest visible response to the cold water, and none even to an affusion at 50° F., the patient's pulse improved in tension and frequency, and she slept for three hours after the first bath and awoke from an unconscious state of several days' duration, during the fourth four hourly bath, the pulse improving after each one. (Ueber Reaction nach kalter Prezeduren—Congress fuer Naturforscher und Aertzte in Karlsbad 1902.)

This experience was repeated in other consultations, so that I no longer hesitate to order certain cold baths, from which I formerly refrained in de-

preciated cases, when fortified by CO_2 gas. My experiments have demonstrated the enhancement of sensibility in the peripheral nerves by CO_2 baths, so that the clinical fact above mentioned is accounted for, and we are able to deduce from them a phase of therapeutic action of CO_2 baths in cardiac insufficiency that has been hitherto obscure.

These effects are combined with the following: the bubbles of CO_2 gas, which in the bath envelop the body, as it were, in a network, isolate the portions so protected against extremes of temperatures, so that the beneficial results referred to above are attained. Temperatures that would be obnoxious, either above or below tolerance, are borne with comparative comfort when the water contains CO_2 bubbles.

The systemic effect from absorption of CO_2 is more important, in my estimation, than is generally believed. Indeed, it is the one positive fact undisputed by all authorities. Ottfried Miller and his aids mention it, but do not appear to realize its importance. (Sammlung Klinischer Vortraege No. 711-14, 1915.)

The absorption of CO_2 through the skin and its activating of respiration has been indisputably established by the valuable investigations of Filehne and H. Winternitz of Erlangen (Deutches Archiv f. klin. Medizin Bd. 72). H. Winternitz regards this action as specific in CO_2, being absent in other cutaneous irritants, and he affirms its increase in the presence of salt solutions. This is a neglected but important fact, which explains what hitherto has been obscure, as I shall show in the superiority of the Nauheim over other CO_2 waters.

In commenting upon my new rationale of the Nauheim bath, Professor Groedel protests that there is already a fatal increase of CO_2 in many cardiac cases. In rebuttal I would point to the fact that we deduce from animal experiments with toxic doses of drugs our most valued therapeutic results from safer doses of the poisons. Moreover, the cyanosis present in extreme cardiac failure is due more to the absence of oxygen than to accumulated CO_2. That CO_2 circulating in the blood in excess stimulates the respiratory center is a well-known physiological fact, an increase of 2 per cent. causing a tenfold energy of respiratory activity in health. (Burton-Opitz.) Starling (*Lancet*, 1905) gave CO_2 the first place as the hormone or chemical regulator of respiration.

Therapeutically this enhancement of respiratory activity becomes of immense import, in that it must influence favorably the entire intrathoracic circulation, more especially the venous flow. The right heart is unloaded and the diastole prolonged, all of which must bring great relief from stases, which, by their production of edemas and retention of toxines from faulty tissue change, give the bedside clinician most anxiety, and but too often close the scene. I am disposed to regard this action of the absorbed CO_2 as most important in temporarily restoring lost cardiac equilibrium. That it requires judicious adaptation of the bath to each individual case is evident. It is remarkable that other clinicians do not lay more stress upon this demonstrated action of CO_2.

Distribution of blood as manifested by blood pressure, pulse frequency, volume and tension, has been a bone of contention among investigators. Ottfried Miller and other laboratory reporters claim some increase of blood pressure, while Groedel, Jacob and others who practise with natural CO_2 baths do not find increase of blood pressure to any extent. Nevertheless, all report almost invariably an improvement in the pulse, evidencing bettered cardiac conditions. My own observation made with Saratoga waters, published in the *N. Y. Medical Journal*, confirm their view.

This difference in the observations of equally reliable clinicians may be explained as follows: The action of water, air and CO_2 gas upon the skin is determined by the temperature conducting capacity of these agents. Air and CO_2 gas differ materially in the *capacity of absorbing* temperatures (cold and heat), and water *absorbs* temperature with far greater rapidity than either. The point at which the skin is indifferent to water, air or CO_2, as ascertained by changes of blood pressure, is 34° to 35° C. (93° to 95° F.) for plain water, and it is lower for atmospheric air, in ordinary humidity, 20° to 25° C. (68° to 79° F.), and for CO_2 gas it is still lower, viz.: 13.5° to 14° C. (57° F.). According to Senator and Frankheimer (Therapie der Gegenwart, 1904) air, water and CO_2 gas differ still more positively in *conductivity* or capacity for transmitting temperature to objects. Taking the conductivity of air to be 100, that of CO_2 gas is inferior (almost one-half) to that of air, and almost infinitesimal when compared to water (1 to 54). Therefore, CO_2 conducts its own temperature so slowly to the skin that it must be warmed, by the temperature of the water, long before the skin can be affected by it; for example, if the temperature of the water at 90° F. were conveyed to the skin in one-tenth of a second, the CO_2 temperature would require 570 seconds (9 minutes) to reach the skin, were it not held in the water. This being the case, the water, which absorbs temperature readily, is endowed with the temperature indifference of CO_2 but slightly. The water temperature always dominates, because of its great conductivity, both in the low and high-temperature baths. This confirms the results of my clinical observations.

In my estimation, a potent influence upon the circulation has been overlooked by all observers, viz.: the direct stimulation of the heart muscle by absorbed CO_2. We have experimental warrant for such cardiac stimulation in the fact that animals poisoned by CO_2 die with the heart in systole.

Blood Pressure.—Weiss & Kommerell (Ueber die physiologische Wirkung der Kohleusaure, Volkmann's Sammlung, 711-14, 1915) have made some interesting experiments on the difference between the plain and CO_2 bath, to which I have added, as I shall show, some data of importance.

In a CO_2 bath the body is covered by a net or jacket of gas bubbles or pearls, which are warmed by the water. This would explain theoretically the remarkable dualism of a neutral bath in CO_2 water and its tendency to lower blood pressure, despite the atonic condition of the peripheral (capillary?) vessels, but Ottfried Miller has shown practically that "while there is at first a rise in blood pressure for fifteen minutes, that later, in ten minutes, the pressure falls step-like, all of which is due to warming action of the water, upon the CO_2, which is raised above its normal point of indifference (neutral temperature)," when the bath is prolonged.

The sensory excitation depends upon the number of gas bubbles and the duration of the bath. This demonstrates a chemico-mechanical excitation. In the laboratory they use artificial CO_2. I believe that a natural CO_2 water acts differently, because the bubbles are finer and it contains more dissolved

CO_2. The artificial, on the contrary, contains more free CO_2 gas, which escapes more easily, as is proved by the presence in the layer of air above an artificial CO_2 bath of 17.25 per cent., while the air above the natural CO_2 bath shows only 0.89° CO_2 (Beerwald & Von Heyde, Balneological Congress, 1909).

Moreover, experiments made under my direction by Mr. Herbert Ant, State Chemist, of the Reservation Commission, at Saratoga Springs, last December, show that the total gas available from a CO_2 bath, prepared with hydrochloric acid, 12 oz. and bicarbonate of soda, 8 oz., is less than 11 per cent. actually found by chemical experiments, of which only 3 1/3 per cent. to 4 2/3 per cent. is supersaturation. Recently a CO_2 bath made with 1½ lb. bicarbonate of soda and 2½ lb. hydrochloric acid, produced 17 per cent. CO_2 gas, immediately after solution (6.75 per cent. supersaturation). At Nauheim, the presence of at least 25 per cent. of gas as supersaturation is considered essential. In Saratoga, the Hathorn No. 1 water, when first drawn into the tub, ranges from 33 to 35 per cent. supersaturation, and when the patient is actually taking the bath, there is still from 25 to 27 per cent. of gas, ascertained by the Haertl shaker.

The contrast effect between the CO_2 gas and water, which Groedel dwells upon as important for thermic excitation, therefore must be more pronounced in the artificial bath, with which Ottfried Miller and his school experimented, namely, that produced by hydrochloric acid and bicarbonate of soda, as in the natural bath.

There are other elements in this problem which must influence the physiological action of the artificial carbonic acid bath; first, uncertainty from the size of the tub, which ranges, according to the exact measurements, from 45 to 75 gallons. The calculation of artificially prepared carbonic acid should be made according to the size of the tub (which differs from 45 to 75 gallons), otherwise it will be too strong or too weak; second, the fact that in the artificial bath, carbonic acid gas is rapidly evolved and passes off and its temperature cannot be quickly equalized with that of the water, would change the physiological action, unless the bath is longer than is regarded as safe. On the other hand, in the natural CO_2 bath, as given in Saratoga, Nauheim, Marienbad, Kissingen, and Franzensbad the carbonic acid being in age-long contact with the water is received by the skin, of the same temperature as the water and in the same percentage, furnishing an unvarying action, which is reliable for therapeutic purposes, whether the tub is small or large. *There cannot be any doubt, therefore, of the superiority in therapeutic effect of the natural carbonic acid water over the artificially prepared in cardiac diseases.*

Vasomotor Effect.—I have already mentioned that the hyperæmia of the skin is not due to vasomotor action, because it is only discovered in parts that are exposed to the CO_2 bath. It is possible that Groedel's idea that the contrast action, produced by the difference of the temperature between parts covered by the CO_2 and other uncovered parts may produce some excitation of the sensary terminals.

But the main vasomotor action ensues when, as I have shown long ago ("Principles & Practice of Hydrotherapy," Wm. Wood & Co., 1908, page 50), the bath temperature is reduced below the neutral temperature (which is about 34° C. or 93.2° F.) for CO_2 water. The lowest temperature prescribed by Groedel and others, being 30° C. (86° F.), must produce some reflex vasomotor effect by excitation of the peripheral nerve endings, which fulfils my hydrotherapeutic law, viz.: the degree of difference between the water temperature and skin temperature governs the intensity of the peripheral excitation, and therefore of the reflex vasomotor, action. A carbonic acid bath of 93° F. (neutral) would be indifferent to the skin, while a bath of two to seven degrees lower, which is not uncommon in Nauheim, would produce thermic nerve excitation.

In commenting on my new theory of the action of carbonic acid baths, Groedel writes that "It is unnecessary to assume a direct effect from absorbed CO_2 gas upon the involuntary muscle fibers, in order that there should be an irritant action. The mechanical irritation of the gas bubbles, upon the peripheral nerve endings would suffice for this purpose; secondly, it is questionable whether or not we have here a thermic excitation through cold, in a bath of 32° C. (89.6° F.), to which I should reply that a difference of 3.4° C. between the bath water and the skin is certain to arouse a thermic excitation in the sensory terminals of the latter and produce reflex vasomotor action. Replying to the first, there is no such mechanical action from bubbles in the oxygen bath, in which reddening of the skin is absent.

Specific Action of CO_2 Water Upon the Cutaneous Muscular Structures.—Experiments made in Bad Nauheim and in Saratoga Springs have convinced me that a CO_2 bath produces on the unstriated mussular structures of the skin a constringing action similar to but milder than that produced by plain colder water. This constringing of the skin probably offers a mild but positive resistance to the flow of blood in the large peripheral surface, with the result of enhancing cardiac energy.

Judging from the susceptibility of the dartos, of the scrotum to cold air, as manifested by contraction of its cutaneous structures, I utilized this peculiarity of the scrotum for the purpose of ascertaining the effect of the CO_2 waters of these springs. There was noted a very decided formation of rugae in the scrotum of patients emerging from a CO_2 bath. (Illustrated by lantern slide.)

There is no reason to doubt that the same constringing effect is produced upon the unstriped muscular fibers in the cutaneous surface of the entire body, though not so perceptible to the eye. It is not unreasonable to assume that this muscular contraction, to the effect of which I have already referred in connection with compressing the capillaries, furnishes added resistance at the periphery, which promotes reaction, despite capillary dilatation. You will find illustrations of this in the *N. Y. Medical Journal* of the 13th inst.

It is plain that through the combined effect of all the elements furnished by the CO_2 baths, as described above, there is a mild resistance at the periphery, which impels the ventricle, already stimulated by absorbed CO_2, to drive the blood with more energy to all the outlying districts. This mild training of the heart, once a day, though for only a short period, appears to be productive of salutary conditions in the entire vascular system.

This explanation of the rationale of the CO_2 baths is much more reasonable than that of a special, or an occult effect from the CO_2.

The action of the salines rests upon a scientific rationale. They are *not* absorbed, but as the Nauheim doctors correctly claim, an imperceptible layer

remains deposited on the skin even after drying. Being hygroscopic the skin remains somewhat moist. Added to this there is an irritating action of the salines upon the skin, producing a moderate hyperaemia; both furnish an enduring physiological rest to the failing heart.

But a more potent influence of the salines is evidenced by the discovery of H. Winternitz in von Mering's Erlangen Clinic, that the addition of chloride of sodium to the CO_2 bath promotes the penetration of the gas through the skin and its enentrance into the blood. The importance of this fact has been overlooked. Believing that an essential effect of the CO_2 bath arises from the absorption of CO_2 gas, which acts primarily upon the unstriated muscular coats of the arteries and arterioles, increasing peripheral resistance and thus enhancing ventricular energy, in a mild but positive form, I lay great stress upon its presence in proper quantity, as found in the Nauheim water.

It is my gratifying privilege to-day to present another important and, as far as I am aware, hitherto unknown value of salines in connection with CO_2 baths. Under my direction the talented chemist of the Reservation Commission, Mr. Herbert Ant, made certain experiments. Under date of December 29, 1915, Mr. Ant reported: "I have completed the experiments on the artificial baths requested by you," and he concludes "this gives only 16.3 per cent. free gas that is actually available for the beneficial effect of the bath. Of this 16.3 per cent. only from 5 to 7 per cent. is supersaturation." In compliance with directions for another experiment, I sent to Mr. Ant, he reported on April 18, 1916: "You will note from some of my previous results on artificial baths that the addition of the salts seems to retain the gas better and therefore improves the supersaturation." In fact, the difference is marvelous, being 5 to 7 per cent. from the best artificial preparation, without the salines and 20 to 25 per cent. with the same preparation, when the proper quantity of salines is added. Mr. Ant has also, in accordance with my instructions, determined that when the salines are added there is a loss of only 1 to 2 per cent. of gas during a ten-minute bath, and 2 to 5 per cent. during fifteen minutes. Hathorn No. 1 loses 8 per cent. during the first few minutes of the bath which loss would be prevented by the salines.

These reliable data must set at rest all further disputes over the value of the salines in the Nauheim waters, for they show that absorption of CO_2 is furthered by them and escape of CO_2 is prevented by them.

Last October I advised the Chairman of the Reservation Commission to direct the Manager of the Kayoderosseros Bath, as a temporary measure, to add 6 lb. sodium chloride and 10 oz. calcium chloride to each bath, which though milder than the salines of the Nauheim water, was reported by Dr. A. S. Downs as a great improvement. The nurses also remarked upon the increased hyperemia.

In order, therefore, to have the closest approximation to the Nauheim water in Saratoga, it is necessary to add to the water of the Hathorn Spring No. 1, which contains, besides many of the minor mineral ingredients, about 21 ounces of chloride of sodium, but no chloride of calcium, in each 60 gallons definite quantities of salines calculated by Mr. Ant. The other mineral ingredients are so minute and practically the same in both waters (Nauheim and Saratoga) that it is not worth while to calculate them. It would be easy to dissolve in the smallest quantity of Hathorn water 12 lb. sodium chloride and 1 lb. pure calcium chloride, in the tub; then permit a sufficient quantity of the Hathorn water to flow in to make 60 gallons, which would cover the average person. In this manner the average saline contents of the three Nauheim springs commonly used mixed would be approximated. Any physician may, if these salines be held in readiness at the bath house in packages of whole, half, and quarter quantities, prescribe the exact percentage desired, viz., full, half, or quarter salines, and by dilution prescribe full, half, or quarter quantities of CO_2 water as they do in Nauheim with success.

Physicians would do well to use the Kayoderosseros (now called Saratoga) bathhouse chiefly for Nauheim baths in order to avoid confusion, and to use the Lincoln and Empire Springs for other cases. My reasons are:

1. The Saratoga bath on Phila Street, being situated in the town near the lodgings of the patients, would diminish the exertion to reach their rooms, while the Lincoln bathhouse, especially, is some distance from town, an advantage for cases of neurasthenia and other functional diseases that require open air exercise after the bath, viz., when the system has been thoroughly aroused.

2. The attendants of the different bathhouses would in this manner become skillful in their respective lines.

3. Another important advantage of this specialization would be that by treating cardiac cases in the bathhouse on Phila Street the physicians would have more easy access to the bathhouse, enabling them to supervise the treatment occasionally as the Nauheim colleagues do. In the event of overcrowding, the High Rock or Lincoln bath could be used for all purposes by having the necessary saline packages on hand.

Therapeutic Application.—Formerly the Nauheim physicians began a series of baths with the thermal bath, containing the salines, with a minimum CO_2 left after exposure to the air, then increasing CO_2 content. Groedel, the highest authority, dilutes the spring water with Suesswasser to obtain percentages desired of the Nauheim spring waters.

Therapeutics.—Recognizing the rationale mentioned it is not difficult to devise a scheme of treatment by which the heart may be gently trained. I shall confine myself to a few illustrations.

In cases of positive insufficiency of the circulation, in which there is no great dyspnoea in the recumbent posture and only slight oedema, rest is the most important element of treatment, especially after arrival from a journey.

In Saratoga Springs such cases may receive with benefit the Hathorn No. 1 in the Saratoga bathhouse, diluted with 50 per cent. plain water (Groedel method), in which the salines are dissolved and poured into the tub, the bath being of about 93 F., duration 6 to 8 minutes, and repeated every other day. This should be followed by a rest of one or two hours in bed. Patient should return to his room in a wheel-chair or other easily-running vehicle. After three or more of these baths, the duration may be increased to 10 minutes, and the dilution diminished from time to time. If dyspnoea and other manifestations are relieved, the temperature of each bath may be reduced gradually as far as 91° F. and the full saline and CO_2 given. The number and frequency of the baths should be arranged entirely

in accordance with the effect of each partial series, ascertained by a report of the nurse or, better still, by the physician himself. *The prevailing mode of ordering a series of eighteen baths is unscientific and unjust to the patient.* An enduring sense of fatigue or loss of sleep are warning signals that the bath is too long, too cold or too warm.

If the cardiac insufficiency be more recent, or compensation appears to be initiated, the full strength of the saline and CO_2 bath may be administered for three baths at 93° F. and afterwards each bath reduced in temperature and the duration increased up to 12 minutes, omitting the third day.

In *uncomplicated mitral insufficiency,* if there is no cardiac muscular degeneration, the temperature of the bath may be reduced every other day until 86° F. or less is reached, according to the effect upon the pulse and general manifestations. In cases of aortic or mitral stenosis, or if there is much fibrillation, the temperature should never go below 90° F.

If there is no disturbance of compensation, namely, if palpitation or slight dyspnoea ensues only on decided or prolonged exertion, or during ascending stairs, one may begin at once, with the combined CO_2 and saline bath and proceed to the strongest baths at a temperature of 90° F. and duration of 10 minutes, but not exceeding 15 minutes. Only well-ascertained tolerance after each of these baths would warrant proceeding to lower temperatures, and this with great caution, but with a shorter duration, not exceeding 10 minutes.

Attention should be paid always to the general manifestations following these baths. A sense of prolonged fatigue and loss of sleep indicate that the bath is probably too intense.

In so-called fatty heart and so-called weak heart, manifesting themselves by a feeble compressible pulse of 80 or over, or increased considerably by ordinary exertion, one may readily proceed from the mildest to the strongest CO_2 bath, with intermissions, raising the duration up to 15 minutes, and lowering the temperature to 85° F. by degrees for each bath.

In arteriosclerosis, the therapeutic indications are conditioned upon the presence or absence of increased blood pressure and high pulse tension. In the latter cases, the bath temperature and duration may be gradually increased to a point at which results appear to be favorable, always being ready to recede on the appearance of unfavorable manifestations. When there is high blood pressure, however, great caution is necessary and it is well not to allow the temperature to go below 95° F. A full bath of Hathorn No. 1, with preceding saline addition at 93° to 95° F. is ideal in such cases, if the duration be gradually and cautiously increased as far as fifteen minutes.

In true angina pectoris, when the nitrite of amyl does not relieve the paroxysm, Groedel advises to refrain carefully from the carbonic acid bath. He gives the same warning for patients with arteriosclerosis, who have had an apoplectic attack, even of the mildest type. Babcock says "Nauheim baths must be ordered with extreme care. I now recall only one patient who appeared not to be benefited by these baths."

Angina pectoris of the so-called nervous or functional type, requires gradual neorovascular training, beginning with baths of five minues at 93° F. and diminishing the latter in each bath, as far as 85° F. without salines. Groedel and Goldscheider regard the carbonic acid baths as the most excellent means of exercising the vasomotors and of raising the tone of the cardiomuscular nervous system. This is entirely in accord with my own observation, these baths, without salines, having brought me very satisfactory results in cases of nervous or false Angina, which must be diagnosed cautiously.

In Basedow's disease and in neurasthenics suffering from nervous disturbances of the heart, manifested by easily produced palpitation, without exertion, cases should be carefully differentiated. The depressed type may be treated energetically, with brief and cold CO_2 baths, at the Lincoln Spring, which has the highest CO_2 content, starting with 90° F.

In the erethetic type, the carbonic acid baths are contraindicated unless 100° F. is used.

Purely anemic patients should be treated with a full gas content (Lincoln Spring), *without salines,* increasing duration and decreasing temperature, beginning with 90° F. and decreasing until the lowest temperature, which produces an agreeable reaction, is reached. On account of the value of open air exercise after the bath in non-cardiac cases, I recommend the Lincoln and Empire Springs, for the neurotic cases.

The Nauheim physicians have ascertained, by long experience, that patients arriving there should be kept at absolute rest, before the baths are begun, until a fairly normal condition of the pulse and respiration is established. They should also have physical and mental rest before each bath. The most favorable time for the bath is in the morning, about an hour after a light breakfast. Patients should endeavor to be quiet in the bath and avoid inhalation of carbonic acid gas. He should be dried gently, without friction, with warm linen sheets or towels, and he should rest in bed in a well-ventilated room, one or two hours after each bath. A fairly strong patient, whose pulse is not easily excited, may walk slowly to his lodgings, and there take a rest, but in the majority of cases, I regard it as advisable for the patient to ride in a chair to the hotel, and in a severe case he should not leave the bath house without resting at least an hour. The period of rest is the time for the physician to see him personally, if possible, in order to note the effect of the bath. The same rule applies to the artificial Nauheim bath.

A reliable guide to the beneficial or other effect of the bath is the condition of the pulse, which should be reduced in frequency and somewhat increased in tension, in uncompensated or imperfectly compensated patients. Groedel, Sr., holds that cases that do not respond to digitalis are, as a rule, not benefitted by baths. I am disposed to believe that this is too broad a statement, since we have in the bath (plain water or water containing CO_2 of varying temperatures and durations) means for adapting them to conditions that will not respond to digitalis.

An important auxiliary in the Nauheim Method is the mechanical treatment by passive and active movements.

Mechanical Treatment.—While rest is probably one of the most important elements in the management of cardiac ailments proper exercise is of great service. The latter must be adapted, just like the baths, to the responsive capacity of the heart, with due regard to physiological principles, viz.: that exercise of the voluntary muscles produce an

emptying of the veins, which in advanced cardiac cases always are too well filled. That the respiration may also be affected by certain mild forms of exercise, I have had abundant opportunity to prove. I have in mind a medical society meeting, in which an eminent internist stated as a result of a recent visit to Nauheim, that the resisting movements are a negligible fad. I called upon him to permit me to give him some resisting exercises of the arms, and on his declining I gave them to another colleague, who, in reply, to the question if he felt any effect said that he felt somewhat fatigued.

Active exertion, like tennis or bicycling, etc., or long walks, are absolutely forbidden, but the energy of the heart may be trained by mild methods of exercising; passive and resisting, following by the Oertl system of walking, all of which must be applied with due regard to the reserve power of the heart and the vascular system, always bearing in mind that the latter is vicarious of the former. The condition of the patient is here of great moment. He must be absolutely calm during the exercises. In the passive method the attendant grasps an extremity, with the right hand. Holding the adjoining portion of the limb, with the left hand, he flexes and extends it slowly several times, with a view to press the venous blood out of the muscles and of increasing the arterial supply of the latter. This is repeated with several extremities, after each of which the patient is advised to rest.

Resisting Movements.—I still adhere to Schott's Wiederstand Gymnastik, consisting of slow movements executed by the patient, and resisted by the operator, short intervals allowed between each for rest; patient sitting in chair, rises for each movement. They may be alternated with the baths or used after the completion of the series.

Exertion should be small and cause no increased respiration, flushing or pallor. Patient should be loosely clothed and told to breathe quietly. Resistance should be of such kind that patient feels himself master. Operator must not grasp or constrict limb, but oppose by his hand held flatly.

1. Each movement is to be performed slowly and evenly, that is, at a uniform rate.

2. No movement is to be repeated twice in succession in the same limb or group muscles.

3. Each single or combined movement is to be followed by an interval of rest.

4. The movements are not allowed to accelerate the patient's breathing and the operator must watch the face for the slightest indication of (*a*) dilatation of the alae nasi; (*b*) drawing of the corners of the mouth; (*c*) duskiness or pallor of the cheeks and lips; (*d*) yawning; (*e*) sweating, and (*f*) palpitation.

5. The appearance of any of the above signs should be the signal for immediately interrupting the movements in process of execution, and for either supporting the limb, which is being moved; or allowing it to subside into a state of rest.

6. The patient must be directed to breath regularly and uninterruptedly and should be find any difficulty in doing so, or for some reason show a tendency to hold his breath, he must be instructed to continue counting in a whisper during the progress of each movement.

7. No limb or portion of the body of the patient is to be so constricted as to check the flow of blood.

Exercises.—1. Arms extended in front of body on a level with the shoulder, hands meeting; arms carried out until in line and brought back to original position, operator resisting.

2. Arms hanging at sides, palms forward, arms flexed at elbow until tips of fingers touch shoulders, back to original position; one arm only moved at a time.

3. Arms down, palms forward, arms carried outwards and upwards until thumbs meet overhead; back to original position.

4. Hands in front of abdomen, fingers flexed so that second phalanges touch those of opposite hand; arms raised until hands rest on top of head; back to original position.

5. Arms down, palms against thighs, arms raised in parallel, planes as high as possible; back to original position.

6. Trunk flexed on hips; return to original position.

7. Trunk rotated to left, to right, return to original position.

8. Trunk flexed laterally.

9. As No. 1, but fists clenched.

10. As No. 2, but fists clenched.

11. Arms down, palms against thighs, each in turn raised forwards and upwards until arm is alongside of ear, than turned outward; arm descends backwards.

12. Arms, down, palms to thighs, both together moved backwards in parallel planes as far as possible without bending the trunk forwards.

13. Thighs in front flexed on trunk, opposite hand resting on chair.

14. Lower extremities in turn extended fully, and bent on trunk forwards and backwards to extreme limits of movements, opposite hand resting on chair.

15. Legs in turn flexed on thighs, both hands on chair.

16. Feet together, lower extremities in turn abducted as far as possible and brought back to original position, opposite hand on chair.

17. The arms extended horizontally outwards, are rotated from the shoulder joint to the extreme limits forwards and backwards.

18. The hands in turn are extended and flexed on the forearm to extreme limits and brought back in line with arm.

19. The feet in turn are flexed and extended to extreme limits and then brought back to their natural position.

These exercises are given on the Zander apparatus in Nauheim and other resorts.

The principal guide to a prescription of the Nauheim method, whether natural or artificial is *adaptation of the bath in duration, temperature, and gas and mineral contents, to each case* and a careful watching of the response of the heart to the bath. Omitting the salines is as unwise as omitting any element of asepsis in surgery.

Artificial Nauheim baths, when prescribed at home, demand greater precision in the use of the ingredients than is possible now. I would suggest a ready method as follows: When in the beginning a weaker CO_2 and stronger saline content is desired, for example, it is easy to pour the entire quantity of water required into the tub, dissolve the full quantity, 12 lb. sodium chloride and 1 lb. calcium chloride in the water; then add one-half of the acid and alkali supplied in the package to the water. If a full Nauheim bath is required, dissolve the full quantity of salines in the entire quantity of water, then add all the alkali and acid of the package. To imitate the

Nauheim bath, the water temperature should not be higher than 94° F. nor go below 86° F. unless patient has a fine reaction and is improving. The object of all treatment is to mildly raise the responsive capacity of the heart muscle by withdrawing obstacles to its free action at the periphery and enhancing the ventricular energy by slow degrees; in other words, to train the heart muscles as we train the muscles of the arm, with dumbbells, by gradual increase of labor. This is a coarse analogy; no harm can be done to the healthy voluntary muscles, by over-exercise, whereas the cardiac muscle acts involuntarily and is related intimately to the complicated machinery of the entire body, to which it furnishes pabulum, for the organic activities. Moreover, we have to deal with a pathological condition of a delicate organ, demanding cautious adjustment.

In Nauheim they find a series of eighteen baths and not exceeding twenty-four of average usefulness. From this brief data it may be inferred that the routine prescription of a series of eighteen or less number of baths, which many American physicians are in the habit of prescribing, is not to be commended. Positive individualization, which involves examination after every two or three baths, is necessary in every case, not alone on account of occasional idiosyncrasies that may bring about serious or fatal results, but owing to the uncertainties in the responsive capacity of patients, suffering from cardiac diseases, no two of whom are alike. One of my patients complained that a doctor in Nauheim, to whom I had sent him, was objectionable, because he seemed to pursue him, when he did not appear at his office, as directed. The patient regarded his motive as mercenary, but the fact was that this conscientious physician was intent upon protecting him against possible deleterious consequences from negligence of his prescriptions. It is safer to err on the right side, at the risk of being charged with mercenary motives, and see the patient frequently.

51 West Seventieth Street.

A SCHEME OF STATE CONTROL FOR DEPENDENT INFANTS.*

By HENRY DWIGHT CHAPIN, M.D.,

NEW YORK.

A very large number of dependent children are annually cared for in the State of New York by municipalities and various agencies under the official supervision of the State Board of Charities. The methods of operation and results of these different agencies vary according to the ages of the children. It seems wise in this connection to make a distinction between the infant and very young child and older children.

Let us first glance at the relative numbers that are cared for at different ages. The magnitude and growth of this work is shown by the chart on the following page, prepared by the State Board, which exhibits graphically the relative average rate of increase in the population of the State as compared with the fluctuations in the population of the institutions for children. The heavy line represents the fluctuations in the population of the institutions for children, as reported for September 30 of each of the years represented, and the dotted lines represent the relative average rate of increase in the population of the State.

The total number of children admitted to institutions reporting to the board was 18,801 during the year ending September 30, 1915. The ages of these children when admitted were as follows:

Less than one year of age	3,677
Between one and two years	1,021
Between two and five years	3,104
Over five years	10,999
	18,801

The ages of the children remaining in the care of institutions on September 30, 1915, were as follows:

Less than one year of age	1,486
Between one and two years	1,227
Between two and five years	4,807
Over five years	29,574
	37,094

A glance at these two tables will show a much smaller number of infants at the end of the year than were admitted during the course of the year. While some of these infants were discharged, or transferred elsewhere, a very large number died. The following two tables will show the number of deaths of infants and little children in institutions during the past two years. These figures do not include hospitals for the treatment of acutely sick infants.

1914. Cases Discharged from Infant Asylums (Year Ending Sept. 30, 1914)

Length of Time in Institution	Less than One Year					From One to Two Years
Age When Discharged	Under 3 Months	3 to 6 Months	6 to 12 Months	1 to 2 Years	2 to 5 Years	1 to 2 Years
Total	1306	540	582	504	614	318
Died	956	303	261	96	22	74

1915. Cases Discharged from Infant Asylums (Year Ending Sept. 30, 1915)

Length of Time in Institution	Less than One Year					From One to Two Years
Age When Discharged	Under 3 Months	3 to 6 Months	6 to 12 Months	1 to 2 Years	2 to 5 Years	1 to 2 Years
Total	1035	621	746	666	671	313
Died	674	389	350	122	22	74

As the whole number of infants in the institutions at one time is not included in these tables the mortality rate cannot be given, but a careful study of this question by a committee of the American Association for Study and Prevention of Infant Mortality has given information on this point as well. An examination of the statistics of eleven institutions operating in New York State showed that from 1909 to 1913, inclusive, 28,210 children under two years of age were cared for in these institutions, and that the death rate for babies under two years for this period, based upon the total number of children cared for, varied in the different institutions from 183 to 576 per thousand, with an average mortality rate for the eleven of 422.5 for the five years. During the years 1909 to 1912, inclusive, the death rate for children under two, based on the estimated population for the State at that age, was 87.4, practically one-fifth of that in institutions. These figures emphasize the fact well known to those working in this field that institu-

*Read before the Pediatric Section of the State Society at Saratoga Springs, May 18, 1916.

tional mortality among infants, especially in the first months, is very heavy.

We may here briefly inquire why the institution is not a favorable place to permanently house babies. Each age and period of life has its own special susceptibilities and reactions to various environments. The infant, in the first place, needs individual watching and care, and always suffers when this is lacking. It seems to crave the usual environment of family life, as this is the unit best fitted for its healthy development. In other words, it needs a home and mother. The farther we get away from these normal and natural conditions, the more the baby suffers. A poor mother and a poor home are better for the baby than an institution. But even in the best of institutions there are rarely enough good nurses for individual care during the day, and practically never at night. A baby can lose from a restless, untended night, the good that may have taken days of care to secure. The babies quickly show the lack of this individual nursing, generally by stationary or losing weight.

They rarely get sufficient fresh air, and oxygen is as necessary to their well-being as protein or fat. This may explain why improved methods of feeding have not had as favorable results inside institutions as outside of them. Lying in cots for long stretches of time, they miss the handling and fondling that even the poorest mother gives, and the muscular exercise that goes with it. When babies are removed from the natural conditions that usually go with even the poorest home, they droop in the presence of an artificial environment. The baby is the most susceptible member of the family to all external conditions.

There are other dangers in collecting and treating infants *en masse*. Reference may first be made to the spread of specific infections, such as pertussis, diphtheria and the exanthemata, to which little children are unusually susceptible. Young protoplasm is receptive to germs of all kinds, which are passed from one to another unless the greatest care is exercised in preventing their transmission. When the general vitality is depressed, resistance is likewise lowered. Institutional infants seem to lose their immunizing power against bacteria after a certain length of time. Probably the greatest and most constant danger, however, comes from the ordinary ward infections. It is almost impossible to prevent cross infections, especially from ordinary colds and influenzas, when many cases are collected in one ward. It is a constant experience in institutional management to have cases of pneumonia develop, as well as affections of the mucous membranes of the nose, ears, throat, bronchial tubes, gastrointestinal tract, and vagina. Unfortunately, if vaginitis occurs, it is nearly always specific and it is exceedingly difficult to prevent its general spread or even to treat the disease successfully in the individual.

Unfavorable conditions that cause a high death rate, and favor the spread of infections, are also usually reflected in a poor vitality in those who survive. This is one of the most serious aspects of this question. The first few years of life are, biologically considered, the most important ones we live. The rapidly growing organism has at this time stamped on it the possibilities of future vigorous life or of early degeneration or decay. Defective conditions at this period cannot be compensated for, as they sometimes can be in later life.

What then shall be done with the many foundlings and abandoned infants that drift from one institution to another in our large cities? It is a most difficult problem involving helpless, unmarried mothers, worthless, or hopelessly poor and ignorant parents, and social conditions that are hard to remedy. The institution has, at best, very poorly succeeded and usually failed in the solution of this problem, so that some other plan should be tried. The most promising endeavor consists in a proper amplification and systematizing of boarding out, accompanied by a careful follow-up system constantly at work. Relief must be aimed along the lines of family life with individual supervision instead of the collective life with institutional methods. Boarded-out babies, however, should be kept under constant oversight by some competent authority. There is nothing in common between a well-organized system of boarding-out and the old-fashioned baby farming which was subject to many abuses.

It is proposed to abolish the large city asylums and institutions for the care of homeless babies, and, instead board them out in the surrounding country. A method of operating this plan would

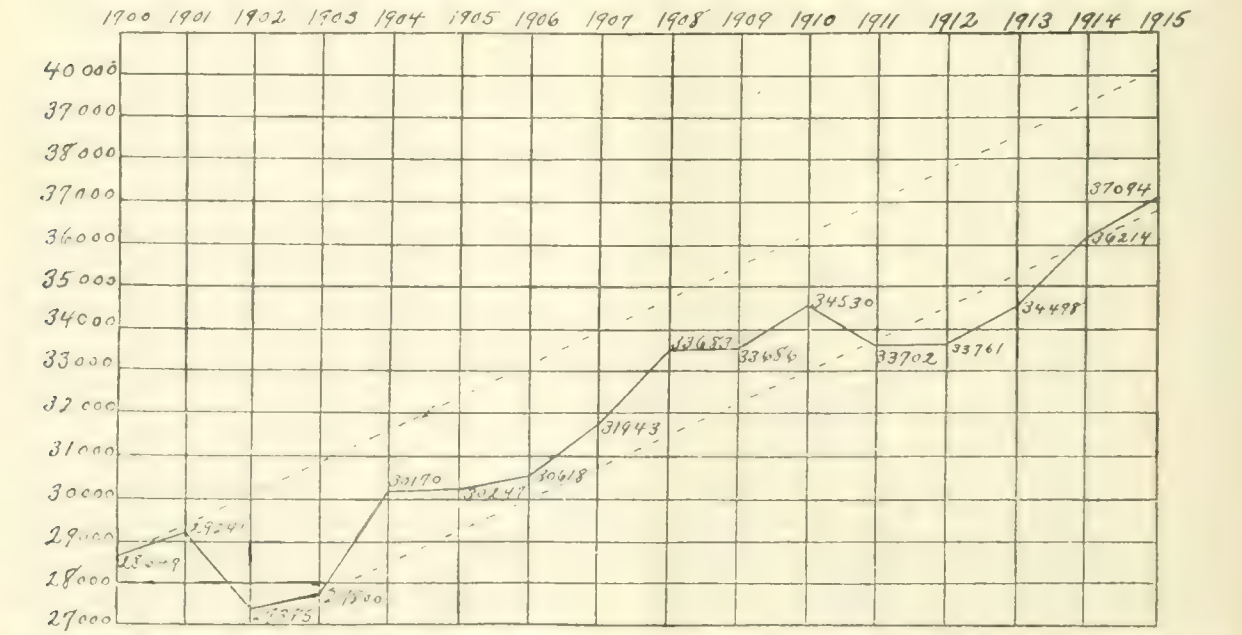

Chart showing (dotted lines) the relative average rate of increase in the population of New York State as compared with (continuous line) the fluctuation in the population of the institutions for children.

first consist of having a few small collecting stations in the city. These stations will merely act as receiving homes to study the infant's physical condition and find the proper substitute food, after which it will be promptly boarded out in the country or even in the city, but under the constant oversight of a doctor and nurse who are never to lose sight of the case. This plan requires the work to be done in certain definite localities that will serve as units, each unit having its own staff. These babies must never be allowed to get away from constant and careful supervision if good results are to be obtained. Systematic, careful study of the field of operation is required if such a work is to succeed. Desultory, haphazard methods will not avail. The same care, routine, and system that are usually brought to bear in institutional work must be applied here. Its advantage lies in working largely through direct human agencies instead of depending overmuch upon a plant or a machine. A unit should consist of a definite locality, whose limits are not too widespread, which will thus allow of a complete understanding of the community by the visiting nurse. A survey should first be made to find out the general healthfulness and hygienic condition of the locality. Next, a census of homes, desirable and available for boarding babies may be made, with data as to the members and apparent intelligence of the family, and the hygienic condition of the household. The health and tone of the mother's own children will form a very good index as to her suitability for undertaking such a work.

The large infant asylums now board out quite extensively, but do not exercise sufficient oversight of their charges. The following plan of boarding out was inaugurated by the writer in 1902 and has been in successful operation ever since. As no institution was involved, a society was formed to oversee and carry out the work. The Speedwell Society emphasizes the following points: First, boarding out in a certain district of the country noted for its healthful conditions. Second, constant attention to diet and hygiene on the part of a physician and nurse who are thoroughly familiar with this class of cases and competent to deal with them. Third, the infants are kept as long as necessary, until feeding is regulated and digestion and assimilation are improved sufficiently to result in an increase of weight. Work is kept up during the whole year and not limited to certain seasons. Fourth, the training in a given neighborhood of a number of foster mothers, who, by constantly taking these infants into their homes, become fairly expert in handling them under conditions totally unlike those offered by the best institutions, and far superior to them.

The infants are kept until they are essentially improved—the average stay being about four months—when they are returned to their homes if such exist and are suitable for the infant. There is no reason why this principle should not be indefinitely extended. For the homeless or parentless infant, it would take the place of the institution. It is safer and more natural to house the child permanently in a home, however humble, than in the best equipped institution. In the long run the baby will do better in the home, but boarding out, according to this plan, should always be done in units which will allow intensive working in many small fields. Each village around a city could have its unit, with doctor and nurse working under the direction of a local committee. Money collected for such a work would thus be largely expended in direct human service, rather than in keeping up bricks and mortar. The large sums of money now spent by the State in various communities to support children in institutions could gradually be deflected into real homes. Immense amounts are annually given by various municipalities for the institutional care of children. Thus the City of New York in the decade from 1904 to 1913 contributed $4,481,251.28 to five institutions devoted to the care of infants. Instead of paying money to institutions, it would be better for the State to support a series of carefully regulated units for the intensive care of dependent infants boarded out in homes. Various centers for this work could be formed along the lines of densest population. These lines always follow those of transportation, and in this State the Central Railroad traverses the most populous sections of the community. Following this idea, the following centers suggest themselves for tentative trial: New York, Albany, Syracuse, Rochester, Buffalo. For the upper part of the State, Watertown might serve, while Binghamton could act as a center for the lower tier of counties. Each of these localities might serve as a unit, with a doctor and nurse on a salary, and homeless or abandoned infants from the surrounding area could be placed in homes under their oversight. The whole work should be under the control and inspection of a central body, such as the State Board of Charities, in cooperation with the State Department of Health. The difference would be not only in lowering mortality, but the money would go to trained human instruments, such as doctors and nurses, rather than be expended in overhead charges for operating large buildings.

The homes in which the children are placed will be helped financially by the board paid, and morally by the good advice and watching of the trained overseers. It will thus help the problem of poverty in every community and aid in keeping families together in line with the widowed mothers' pensions. The educational value should also be considered, as the constant oversight by a doctor and nurse will help instruct each foster mother in the care of her own children. It would be possible to raise the whole standard of living among many poor families in this way and I believe this has already been accomplished in the section of Morristown, N. J., in which the Speedwell work has been going on for the past fourteen years. We have been astonished at the labor and solicitude often given by our foster mothers in the care of sickly, atrophic infants and the marvels occasionally wrought thereby. A woman who bears a baby is a creator: a woman who takes a feeble, ailing baby and restores it to health and strength is a re-creator. In this work, even poor mothers often succeed where the most exemplary nurses fail. There is something in the mother instinct that makes for healing; love has a distinct therapeutic value to the little child.

The best solution is thus to place the well and normal child in a private home constantly supervised by the authority of the State; the defective, and sometimes the acutely sick infant, may best be treated in the institution. We would not imply that good intentions and kindly service are not found in institutions in spite of the lack of individual care, but the time has gone by when good motives can be accepted as a lasting excuse for bad methods.

Thus far we have only studied this problem from the standpoint of efficiency; there still remains the

question of economy to consider. This is reached by comparing the daily per capita cost to the individual in an institution with the cost for the same type of case as handled by boarding out according to the Speedwell method. The daily per capita cost is obtained by dividing the total number of days service into the total cost of operation. This is the standard by which the Hospital Saturday and Sunday Association of New York City estimates the amount of work done by institutions, with the cost, in apportioning its funds. The following is taken from their statement of the daily per capita cost of four hospitals in New York City dealing principally with infants and little children:—$1.98, $1.90, $1.81, $1.54. Three of the city institutions for infants, in which hospital care is not an important feature, do not receive aid from the Association and hence do not report according to its standards. In an accounting to the Department of Finance of the city they report a weekly per capita cost of $4.75, $3.48, $3.34. No explanation is given as to how this amount is reached and what is included or excluded in arriving at these figures.

In estimating the real and actual cost of caring for children in institutions, several items should be considered to which attention is usually not directed. Thus no account is taken of the original cost of the plant. As this means locking up a large sum, several hundred thousand dollars—and in one case well over a million dollars, the interest of which might be expended in more fruitful methods of operation, this lost interest should be charged against the expense of the work. These buildings are also not taxed, which means that the community at large must make up this deficit by additional taxation, and thus indirectly contribute an added cost. It is thus seen that the institutional care of infants is really very costly when analyzed from all sides. Against this, the cost of the Speedwell method of carefully regulated boarding out amounts to $1.15 per capita per day, which includes absolutely everything. Travelling expenses of nurse and child to and from the country, extra clothing, special milk, the price of board and the salary of a doctor and two nurses, with occasional unforseen additional expenses, are all included in this item.

It is seen that this plan of management is economically sound as well as practically efficient. While efficiency should always come first in charitable work, economy of administration is a feature that is too often overlooked.

The time is ripe for new and concerted efforts along the line of conserving the life and vitality of motherless and abandoned infants. It is believed that the plan here proposed offers the best solution of a difficult problem if intelligently and perseveringly tried. The life of the infant is, economically, the most valuable asset of the State, as it should have the longest duration in years and the highest possibility of usefulness. The preservation and conservation of vigorous infant life should thus be one of the first concerns of the State.

Incipient Mental Disease.—Floyd M. Alpin states that in his early observation of suspected mental cases there are four major points he uses in much the same spirit as a woodsman would the four points of a compass. First, is the patient above normal in spirits, lowered in his religious habits, bold in manner, free with money and remiss in home relation? Second, is he below the average in spirits? Third, what about any peculiar ideas if any are present? Fourth, does there exist or likely to exist a decrease of mental capacity?—*Wisconsin Medical Journal.*

ANGIOMA OF THE LARYNX.*

By EMIL MAYER, M.D.,

NEW YORK.

LARYNGOLOGIST TO MOUNT SINAI HOSPITAL; FELLOW OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION, ETC.

ANGIOMA of the larynx is of rare occurrence. The importance of its recognition becomes at once apparent when we consider the danger that may follow upon an attempt at the removal of a portion of the angiomatous induration for diagnostic purposes. In the case here recorded, there was good reason to suspect the condition to be due to a malignant growth, and an attempt at removal of a specimen for confirmation of that diagnosis might have led to fatal consequences.

Mrs. S. R., aged 52, was first seen by myself in consultation with her physician at my office September 20, 1915. She had been hoarse for a year. This was her second attack. Six months previous to the beginning of this attack, she had been hoarse for a time, had a profuse hemorrhage from the mouth, and her hoarseness left her to return some months later. There was some cough, no pain, but attacks of dyspnea occurred on the slightest exertion. Patient was well nourished and there was no loss of weight. An examination showed a growth involving the left side of the larynx, extending from the lower surface of the left false cord downward, diminishing the lumen of the larynx appreciably. The left vocal cord was not visible.

The diagnosis of cancer of the larynx had been previously made, and the likelihood of this was not deemed impossible. The patient was advised to enter hospital for observation and operation if indicated.

On October 4, 1915, she entered Mount Sinai Hospital in the service of Dr. Charles A. Elsberg, and I was requested to examine her and report as to the diagnosis. On examination I found a dark, bluish-gray mass, yielding to the probe, generally rounded and extending downward on the left side from the under surface of the false vocal cord, and completely hiding the true cord without having the external appearance of a cancerous growth. My diagnosis was angioma of the larynx. In view of the history of a previous hemorrhage, and the danger of uncontrollable hemorrhage following, I declined to remove a portion of the growth, but advised laryngo-fissure and extirpation of the mass.

The operation of laryngotomy and excision of the angioma of the larynx was done by Dr. Elsberg. Local anesthesia. Under infiltration anesthesia incision 5 centimeters long over thyroid cartilage. Cartilage split in median line and edges retracted. Mucous membrane of larynx thoroughly cocainized with 10 per cent. cocaine. The posterior half of the left true vocal cord is occupied by a bluish tumor which extends into the ventricle on that side and over the greater part of the false vocal cord. The tumor was 2 centimeters in its greatest length and 1 and one-half centimeters in its greatest width. After incision of the mucous membrane above the tumor down to the cartilage, the entire mass was peeled out of its bed, part of the thyroid cartilage, the entire false vocal cord, part of the wall of the ventricle and the posterior half of the true vocal cord being excised. The base was touched with the thermocautery. Bleeding was very slight. The mucous membrane was then raised up to the epiglottis and into the saccule until it was possible to unite its edge with the mucous membrane below the vocal cord. The edges were united by interrupted sutures of fine catgut and the continuity of the mucous membrane thus restored. Edges of the thyroid cartilage were then approximated by sutures of catgut and the skin wound closed with drainage.

At the time of operation a frozen section of the tumor was made by Dr. F. S. Mandlebaum, pathologist to Mount Sinai Hospital, who reported it to be non-malignant. Subsequent sections showed that it was a hemangioma.

The patient made an uneventful recovery and was discharged cured from the hospital on November 6, with a reasonably good voice.

*Read before the 38th annual congress of the American Laryngological Association at Washington, D. C., May 9, 1916.

An examination made January 27, 1916, showed no evidence of the former growth; the left vocal cord was much thinner than normal, the voice was strong but husky and the patient had had no discomfort.

The greatest point of interest in this case lies in the diagnosis. She had been seen by a number of laryngologists, all of whom concurred in the diagnosis of tumor of the larynx, cancerous in nature. In fact at first it seemed so to me, but the color of the growth, its yielding to the probe, and finally the history of an unaccounted-for hemorrhage, made me confident that it was an angioma. I then promptly decided not to attempt the removal of the whole or a part endolaryngeally, and I am confident that had I done otherwise, there would have been a severe hemorrhage, requiring a hasty tracheotomy and perhaps a fatal ending. This opinion is held by others who have encountered this affection in this most unusual situation.

The number of cases found in the world's literature is very small. John Phillips and H. O. Ruh[1] have recorded an interesting case of this affection in a young child. It has been carefully studied and is very interesting.

A boy aged nine months was hoarse, had gradually increasing difficulty in breathing, cough and inspiratory stridor dating back to an attack of measles four months previous. The dyspnea was especially severe at night. The child was brought to the hospital with pneumonia and moribund. The larynx could not be examined. The child died the next day.

At the autopsy, stenosis of the larynx, chronic catarrhal laryngitis, hemangioma simplex of the larynx, early lobar pneumonia of the lower lobe of the left lung, were the main features found. Of special interest is the detailed description of the condition of the larynx and trachea. "On removing the larynx and on external inspection it appears quite normal. On looking down between the vocal cords, however, marked changes are found. Instead of the characteristically shaped chink between the true vocal cords, there is only a very small slit-like aperture with granular edges. On opening the larynx over the anterolateral portion of the wall and extending from the true vocal cord down to the third ring of the trachea, there is a reddish gray growth with quite an irregular and granular surface. Opposite the lower border of the thyroid cartilage there is a slightly larger growth of a deeper red color, with a more irregular surface. The lumen of the larynx and upper part of the trachea is greatly narrowed by this growth. The greatest narrowing is at the true vocal cords, where the opening measures 1-5 by 3 mm.; the point of the greatest thickening is at the lower border of the thyroid cartilage, where the mucous membrane measures 4 mm., while at the latter it is only 3 mm. at the widest point."

The pathological changes in the larynx was confined to the mucosa, and showed marked differences in the various regions. "Just below the vocal cords there is a great thickening of the mucosa. This depends on an increase of all the elements, but more especially in the fibrous connective tissues. Toward the lumen, the tissue is infiltrated with mononuclear leucocytes, and plasma cells. Thin-walled engorged vessels are quite numerous, and the mucous glands, which normally in this region are rather small, are quite large and show evidence of an active hyperplasia. In places they are considerably distorted by the overgrowth of the surrounding connective tissue. The lumina of the glands and their ducts are filled with a faintly basic-staining homogeneous material in which a few mononuclear cells are found. The gland cells stain deeply, and the nuclei are very large. The epithelium of the larynx is absent in not a few regions, and here the tissue is densely infiltrated with round cells and the surface is covered by a small amount of a cellular exudate. The tissue in this region is quite edematous. Near the lower border of the thyroid cartilage in the region which miscrocopically appeared of a deeper red than elsewhere, very interesting changes are found. Here, as in other portions of the laryngeal mucosa, the glandular elements are hyperplastic, but instead of being imbedded in an edematous, infiltrated, fibrous, connective tissue, they are compressed and distorted by what appears to be a true hemangioma simplex. The main portions of the tissues are composed of numerous small tortuous vessels, with thin walls and quite prominent endothelium, which in places seems to be more than one layer in thickness. The vessels lie very near each other, the interstitial tissue being composed of numerous spindle-shaped cells. All the vessels are filled with blood."

The same writers found but twenty-six cases of this affection in a critical review of the literature, their own case being the twenty-seventh, and they present a brief reference to each of these twenty-six cases.

Their earliest recorded case is by Fauvel in 1876. Others were presented by Coupard, Heinze, Louis Elsberg, Kidd, Seiler, Wolfenden, Schwarz, Desvernine, Brown, Loomis, M. Mackenzie, Beau, Brady, Glasgow, Ferreri, Matzen, and Thurber.

These cases, however, are not all the recorded ones, for I have found twelve more cases omitted by them, and one more published since theirs. These with my own case bring the total number of cases found in the literature up to forty-one. They are here presented in brief:

Edmund Meyer,[2] at a meeting of the Berlin Laryngological Society, January 22, 1904, showed of specimen of cavernous angioma of the larynx removed from a thirteen-year-old boy by means of laryngofissure and galvanocautery snare. The growth was subglottic on the right vocal process, and so filled the larynx as to occasion great dyspnea. Microscopically, it was composed of cavernous tissue and newly formed vessels.

Biaggi[3] (Eighth Congress of the Italian Society for Laryngology) records a case of cavernous angioma of the larynx in a hemophiliac forty-two years old. Hoarse for two years and occasional attacks of dyspnea. Tumor of the larynx, size and color of a raspberry. Spontaneous expectoration of the tumor with much hemorrhage checked by enemas of gelatine. Another growth remained in the larynx still larger than the first, which was removed by forceps eight days later and again the hemorrhage controlled by gelatine enemata.

Blevgad[4] (Proceedings Danish Oto-Laryngological Society, 1908) reports a case of pedunculated angioma on the left processus vocalis. Male, hoarse a few months, slight improvement, later becoming worse. Fourteen days before examination sudden expectoration of blood, without any cause, after which the voice was better.

Examination showed a tumor of the size of a millet seed, white and irregular surface, between the anterior and middle third of the left processus vocalis. This tumor was removed with the cold wire snare. There was little bleeding. The microscope showed it to be angioma. The writer believed that there was an attempt at healing after the spontaneous bleeding.

D. von Navratil[5] (Rhino-Laryngeal Section of the Royal Hungarian Medical Society of Budapest, January 30, 1908) presented a case of angioma laryngis. Woman of thirty-one, with a tumor of soft consistency, reaching beyond the left vocal cord. If there was any increase of stridor the speaker contemplated removal of the tumor by laryngofissure. In the discussion, von Lenart would proceed endolaryngeally, while Donogamy asked for histological examination. Von Navratil, in closing, said he had observed the case for nine months and noticed its increase. He would not consider endolaryngeal procedure or removal of a portion, because of his experience of a severe hemorrhage from an endo-

laryngeal interference in a similar case, which caused suffocation and required hasty tracheotomy.

J. Safranek[6] (Tumors of bloodvessels in the upper air passages) reports two cases of angioma, one in a woman of twenty-seven. A small angioma with pedicle extending from the vocal process, and the other with a broad base on the right arytenoid.

E. Pistre[7] (Contributions to the history of bloody tumors of the larynx; Cavernous angioma of the right vocal cord), records a case with histological report.

Loubert[8] (French Congress of Oto-Rhino-Laryngology, Paris, May, 1912), reports a case of Subglottic Angioma.

F. Roux[9] (on angioma of the larynx), reports three cases occurring on the vocal cords and a fourth one at the tip of the left arytenoid.

G. S. Ryerson[10] Angioma of the Larynx

Female, aged fifty-five. Difficult and oppressive breathing without pain, hoarseness, or cough. Had lingual varix which was cauterized. "On the left side on the anterior surface of the arytenoid, on the ventricular band, and along the external margin of the vocal cord, is a bluish-purple mass, lobulated and presenting the appearance of a small raspberry. Another similar smaller body, on the anterior surface of right arytenoid, extended beyond it. Because of disastrous effect of operative interference, radium was preferred and tried successfully."

Martuscelli and Porfidia.[11] The writers lay especial stress on the size of the growth and upon the fact that the tumor had undergone hyaline and amyloid changes. They state that Massei (International Congress of Laryngology, Vienna, 1908) declared that of eight hundred cases he had seen, only ten were large enough to be called "giant tumors." Massei was the first to call attention to the association of hemo-angio-endothelioma of the larynx and general sarcomatosis cutis, and the similarity in the histological structure of the two kinds of tumors. Such growths may attain a large size in the larynx, and have been found not only in the isthmus and under the vocal cords, but also on the uvula, soft palate, and walls of the pharynx. The authors give only a short history of their patient.

A man, thirty-two years of age, addicted to excesses—tobacco and alcohol—was brought to them with the history that he had been having attacks of painful asthma for a long time. Breathing had been much interfered with at times, he had the feeling as if there was a foreign body in his throat. Occasionally he felt as if he was suffocating and one night had an attack in which he had great trouble in getting air. Examination: A large growth filling the aperture of the larynx almost completely, very soft and changing its shape and volume with respiration, so that it caused a varying amount of obstruction to breathing. After the thorough application of cocaine and adrenalin, the base of the growth below the vocal cords could be seen. The growth was the size of a chestnut and presented the appearance of an angioma. (The authors do not describe the appearance of the growth, they do not say what was its color, and fail to state exactly where the growth started from.) With a Mackenzie forceps, modified by Martuscelli, an attempt was made to get around the growth. This failed on account of the deep situation under the cords. At a second attempt the growth with its pedicle was removed. Lively bleeding followed, and though the hemorrhage was never an alarming one, it required all the skill and close attention of an experienced laryngologist to control it. Frequent applications of cocaine and adrenalin finally controlled the bleeding. The growth was the size of a chestnut, it consisted of a mass of dilated and new formed capillaries, lying in an amorphous and homogeneous stroma, which gave with rosin the typical staining reaction of hyaloamyloid degeneration.

After remarks on amyloid degeneration of laryngeal tumors, the author's conclusions are:— (1) Report of a rare "giant" growth of larynx. (2) It was a rare form both as an angioma and because of the amyloid degeneration.

In a discussion on a case of angioma of the larynx presented by Thurber[12] before the laryngological section of the New York Academy of Medicine, Simpson advised evulsion, while I called attention to the dangers of this method and advised laryngofissure.

As a rule angiomata of the larynx lie at the entrance, and my own case is the only one, as far as I can ascertain, whose position was in the favorite site of malignant disease and was suspected of malignancy.

A study of this and of the recorded cases enables us to reach the following conclusions:—

1. Angioma of the larynx is a rare disease, occurring mostly in adults and the proportion of males to females is approximately four to one.
2. It may be mistaken for cancer.
3. Endolaryngeal removal of a portion of the growth for diagnosis, or its complete removal in this manner, is fraught with danger and may have serious results.
4. Laryngofissure, removal and suturing the mucosa are entirely safe and feasible procedures.

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40 East Forty-first Street

DUODENAL ULCER, MISTAKEN FOR CHRONIC APPENDICITIS.

REPORT OF FOUR CASES.*

By RICHARD LEWISOHN, M.D.,

NEW YORK.

Attending Surgeon, Beth Israel Hospital and Montefiore Home; Associate Attending Surgeon, Mount Sinai Hospital.

WHILE the differential diagnosis between acute appendicitis and perforated duodenal ulcer is extensively discussed in the medical literature, the differentiation between chronic ulcer of the pylorus or duodenum and chronic appendicitis is hardly ever dwelt upon. Moynihan, for instance, in his monograph on duodenal ulcer, discusses the differential diagnosis between cholelithiasis and duodenal ulcer. He does not, however, say a word about the differentiation between duodenal ulcer

*From the Surgical Department of Mount Sinai Hospital, service of Dr. A. A. Berg, New York City.

and chronic appendicitis. In his book he gives over 180 detailed histories of cases of duodenal ulcer. In not one of these histories is the possibility of an error of diagnosis considered.

And yet errors in differential diagnosis between duodenal ulcer and chronic appendicitis are not at all infrequent. The more carefully we study these cases with indefinite abdominal pains, the more we shall be impressed with the diagnostic difficulties.

We know that a chronically inflamed appendix may cause hyperacidity, with pylorospasm, pains in the right hypochondrium and vomiting, symptoms which, as a rule, point toward a duodenal ulcer. Even more or less profuse hemorrhages from the stomach may be caused by chronic appendicitis.

It is not the object of this short paper to discuss this subject from the standpoint of the appendix, *i.e.* those cases which have all the symptoms referable to the stomach and which are cured by appendectomy.

In this communication I wish to report four cases which, though suffering from a duodenal ulcer, were in other hospitals erroneously operated upon for appendicitis.

Case I.—M. S., cutter, 34 years old. Admitted June 14, 1915; discharged July 4, 1915. Patient had suffered from abdominal pains for fifteen years. The pains came on three hours after meals; they continued to the next meal and were relieved by the taking of food. He had never vomited. An appendectomy was performed two years ago without relief of his symptoms. The physical examination was negative except for a rather marked tenderness in the epigastrium. The chemical analysis of the stomach showed no abnormality.

X-ray examination (Dr. Jaches): Peristalsis very active. An incisure was seen on the lesser curvature near the pyloric region throughout the entire observation. Slight residue was still present in the stomach after six hours. The very active peristalsis, the irregularity in the pyloric region, the residue after six hours, and the persistent incisure near the pyloric region suggested a pyloric ulcer. A second examination revealed a deformity in the duodenal cap. Diagnosis: Duodenal ulcer.

Operation, June 19 (Dr. Berg): In the anterior wall of the first part of the duodenum a marked induration was felt. No crater was palpable, no stenosis of the pylorus was present. Posterior gastrojejunostomy and pyloric exclusion was done.

Re-examination, January 10, 1916: All the pains have disappeared. The patient feels perfectly well except for some gaseous eructations. *X*-ray examination shows the stoma patent and the pylorus closed.

Case II.—M. H., tailor, 38 years old. Admitted June 14, 1915; discharged July 13, 1915. The patient had complained about very severe abdominal pains for the last seventeen years. The pains were localized in the epigastrium. They usually started a few hours after eating. On admission to the hospital he complained of sour eructations, vomiting, loss of weight, and constipation. He was operated on April 1, 1915. The hospital reported that after the appendix had been removed an exploration of the stomach was made through the appendix incision; an induration was felt around the pylorus; the abdomen was then closed without any further surgical interference.

Physical examination: Distinct rigidity of the upper right rectus; no masses felt. Test meal normal. *X*-ray examination (Dr. Jaches): Violent peristalsis and segmentation of stomach. Retardation of food in first portion of the duodenum. The stomach was entirely empty four and one-half hours after the food ingestion. Diagnosis: Duodenal ulcer.

Operation, June 26 (Dr. Lewisohn): Exploration revealed an indurated crater-like ulcer about the size of a 25-cent piece in the second part of the duodenum. Gastrojejunostomy and pyloric exclusion were done. Postoperative course was uneventful.

Re-examination, January 16, 1916: Patient is feeling very well; has gained 26 pounds since the operation. *X*-ray examination shows a partial re-opening of the pylorus.

Case III.—S. H., operator, 32 years old. Admitted June 14, 1915; discharged July 5, 1915. Patient had been suffering from pains in the right upper quadrant for about eight years. His appendix was removed six years ago without relief of symptoms. He complained about pain in the epigastrium. The pains started about one hour after each meal, were burning in character, and continued to the next meal. His appetite was very poor. He never vomited. He had lost some weight in the last few years.

Physical examination negative. Test meal normal, except for the presence of some blood. *X*-ray examination (Dr. Jaches) showed marked hyperperistalsis, irregularity of the duodenal cap, retardation of food in passing through the duodenum, and a residue of the test meal in the stomach after six hours. Diagnosis: Duodenal ulcer.

Operation, June 19, 1915 (Dr. Lewisohn): An indurated ulcer (the size of a bean) was felt on the anterior surface of the duodenum about ½ inch from the pylorus. Posterior gastrojejunostomy and pyloric exclusion were done. Postoperative course was uneventful.

Re-examination, January 25, 1916: The patient felt perfectly well for about four months. In the last two months he complained of heartburn and occasional vomiting of bile. *X*-ray examination shows that the stoma is patent. The pylorus is not completely excluded.

Case IV.—L. K., singer, 32 years old. Admitted August 14, 1915; discharged August 26, 1915. The patient had suffered from stomach trouble for many years. An appendectomy was done fourteen months ago in Paris. Six months ago he was operated upon for perforated gastric ulcer (closure of the opening and gastrojejunostomy were done). His complaints on admission to the hospital were epigastric oppression one hour after ingestion of food, nausea, vomiting, and loss of weight.

Physical examination: Marked tenderness in the right upper quadrant. Test meal normal. Raisin test meal negative; no retention. *X*-ray examination (Dr. Jaches) showed hyperperistalsis, at times violent; incisures on both curvatures. Duodenum not clearly defined, except after massage, and then not completely filled. No evidence of patency of stoma. Slight residue after six hours. The hyperperistalsis and the irregular filling of the duodenum suggested the presence of a duodenal ulcer.

Operation, August 14, 1915 (Dr. Lewisohn): The abdomen was opened through an upper median incision. Division of numerous adhesions. The gastrojejunostomy was perfectly patent, easily admitting two fingers. The pylorus was markedly thickened. A punched-out ulcer was felt in the first part of the duodenum. A purse string suture was put around the pylorus. This stitch did not close the pylorus perfectly tight (application in the inflamed area). A second stitch was therefore applied proximally to the first stitch and an absolute occlusion was thus obtained.

Postoperative course: The patient never vomited after the operation. His pains disappeared immediately.

Re-examination, December, 1915: The patient reentered the hospital on account of recurrence of symptoms. He had been relieved from pains for about two months. He now complained of frequent vomiting. The *X*-ray examination showed a marked residue. We were probably dealing with a gastrojejunal ulcer. The patient left the hospital after a few weeks' medical treatment and we have not been able to trace his whereabouts.

These four patients had been suffering from distinct and severe stomach symptoms for many years (two of them as long as fifteen and seventeen years, respectively). Previously to their admissions to Mount Sinai Hospital they all had been operated on for supposed appendicitis in other hospitals, without relief of their symptoms. The appendectomy had been performed six years, two years and one year previously in the first three cases, and four months previously in the fourth case. In one case the surgeon, after removing the appendix, which was evidently normal, felt the induration of the pylorus. He did not, however, follow up his observation with a gastroenterostomy and possibly pyloric exclusion, as his findings would have warranted.

The operation which we performed in these cases consisted in a posterior no-loop suture gastro-

jejunostomy and a pyloric exclusion according to Berg's method.

In our indications for operative interference in pyloric and duodenal ulcers, the service is guided by three factors: clinical history, chemical examination of the stomach contents, and *x*-ray examination. We demand that two of these factors point toward ulcer before we advise operative interference. Even when all three factors are positive, the diagnosis of ulcer of the stomach or duodenum is not absolutely certain. We have had a number of cases in the last year which had a typical history, positive chemical and *x*-ray findings, and in which a careful exploration of the abdomen did not reveal any surgical abnormality.

Three of the four cases reported above had positive histories, and *x*-ray findings and negative chemical analyses, and the fourth case had the whole triad pointing toward duodenal ulcer.

The first two patients (those that had been suffering for fifteen and seventeen years, respectively) are entirely cured. The *x*-ray examination of the first patient shows complete occlusion of the pylorus. In the second case the pylorus has partly reopened; the patient is, however, free from symptoms, and has gained twenty-six pounds since his operation. The third patient is not entirely cured, though very markedly improved. The fourth case was not permanently benefited by the operation, which consisted simply in occluding the pylorus with a Pagenstecher stitch. The patient probably is suffering now from a gastrojejunal ulcer, which may require surgical interference.

I shall not try to enumerate certain symptoms which point toward duodenal ulcer and others as pointing toward chronic appendicitis. The text-books make it appear as if certain symptoms are pathognomonic for duodenal ulcer, whereas certain other symptoms can only be caused by chronic appendicitis. That may be true for the very typical cases of both these groups. All the text-book doctrines, however, will not help us in atypical cases. As stated above, a chronic appendicitis can cause typical symptoms of duodenal ulcer (pylorospasm, vomiting, hemorrhage, etc.). In duodenal ulcer, on the other hand, a superficial examination may suggest the presence of chronic appendicitis, and the disease will be correctly diagnosed only after a careful study of the case.

The object of this short presentation is to draw attention to the intimate relation of symptoms caused by duodenal ulcers and those caused by chronic appendicitis in atypical cases. The fact that three cases of this type were admitted to one hospital on the same day is sufficient proof that this diagnostic error (appendectomy in cases of duodenal ulcer) must occur frequently. For this reason this very interesting subject ought to have much more attention in the medical literature than it has heretofore received.

36 East Forty-First Street.

Mortality of Pneumonia in Children.—Pisek and Pease, from a study of a thousand cases have established a mortality-rate for pneumonia in children of 34.3 per cent. This is probably a higher rate than obtains in private practice, but is the average for city dwellers. Bronchopneumonia is preëminently a disease of the first two years of life, and after the third year is relatively uncommon. Lobar pneumonia is the type of the disease which is present after the third year in practically all cases, if those which are frankly secondary, or in which the pneumonia occurs as a terminal infection, are omitted.—*American Journal of the Medical Sciences.*

DYSPNEA: A BRIEF REVIEW OF ITS OCCURRENCE AND SIGNIFICANCE,

WITH REPORT OF A CASE DUE TO TUMOR IN THE SUPERIOR THORACIC APERTURE.*

By J. WHEELER SMITH, JR., M.D.,

BROOKLYN, N. Y.

Definitions.—The regulation of normal breathing is twofold. (*a*) chemical, by the concentration of carbon dioxide in the blood; and '(*b*) nervous, through the vagi, of which there are two sets of fibers: (1) inhibit inspiration and incite expiration; are excited by expansion of the lungs; (2) incite inspiration and inhibit expiration; are excited in strong expiration, as in dyspnea, by collapse of the lungs, but are not active in ordinary respiration. Any condition which leads to excessive concentration of carbon dioxide in the blood or which otherwise excites directly the respiratory center of the medulla or which does so indirectly through the vagi, produces a departure from the normal respiration.

Dyspnea means difficult or labored breathing. It should be distinguished from hyperpnea, which is exaggeration of the respiratory movements, and tachypnea, which is excessive rapidity of respiration. However, very commonly hyperpnea is associated with dyspnea, as is also sometimes tachypnea. On the other hand, hyperpnea or tachypnea commonly occur when there exists no real difficulty in the ingress or egress of the respired air. Under such circumstances it is really incorrect to call the condition dyspnea.

Varieties.—In general dyspnea may be divided into two varieties: (1) physicochemical and (2) mechanical. The physicochemical variety is due to insufficient oxidation of the tissues, and is an expression of the air-hunger of the tissues, entirely independent of mechanical interference with respiration. This last characteristic is the quality of mechanical dyspnea.

Among the varieties of physicochemical dyspnea is that which is experienced in an ascent to a high level, as on a mountain-top or in a balloon. The atmospheric rarefaction predicates a diminished oxygen concentration of the inspired air with diminished oxidation of the erythrocytes in the pulmonary capillaries. A compensatory response is made, because of the lessened peripheral resistance, by a vasodilation of the periphery, including the lungs, and an acceleration of the action of the heart. After a variable period of time, as the organism accommodates itself to its new environment, the dyspnea passes off. The erythrocytes increase rapidly in number. The red blood cell count of mountaineers is ordinarily greater than that of dwellers in the lowlands—usually 6,000,000 rather than the average normal, 5,000,000 per cu. mm.

The dyspnea of anemia is a very similar phenomenon. Whereas in the case of altitude dyspnea the hemoglobin is relatively insufficient, in this case the hemoglobin is absolutely diminished. The "breathlessness" of chlorosis is a well-recognized feature.

One speaks commonly of cardiac dyspnea and of renal dyspnea. By cardiac dyspnea is meant that which is associated with the decompensatory stage of cardiac disease. The circulations, both general and pulmonary, are impaired and the rate of flow in the capillaries is reduced. As a result there occurs

*Read before the Brooklyn Society of Internal Medicine, December 30 1915.

a passive congestion, evidenced by cyanosis and edema. The same condition obtains in the lungs, over the bases of which the physical signs of edema may be readily elicited. The dyspnea which characterizes this condition is due to a number of factors. For one thing, the unusual volume of blood in the lungs encroaches upon the air-space, thus mechanically interfering with ventilation. This effect is enhanced by the edema of the dependent parts of the pulmonary tissue, which edema naturally ensues when the passive congestion becomes more or less chronic. For another thing, because of the stagnation of the blood current, aeration of the tissues is insufficient. Carbonic acid accumulates in the blood and stimulates the respiratory center. The respiratory rate increases in consequence and, depending upon the degree of pulmonary edema and its association with cardiac distress, is more or less difficult.

The dyspnea of chronic nephritis which is unaccompanied by myocardial insufficiency, is rather difficult of explanation. According to the recent researches of Francis W. Peabody of Boston, it is a manifestation of acidosis. He offers very illuminating evidence in tabular form which reveals the relations between renal insufficiency, acidosis, and hyperpnea. He has found that in cases of chronic nephritis a reduced phthalein excretion is associated with a high alkali tolerance and a low CO_2 alveolar tension. Myocardial insufficiency complicating chronic nephritis introduces a confusing element, which makes it almost impossible to decide just how much of the dyspnea is due to the acidosis of nephritis and how much to the tissue asphyxia of passive congestion.

The dyspnea of diabetic acidosis is explained in the same way as is that of chronic nephritis.

Pneumonia of the lobar type presents as a classical symptom an increase of the respiratory rate. This symptom is very prominent, and is independent of the degree of lung involvement. The consolidation of one lobe will be the occasion of just as rapid breathing as will the solidification of an entire lung. However, the air may pass very freely to and from the uninvolved areas. In other words, there may be simple tachypnea but no real dyspnea. It appears to be due to stimulation of the respiratory center by the toxins of the pneumococcus. At the crisis, when the body asserts its immunity and the toxins are neutralized, the temperature drops, the pulse-rate falls, and the respiratory rate falls *pari passu*. The degree of pulmonary involvement, nevertheless, remains practically the same. The exudate is many days in being absorbed, and those portions of the lungs which were affected do not function again until resolution has occurred. If the tachypnea were due to limitation of the lung area it would persist after the crisis. Of course, it is quite natural to imagine that a very extensive bilateral pneumonia might so seriously interfere with the breathing surface as to produce a mechanical dyspnea from that cause. Ordinarily this is not the case. During the course of pneumonia an associated pleuritis will produce dyspnea due to the pain incident to breathing. Myocardial failure will also give rise to a dyspnea of tissue asphyxia.

Acute toxemias regularly are associated with elevation of the temperature, pulse, and respiration. The hyperpnea here is due probably to direct stimulation of the respiratory center, either by the toxins of the infecting organism or to toxic bi-products of the interaction of host and parasite. The dyspnea of lobar pneumonia may be better explained on this hypothesis than on that of mechanical interference with aeration.

Dyspnea is not a common manifestation of pulmonary disease, with certain exceptions, notably bronchopneumonia and bronchial asthma. One may have extensive destruction of lung tissue, as commonly occurs in pulmonary tuberculosis, and still be able to breathe quietly and easily. Dyspnea occurs in phthisis when there is a rapid extension in both lungs of a bronchopneumonia, with the occurrence of miliary tuberculosis, with the formation of pneumothorax, accidental or intentional (if too great a volume of gas be introduced), with emphysema and with beginning cardiac decompensation in old cases.

We now come to the subject of mechanical dyspnea. This we may consider under two heads: (*a*) that due to insufficiently pervious air passages, and (*b*) that due to inadequate respiratory movements.

Dyspnea due to insufficiently pervious air passages is called obstructive dyspnea. It is caused by some obstruction of the respiratory tract, either in the larynx, the trachea, the bronchi, the bronchioles or the vesicles; by anything within which occupies the lumen (as foreign body, excessive secretion, new growth) or by anything without which presses upon the tract and thus narrows the lumen (as aneurysm or new growth). As to nature, obstructive dyspnea may be considered as inflammatory, neoplastic, or spasmodic. The etiological classification is almost too extensive to enter upon here. Its extent may be indicated in a consideration of edema of the glottis. This condition occurs as a rare sequence of ordinary acute laryngitis, in chronic luetic or tuberculous laryngitis, in severe inflammation (as diphtheria, cervical erysipelas, pharyngeal, laryngeal, and cervical cellulitides).

Spasm of the glottis (laryngismus stridulus or thymic asthma) is little understood so far as its etiology and pathology are concerned. Its nature is probably reflex from peripheral irritation. In the edema the dyspnea is progressive and is associated with hoarseness and finally loss of voice. The condition is very fatal. In the spasm the respiration is very suddenly arrested without premonitory symptoms. As the cyanosis develops, the spasm relaxes.

The dyspnea of acute bronchitis is seen particularly in children, and is due to accumulation of tenacious secretion which is difficult to raise. It is essentially a "foreign-body dyspnea," the secretion occupying the lumen to such an extent as to preclude the easy ingress and egress of air.

Fibrinous bronchitis falls into the same category. Bronchopneumonia, in especially the "suffocative catarrh" of children, is characterized by a particularly intense and distressing dyspnea.

Bronchial or spasmodic asthma is marked by paroxysms of the most intense dyspnea. The inspiratory efforts are herculean but very little air enters the lungs. Expiration is prolonged and wheezy. The respiratory rate remains about normal. The dyspnea in spasmodic asthma is thought to be due to spasm of the bronchial muscles and to turgescence of the bronchial mucous membrane.

Dyspnea is not a prominent symptom of hypertrophic emphysema. It is particularly aggravated by recurrent attacks of bronchitis.

Acute hydrothorax, such as not uncommonly occurs in kidney and heart disease, is usually the occasion of severe dyspnea. Hydropneumothorax

and pyopneumothorax are characterized by urgent dyspnea. The dyspnea of these conditions is due to compression of lung tissue to such a degree as to render it non-functioning.

The last mentioned conditions really fall also into the category of dyspnea due to inadequate respiratory movements. Under this heading we may consider also acute pleurisy, without exudate. In this condition the pain incident to respiration is the producing cause.

Paralysis of the respiratory muscles may be due to organic disease of the central nervous system or may be hysterical. The syndrome of Briquet, which is hysterical, consists in paralysis of the diaphragm, shortness of breath, and suppression of voice. Another remarkable hysterical manifestation consists of extremely rapid breathing, reaching 60 to 100 respirations a minute, the temperature and pulse rate remaining quite normal. I have seen this condition in a Chinese deck-hand, who was sent from his ship to the Long Island College Hospital for treatment for a genitourinary condition of minor importance. While there he was seized on two occasions by paroxysms of intense tachypnea, precipitated presumably by fear that his ship would sail without him.

Meteorism or abdominal tumor may so impede the movements of respiration as to cause very severe dyspnea. The respiratory relief experienced by a patient with ascites when the abdomen is tapped is a matter of common note.

Mediastinal tumor may be solid or fluid. Hydropericardium, hydropneumopericardium or hydropyopericardium act by displacing and compressing lung tissue. Aneurysm, commonly of the transverse portion of the arch, produces pressure on the left recurrent laryngeal nerve and directly on the trachea or the left bronchus. Thus are induced hoarseness, due to spasm or paralysis of the left vocal cord, and dyspnea.

Solid mediastinal tumor is a condition ordinarily in the nature of lymphosarcoma or metastatic carcinoma. In five hundred and twenty cases of mediastinal disease collated by Hare there were one hundred and thirty-four carcinomas and ninety-eight sarcomas, located, in order of frequency, in the thymus, lymph glands, pleuræ, and lungs. The symptoms are pressure symptoms, most important of which are cough, hoarseness, and dyspnea. The cough is usually severe, paroxysmal, and of a brazen quality. The hoarseness is progressive, and is due to pressure on the recurrent laryngeal with consequent spasm or paralysis of the corresponding vocal cord. The dyspnea is suggestive of pressure on the vagus or the bronchus or both. It is accompanied by cyanosis of the face and audible wheezing respiration. There is ordinarily engorgement of the jugulars, more marked in inspiration, at which time the radial pulse is almost imperceptible and the apex impulse is feeble. There is commonly a sense of weight, aching, even acute pain beneath the sternum, radiating to the back and sides of the chest and to the shoulders. There may or may not be dysphagia; esophageal constriction may be recognized by the use of bougies. There may or may not be signs of pressure on the return circulation of either or both upper extremities, or of the lower part of the body, with ascites and edema of the legs. There is usually a pupillary change of the nature of inequality, due to pressure on a sympathetic trunk.

Report of a Case of Dyspnea Due to Tumor in the Superior Thoracic Aperture.—The superior aperture of the thorax, or inlet, is formed behind by the body of the first thoracic vertebra, at the sides by the arches of the first ribs, and in front by the upper border of the manubrium. It is contracted, reniform, and measures 10 to 12 cm. transversely and 5 cm. anteroposteriorly. Its plane is oblique from behind downward and forward. In expiration the superior border of the sternum lies on a level with the fibrocartilage between the second and third thoracic vertebræ. The inlet is small; it is bounded on all sides by absolutely rigid bony walls; it contains no waste space. Even the smallest increase in tissue in the inlet is marked by what would seem to be enormously disproportionate symptoms.

The case which I report is one with the management of which I had very little to do. I report it through the courtesy of Drs. Wightman, Robertson, and Larkin, City Hospital, New York.

A white man, 48 years old, presented himself, with hoarseness and dyspnea, both of three months' standing and both increasing in severity. He was put to bed and studied for six days. During this time his temperature ranged between 98.6° and 100°; his pulse rate, 60 and 80; his respiratory rate 16 and 20. His dyspnea was both inspiratory and expiratory in type and was very severe. During the inspiratory phase his abdominal muscles were held rigid. A very sudden, brief, vigorous contraction of the diaphragm marked the expiratory phase. He was markedly emphysematous and, due to this and to his moving very little air into and out of his lungs, breath sounds were absent except over the infraclavicular regions. He was very hoarse. At infrequent intervals he grew deeply cyanotic and his breathing became even more labored. At such times he obtained relief from oxygen inhalation. His respiratory rate was normal, but the rhythm and the time relation of inspiration and expiration were much disturbed, there being no pause after expiration. A stomach tube was passed to sound the gullet; it encountered no resistance. A woven catheter was passed into the trachea and seemed to enter the left bronchus. For a time breath sounds were feebly audible over the root of the left lung and the patient seemed to be easier. Bronchoscopy was not done, nor was esophagoscopy. His right pupil was about three times the size of the left and his right vocal cord was almost completely paralyzed. A small hard mass was felt at the level of the right sternoclavicular junction. It was not pulsatile but moved regularly with the cardiac systole, as though propelled by a pulsating vessel. Radiograph revealed an indefinite shadow in the region of the second right chondrosternal junction. A Wassermann reaction on the blood serum was negative. There were none of the evidences of aortic regurgitation. Except for an intense cyanosis during the paroxysms, circulatory disturbances were not evident.

A diagnosis was made of tumor of the anterior mediastinum, possibly either aneurysm of the ascending portion of the arch, possibly low thyroid, but probably neoplasm.

To relieve the man's dyspnea it was decided to perform a decompression operation. The right clavicle was sectioned and one inch of the first rib and of the second rib of the right side was resected. The pleural cavity of the right side was entered and a pneumothorax thereby induced. Exploration revealed an inoperable mass in relation to the trachea. The man died eight hours after the operation.

Autopsy showed a bilateral pneumothorax. Apparently the left pleural cavity had been punctured as well as the right. Why he should have lived so long under the circumstances and what was the mechanism of his dying I am unable to surmise.

There was great enlargement of the right group of tracheobronchial lypmh glands, which were matted together and infiltrated by a hard neoplasm, thus forming a very firm mass. The mass pressed upon the trachea to such a degree as to deflect it from its course and had even invaded the trachea, appearing on its inner surface as an elevated tumor, about 2½ by 4 cm.

Scattered uniformly throughout both lungs were small metastatic nodules. There was no lesion of the tongue, submaxillary glands, thyroid gland, or para-

thyroids. The left group of tracheobronchial glands and the paratracheal glands showed no invasion macroscopically. Search for the primary process resulted in its discovery in the esophagus, as a very small, ulcerated epithelioma, about 3 cm. in diameter. Microscopical study confirmed the diagnosis.

What seem to me to be most interesting are the facts that (1) the primary tumor was without symptoms; it was quite overlooked; (2) both lungs were extensively involved; (3) the very severe symptoms were all due to the metastatic involvement of a small group of glands, so placed, however, in the rigid superior aperture as to be very important.

1249 St. John's Place.

Medicolegal Notes.

Liability for Wrong Diagnosis.—In an action for malpractice for negligently and unskilfully diagnosing and treating the plaintiff's injury to his right leg as a sprain only when in fact both bones were fractured, the fibula and tibia, about three inches above their lower ends, there was considerable testimony of physicians on both sides as to the difficulty of diagnosing injuries to the lower leg or ankle, and as to the methods of examination for such injuries, and the relative utility of the different recognized tests. While not altogether in harmony, that testimony disclosed a consensus of opinion that there are certain recognized methods of examination or tests to be used when the nature of such injuries is not obvious, but hidden and difficult of diagnosis. And all agreed that an *x*-ray picture of the injured parts will disclose with almost absolute certainty whether any fracture exists, that the next most useful mode of examination is manipulation and moving of the injured part while the patient is etherized, and that manipulation without etherization is the least efficient, because it is necessarily more or less limited on account of the pain thereby caused to the patient. The defendant concluded that it was unnecessary in the plaintiff's case to have an *x*-ray picture taken of the leg, or to etherize the patient, and he relied upon his manipulation of the injured parts and his examination for deformity or other possible indication of fracture. He made a mistake, however, and his diagnosis was wrong. But that fact alone was not sufficient to render him liable. It must first be shown that the mistake was the result of a failure to use painstaking care and diligence, and to exercise the best of his admitted learning, skill, and judgment in his examination and treatment of the plaintiff's injuries. Whether this was so was a question for the jury.—Nickerson v. Gerrish, Maine Supreme Court, 96 Atl. 235.

Correctness of X-Ray Photographs.—The Iowa Supreme Court holds that the rule as to the identification of photographs, diagrams, maps, and other illustrative evidence, in case of personal injury, is properly extended to skiagraphs, or pictures obtained by the *x*-ray process; that is to say they are sufficiently identified by the testimony of experts who took them and surgeons who saw them taken. In an action for damages for broken legs, an objection that there was no showing that such skiagraphs were correct representations of the plaintiff's legs at the time they were taken was overruled. In one sense of the word, the Court said, no such identification is possible. A skiagraph is a picture of a state or condition of things which is not visible to the naked eye, and its correctness is, at best, a conclusion. Owing to its novelty, the courts were for a time somewhat slow to admit a skiagraph in evidence, except upon quite minute preliminary proof of its scientific accuracy, but its use has become so common and the general correctness of its representations has been so fully proved by investigation, that the above rule has now been very generally adopted.—Ingebretsen v. Minneapolis, & St. Louis N. Co., (Iowa) 155 N. W. 327.

Liability of Third Persons for Physician's Fees.—A physician sued to recover the alleged reasonable value of professional services rendered to th husband of the defendant. The services were alleged to have been performed at the joint request of the defendant and her husband, now deceased.

It is well settled that the performance of services by a physician for a third person at the request of another gives rise to no implied promise to pay for the services by the person making the request, unless the relationship of such person to the plaintiff be one which imports a legal obligation to provide them. McGuire v. Hughes, 207 N. Y. 516, 101 N. E. 460, 46 L. R. A. (N. S.) 577, Ann. Cas. 1914C, 585. In order to support such a liability of a person under no legal obligation to provide the services of a physician, there must be an express promise on the part of such person to pay for the services, made before the services are rendered.

The plaintiff recognized this rule, and that a wife is under no legal obligation to provide such services for her husband out of her own estate, but relied upon an alleged express promise of the defendant to pay for the services. The evidence of such express promise by the defendant was the testimony of the plaintiff that at the time when he commenced the services he had a joint conversation with the defendant and her husband, the patient, in which they said:

"Doctor, you are the one we have confidence in, and we want you to visit me, or the sick one, three times daily, and we will pay you for everything you do for us."

He was asked to state exactly what each party said, and replied:

"They all talked. They were both talking together. I cannot separate them."

The defendant denied that she made any statement in regard to payment for the plaintiff's services, and testified that there were several other doctors in the room, who were all talking in consultation, and she had nothing to say to any one.

Resolving this issue of fact most favorably to the plaintiff, the court was of the opinion that the testimony did not show an express promise by the defendant to be individually personally responsible for the debt. Assuming that the wife said, jointly with her husband, "We will pay you for everything you do for us," it was held that under the circumstances disclosed the "we" clearly referred to the family, and to the husband as the responsible head of the family. In the absence of a separate statement by the wife, saying "I will pay you," or words to that effect, no express promise on the part of the wife to be personally liable for the doctor's fees could be found. Judgment for the plaintiff was reversed, and a new trial granted.—Bernaglia v. Cirota, New York Appellate Division, 156 N. Y. Supp. 432.

Employment by Corporation.—The manager of a manufacturing company, who was accustomed to consult the directors individually about its affairs, no formal meetings being held, employed a physician to treat an injured employee, and thereafter consulted individually a majority of the directors in relation to the employment. No objections were interposed by any of the directors as to what the manager had done, and the latter again directed the physician to proceed with the treatment. It was held, in an action against the company for the physician's services, that there was a ratification by the company of the manager's original contract with the physician, since directors may bind their corporation by acting separately if that is their usual practice.—Indiana Die-Casting Development Co., Indiana Supreme Court, 111 N. E. 16.

Malpractice — Burden of Proof on Plaintiff. — In an action against a physician and surgeon for negligence in the treatment of an injured finger, it was held that expert testimony as to what would be the ordinary, usual, and approved method for treating the finger under like circumstances, was properly admitted. In such an action the plaintiff must show that the defendant's treatment either did something that physicians and surgeons of ordinary care, skill and diligence would not have done under similar conditions, or that the defendant omitted to do some particular thing that they would have done under similar conditions, and must further show that the injury directly resulted from the neglect or omission shown.—Hier v. Stites, Ohio Supreme Court, 110 N. E. 252.

Practising Medicine — Clairvoyancy. — Under the Massachusetts statute, Rev. Laws, c. 76, § 9, providing that the provisions of Section 8, prescribing a penalty for one who, without lawful authorization practises medicine, shall not apply to a clairvoyant, provided he violates none of the provisions of Section 8, it is held that a person to whom the diagnosis of a disease and the kind of medicine prescribed for it were claimed to be revealed by clairvoyance cannot prescribe medicine for the cure of the disease.—Commonwealth v. Lindsey, Massachusetts Supreme Court, 111 N. E. 869.

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QUANTITATIVE MICROESTIMATIONS OF BLOOD CONSTITUENTS.

THE pursuit of quantitative analysis of the blood has led logically to the use of larger and larger quantities of that fluid until a limit has been reached; hence attempts began to be made to determine what could be done with minimal quantities of blood. No one of course will deny that great advantage is inherent in working with large volumes of blood, for these alone can permit of a complete analysis of the fluid. But when a single constituent alone is concerned, be it sugar or urea, a very small quantity of blood may be made to yield the percentage presence of such bodies, which is all that can be expected in blood analyses. Before micromethods can be regarded as efficient, the results thereby obtained must be compared critically with those of ordinary quantitative analyses; and in so far as they agree closely with the latter they may be used to replace them, allowing for error. The clinical advantages of the newer method will be enormous in theory, for not only is the amount of blood necessary for a test trivial and the test amenable to repetition, but the results of analysis may be obtained in a relatively brief time.

During 1913 Ivar Bang of the University of Lund in Sweden published several preliminary papers on microestimations of blood and quite recently his first formal publication on the subject has been issued.[1] The subject matter comprises only the chemical technique and the clinical application of the finds is quite ignored. The subject is, however, ready for the clinical pathologist, and has probably been in use in certain clinics for some time. Professor von Noorden has already spoken of it as a welcome aid in renal diagnosis. In quantities of blood varying from 10 to 15 centigrams Bang has computed the percentage of the chlorides, residual nitrogen, urea, total albumin, blood-sugar, fat, water, and dry solids.

The principle of this procedure consists in the absorption of a few drops of blood by a small piece of filter paper. Such of the constituents as can be extracted by the proper solvents are now removed in succession, the total albumin being left in the paper, while sugar, urea, amino acids, salts, etc., are present in their individual solutions. The filter paper is weighed before and after absorption of blood and the weight of the latter determined by subtraction. The filter paper must be specially suited for the purpose. Each sheet which must weigh at least 50 gm. is cut up into pieces and extracted first with acetic acid and then with water at 50 to 60 deg. C. The fragments are dried at room temperature and cut up again into bits of 16 x 26 mm. The process of weighing these pieces of paper before their use is a complicated one which need not be detailed; a special torsion balance is used As soon as the weight has been recorded, the blood is at once absorbed and the paper reweighed before any evaporation can take place. Blood is taken from the ear or pulp of the finger, and no attempt is made to collect it in quantity. The finger is gently stroked and the blood at once caught on the paper. On no account should the bleeding parts be forcibly squeezed for this would mean admixture with tissue fluids. The paper should not be saturated with blood, for this would interfere with the extraction of the soluble constituents. It is better to err on the other side. If the paper has taken up too much blood it will avail nothing to dry it, for extraction will in such a case be greatly prolonged. Experience has shown that at least 8 centigrams of blood must have been absorbed for the success of the test and that 12 centigrams is the average amount taken up. There is absolutely no advantage in using more than 15 centigrams. After the absorption of the blood, for which 5 minutes should be allowed, the paper should be dropped into a test tube and one of the solutions added in sufficient quantity to cover it. Sugar comes out in half an hour, chlorides require twenty-four hours, etc. The solutions should remain clear.

In the microestimation of urea, residual nitrogen, and all bodies which contain nitrogen, the so-called micro-Kjeldahl method is employed, which is made up of a combination of gross methods now in use. To the solution must be added an acid mixture—the author uses purest sulphuric acid and potassium sulphate—and a catalysator (he prefers a few drops of a 5 per cent. solution of copper sulphate). Heat is then applied and the mixture is distilled. In the special determination of urea the solvent consists of alcohol and ether. The test tube is corked and allowed to stand five hours. It is then decanted into a Kjeldahl bulb and the reagents added with a little water, after which the bulb is placed on a water bath until the ether and most of the alcohol have evaporated. The bulb is then heated until its contents assume a pure green color after which they are distilled as in ordinary analyses. The urea is of course estimated as nitrogen.

The sugar solvent contains saturated solution of potassium chloride, uranyl acetate, and chlorhydric acid, and after it has extracted the sugar from the paper a copper stock solution comprising four more ingredients is added and the whole boiled for nearly two hours (half an hour had been allowed for extraction). The bulb is rapidly cooled, and the contents tested for sugar with iodine solution. This test is really for the entire reducing substances in the blood, and not for dextrose alone, hence, as in all such cases, there is room for error. Further

[1] Methoden zur Mikrobestimmung einiger Blutbestandteiler, von Ivar Bang, Wiesbaden, J. F. Bergmann, 1916.

sources of error are also to be borne in mind. In all micromethods there must be comparison with gross method standards.

It is evident that the technique of these micromethods places them well beyond the capacity of the ordinary office laboratory. Only a few of the larger hospitals contain laboratories and chemists who are equal to such analyses. From the two examples given it is seen that in experienced hands reports could be made in very short time and with little expense. In times more favorable for travel the chemist would much prefer to see Bang carry out his tests than to attempt them from the printed directions which constantly bristle with cautions and possibilities of error.

HEALTH INSURANCE.

A NEW edition of a tentative draft of an act on health insurance has been issued by the Committee on Social Insurance of the American Association for Labor Legislation. The draft as revised meets some of the objections raised against the original act when it was presented to the New York Legislature in the form of the Mills bill.

The section which interests us particularly is the one dealing with the medical aspects of the act. The revised edition contains several important additions. In the first place it provides that the insurance carriers shall make arrangements for medical, surgical, and nursing service through appropriate institutions or associations, and that the medical aid provided under this act shall be secured either through a panel of physicians from among whom the beneficiaries shall have a right to choose, subject to the physician's consent to serve, or through salaried physicians in the employ of the insurance carriers to whom shall be assigned certain areas or a certain number of insured persons. The act allows a large degree of latitude in arranging the medical service and in combining the two or three recognized methods of compensation to suit the various demands and conditions. This section of the act seems to very reasonable and well considered. The restriction placed on the physicians under the free choice plan, not to accept on their lists more than five hundred insured families nor more than one thousand insured individuals, is well advised. It has been demonstrated that an unlimited service makes it impossible for a popular practitioner to give more than a very cursory attention to his patients when his list exceeds a certain number. In England some of the practitioners have assistants in order to meet the heavy demands made upon them. This is a practice which defeats, in a measure, the provision of the law as to free choice.

The second new section of the act, which relates to medical officers, should be modified. To relieve the physician of the burden of issuing certificates of disability and to divest him entirely of responsibilities on which very often the success of health insurance depends, the act provides for special medical officers whose duty it will be to examine the patients who claim cash benefits and to issue certificates of disability. Incidentally, it will also be the duty of the special medical officers to supervise the character of the medical service. One may agree or disagree with the principle of supervision of medical work, but when it is once decided upon it should be exercised in such a way as not to hurt the feelings of the conscientious men who must submit to it because of the failings of a few. The best form of supervision is from within, that is by the medical bodies or associations of physicians themselves. The provision of the act, which leaves it to the insurance carriers to appoint medical officers to perform this duty, should be changed in such a way as to give the appointing power either to the medical associations or to the State Insurance Commission or to both of them jointly.

The provision for an arbitration committee which shall sit in judgment over disputes between the insured and physicians or between funds and physicians concerning medical benefits, and shall be composed of representatives of the interests concerned, with an impartial chairman appointed by the State Insurance Commission, is a very important addition to the act. The new draft is much more definite in its provisions than was the Mills bill and it is an improvement over its predecessor.

AVIATORS' SICKNESS.

FLYING is so common in Europe nowadays that it is somewhat a matter for surprise that more has not been written concerning the effects of rapid flight on the human organism. Perhaps those engaged in the pursuit of flying are so occupied with their duties of observing or of fighting the enemy's aviators that they have no time to attempt to analyze their own sensations. Also they are for the most part unable to describe their feelings from a scientific standpoint.

In the *Medical Press*, May 3, 1916, Dr. M. G. Ferry, a French aviation instructor, gives an experimental study of the arterial tension during flight, and concludes as follows: An ascent in an aeroplane leaves after it a condition of arterial hypotension, and this is the more clearly marked as the ascent and especially the descent have been more rapid. On the other hand, being called upon to adapt its systolic effort rapidly to circumambient conditions, which are essentially and constantly changing the cardiovascular apparatus becomes quickly fatigued. The fatigue brings about at an early stage a degree of lassitude quite disproportionate to the amount of effort expended. Why should we not attribute to the development of a certain degree of cerebral anemia the causation of which is referable to two factors of clearly associated influence, cardiovascular fatigue and arterial hypotension, the onset of these sensations of somnolence, faiting, and vertigo, which are sometimes experienced by aviators and referred perhaps too hastily to modifications of auricular tension; unequal degrees of pressure on the two faces of the tympanic membrane, hypertension within the labyrinth, on modifications in the conditions of the semicircular canals? We might thus have also an explanation of certain grave accidents, such as have occurred after rapid descents from high altitudes.

From these considerations, the writer regards it as highly necessary to advise the aviator to fly at a tranquil pace, and not pass too rapidly from one altitude to another. Not only will he avoid the various forms of malaise to which the aviator is subject but he will also escape the fatigue of his cardiovascular system, which tends to recur more rapidly with the frequent succession of flights; and more especially when such ascents and descents in particular have been effected at a too swift pace.

Blood Stains and Crime.

Eighty-five cases a month would prevent even the indefatigable Sherlock Holmes from having recourse to the needle. This is the average of criminal cases which come under the notice of the Imperial serologist at Calcutta, India, who in thirty-one months examined 6,566 articles suspected to be blood-stained, representing 2,643 criminal cases. The officer in question, Lieut.-Col. W. D. Sutherland (*India Journal of Medical Research*, Calcutta, 1915) gives some Kiplingesque side-lights on crime in the land of mystery, India, especially showing how the natives manufacture evidence and cheerfully perjure themselves to convict their enemies of crime. Sutherland found Vibert's solution (one-half part of mercury perchloride, two part salt, and distilled water to make a hundred parts) the best for the microscopical examination of blood. He does not find the difficulty in distinguishing human blood from ape's blood that German investigators have affirmed, and moreover the ape does not appear to be readily available in India. In thirty-six of the cases examined by Lieutenant-Colonel Sutherland the stains were found due to nonmammalian blood, in ninety cases they were due to mammalian, but not human blood, and in the remainder, about 5,000 cases, the blood was human. Certainly, with 212 blood-stained articles to examine a month, besides the other routine duties of his office, the Imperial serologist at Calcutta cannot find time hang heavily on his hands.

True Narcolepsy.

So many conditions have been brought under the rubric of narcolepsy that it has become necessary to discriminate between the original or essential and the symptomatic types. As described by the French epileptologist, narcolepsy consists of a series of attacks of deep somnolence which are secondary to a sudden and profound fatigue. The patient slumbers for a quarter hour or thereabouts and awakens depressed. The attacks may be ushered in by mirthless, spasmodic laughter, the head is flexed and the lower jaw drops. The patients have a taint, but are quite free from epilepsy or hysteria. At a military medical evening held at Zehendorf last October Henneberg described a case which he characterized as of the strict Gelineau type. The patient was a soldier, aged 35, whose father died of tabes dorsalis, and who lost a brother from multiple sclerosis. He himself was free from epilepsy and hysteria. A member of the Landstrum, he was equal to campaign work save that he slept on march and on foot. He wakened readily, but sleeping on sentinel duty led to an investigation. The man was prematurely gray, had the degenerative facies, and was "nervous." Nevertheless he was powerfully built and did not tire readily. He had had up to five attacks daily for two years.

News of the Week.

Medical Schools Graduate.—Seventy-three graduates of the College of Physicians and Surgeons, New York, received the degree of doctor of medicine at the commencement exercises of Columbia University on June 7. The degrees were conferred by President Butler of the University, and the Hippocratic oath was administered by Dean Lambert of the Medical School.

On the same day New York University conferred the degree of doctor of medicine on forty-six graduates of the University and Bellevue Hospital Medical School. Announcement was then made of the award of the Glover C. Arnold prize in surgery to Daniel B. Lynch, and of the Valentine Mott medals to Bertram Krugman and Emerson Noll.

The graduating exercises of the Cornell University Medical College were held in the Dispensary Hall of the college building in New York on June 8, degrees being given to four women and twenty-six men graduates. Dr. W. Gilman Thompson, acting dean, presided at the exercises; the degrees were awarded by President Schurman of the University, and Dr. Lewis A. Stimson, who has recently returned from the war zone, addressed the class. Several prizes were awarded, the John Metcalfe Polk Memorial prizes for general efficiency to Monroe A. Meyer, first prize; Arthur S. McQuillan, second prize; Anna Kleegman, third prize; for efficiency in otology, Charles T. Olcott, first prize; Robert S. Cleaver, second prize.

Twenty graduates of the College of Physicians and Surgeons, Boston, were given diplomas and the degree of doctor of medicine at the commencement exercises held on June 5. The degrees were conferred by Dr. Charles C. Farnham, president of the college.

Dr. William H. Welch, professor of pathology at Johns Hopkins University, received the honorary degree of doctor of laws from the University of Chicago at the commencement exercises on June 6.

P. & S. Appoints Women.—For the first time in its history, the College of Physicians and Surgeons, Columbia University, New York, has appointed women to its staff. Dr. Rosalie S. Morton has been made attending surgeon to the Vanderbilt Clinic, Dr. May G. Wilson, clinical assistant in medicine at the clinic, and Dr. Vera Dantschakoff instructor in anatomy.

New Floating Hospital.—The new floating hospital of St. John's Guild, the Helen C. Juilliard, a gift of the late Mrs. Juilliard, was opened for inspection on June 7 and will make its first trip with New York's sick babies on July 5. The boat was built at a cost of $125,000, and is the third floating hospital to be used by the guild. Since 1875, when the work was first started, 1,601,933 persons have been carried in the hospitals, and last summer alone the number reached 31,764.

To Inspect Restaurants.—Having ascertained that at least one million persons dine daily in the 5,163 hotels, restaurants, cafés, or other eating houses of New York City, the Department of Health, operating through the Food and Drug Inspection Bureau, has begun a study of the conditions under which the food therein served is prepared, of what quality it is, how it is treated, and how cooked. The restaurants will then be graded as "good," "fair," or "bad."

Hospital Units.—The Massachusetts General Hospital and the Boston City Hospital, Boston,

have each organized a base hospital unit, similar to those recently organized in New York, for service during war time.

Red Cross Membership Grows.—As a result of the campaign now going on throughout the country, the membership of the American Red Cross in and about New York has been increased by over 23,000 members, making the membership of the metropolitan district, embracing the territory within twenty-one miles of Manhattan, over 50,000. It has been decided to continue the movement through June, and it is hoped that the total membership in the United States may be raised to the one million mark.

Bar Wood Alcohol.—In response to the request of the Commissioner of Health of New York City, the members of the Brewers' Board of Trade of New York and vicinity, controlling thirty-seven breweries in New York City and nine in New Jersey, recently adopted a resolution prohibiting the use of methyl alcohol in connection with the varnishing of vats in their plants. It had been shown previously that the use of wood alcohol in this way was a serious menace to the health of the men employed in the work of varnishing, and that several cases of death or of complete or partial loss of vision could be traced to this cause. The Department of Health is particularly gratified with the action of the brewers in this instance, as showing the superiority of the newer method of public health administration which makes effective use of persuasion rather than of legal compulsion.

P. & S. Alumni Prize.—The prize offered biennially by the Association of the Alumni of the College of Physicians and Surgeons, New York, has been awarded this year to Dr. Harold Neuhof, '05, New York, for his essay on "Fascia Transplantations into Visceral Defects."

College Raises Requirements.—The University and Bellevue Hospital Medical College, New York, beginning with the class entering September, 1918, will require two years of college work before admission. This increase in entrance requirements is made necessary because the facilities of the college are greatly overtaxed by the present classes, the previous requirements having included only one year of preparatory college work. By arrangement with the academic department of New York University it will now be possible for students after six years and a half to obtain the combined degree of bachelor of science and doctor of medicine. Dr. Samuel A. Brown, assistant professor of medicine, has recently been made dean of the medical school.

Teaching the Deaf.—The American Association to Promote the Teaching of Speech to the Deaf has offered a prize of $300 for the best essay on the subject of teaching and training deaf children in the home, the essay to be submitted before November 1, 1916. Details of the competition may be obtained on application to the judges of the Alexander Graham Bell Grosvenor Memorial Fund, Volta Bureau, 1601 Thirty-fifth street, Washington, D. C. The successful essay becomes the property of the association and will be published in the *Volta Review* and later in book form for wider distribution.

City Death Rate.—The death rate in New York during the week ending June 3 was slightly higher than that of the corresponding week of last year, the increase being due principally to the increase in the mortality from heart disease, nephritis, and cancer, with a smaller increase in the number of deaths due to bronchitis and diarrhea. The mortality of practically all the other diseases was decreased, thus offsetting to a considerable degree the increased mortality of the first group. The total deaths reported during the week were 1,473, as compared with 1,430 reported during the corresponding week of 1915, the respective rates being 13.75 and 13.68 per 1,000. The death rate for the first twenty-three weeks of 1916 is 15.13 as compared with 15.34 for the corresponding period of last year.

Opportunity for Volunteer Service.—There are several vacancies for volunteer clinic physicians at the Occupational Clinic of the Division of Industrial Hygiene, Department of Health, New York, the service requiring attendance three mornings a week for two hours, and physicians who are willing to co-operate in this work are requested to apply in writing to the Director of the Bureau of Preventable Diseases. Those who have in the past associated themselves with the Occupational Clinic as volunteer clinic physicians have, with few exceptions, acquired knowledge and experience which has fitted them for service in the newer phase of medical practice, industrial corporation service.

Corrective Exercises for Children.—The class for corrective exercises for the children of the Harlem Italian Clinic maintained by the Department of Health, New York, held its annual exhibition recently, eighty children participating. As a means of increasing bodily resistance and so acting as an effective preventive measure against tuberculosis and other diseases, these exercises have been deemed of very great value by those who have given the subject careful study, and their wider adoption is to be hoped for. Much credit is due to the Society for the Prevention and Relief of Tuberculosis, whose generosity has made it possible to maintain this class as an important branch of tuberculosis preventive work.

Health Insurance.—In response to public interest in health insurance the Massachusetts Legislature has created a commission to study social insurance with special reference to sickness. The State Department of Health and the Bureau of Statistics are directed to co-operate with the commission of nine members which will prepare a report and recommend the form of legislation to be introduced in January, 1917. California has a similar state commission already at work on this problem, which is attracting wide attention since the introduction this year of bills for health insurance in the legislatures of Massachusetts, New York, and New Jersey. Proponents of this legislation believe it will bring about a movement for "health first" comparable to the "safety first" campaign which followed the passage of laws covering workmen's compensation for accidents.

Street Accidents.—The Police Department of New York reports that during the month of May, 1916, forty-two persons were killed by vehicles in the city streets, of this number twenty-six were children under sixteen years of age. Of the total number two were killed by surface cars, thirteen by passenger automobiles, twelve by automobile trucks, ten by horse-drawn vehicles, one by an unidentified vehicle, one by collision between a motor cycle and an automobile truck, one by an accident to a truck, and two by being thrown from wagons drawn by runaway horses.

A School of Hygiene for Johns Hopkins.—It is announced that the Rockefeller Foundation has decided to establish in Johns Hopkins University a school of hygiene and public health which will be devoted to training students in preventive medicine and public health work. It is expected the school will be opened in October, 1917. It will take a year to construct and equip the necessary building and organize a staff of teachers. The work of organization will be undertaken by Dr. William H. Welch, professor of pathology, and Dr. William H. Howell, professor of physiology, of Johns Hopkins. Dr. Welch has been selected as director of the new school. The immediate need of such an institution has been emphasized by the difficulty experienced by cities and States in finding men equipped for promoting public health, sanitation, and preventive measures generally.

Fight Sanatorium.—A petition signed by more than 100 of the residents of Verona, N. J., protesting against the location of a tuberculosis sanatorium in the residential section of the town, has been presented to the New Jersey State Board of Health.

Medical Society Elections.—NEBRASKA STATE MEDICAL ASSOCIATION: Annual meeting at Omaha on May 24 and 25. Officers elected: *President*, Dr. William F. Milroy, Omaha; *Vice-Presidents*, Dr. Miles S. Moore, Gothenburg, and Dr. Porter F. Dodson, Wilbur; *Secretary*, Dr. Joseph M. Aikin, Omaha; *Treasurer*, Dr. A. S. Von Mansfelde, Ashland.

MASSACHUSETTS MEDICAL SOCIETY: 135th annual meeting at Boston on June 6. Officers elected: *President*, Dr. Samuel B. Woodward, Worcester; *Vice-President*, Dr. Fred W. Taylor, Cambridge; *Secretary*, Dr. Walter W. Burrage, Boston; *Treasurer*, Dr. Edward W. Buckingham, Boston.

DES MOINES VALLEY MEDICAL ASSOCIATION: Annual meeting at Ottumwa, Ia. Officers elected: *President*, Dr. Charles B. Taylor, What Cheer, Ia.; *Vice-Presidents*, Dr. Charles H. Magee, Burlington, Ia., and Dr. Burt O. Jerrel, Oskaloosa, Ia.; *Secretary-Treasurer*, Dr. E. B. Howell, Ottumwa.

Obituary Notes.—Dr. SARAH HOWE MORRIS, formerly of Buffalo, N. Y., a graduate of the Boston University School of Medicine in 1869, and a member of the Erie County Homeopathic Medical Society, died at Santa Monica, Cal., on May 25, aged 83 years.

Dr. BENJAMIN U. JACOB of Waukesha, Wis., a graduate of Northwestern University Medical School, Chicago, in 1881, and a member of the American Medical Association, the State Medical Society of Wisconsin, and the Waukesha County Medical Society, died on May 28, aged 66 years.

Dr. ALLEN A. GREENE of Anniston, Ala., a graduate of Vanderbilt University Medical Department, Nashville, Tenn., in 1891, and a member of the Medical Association of the State of Alabama and the Calhoun County Medical Society, died at St. Luke's Hospital, Anniston, on May 27, aged 46 years.

Dr. JAMES STENHOUSE of Denver, Col., a graduate of the Denver College of Medicine in 1886, died at St. Joseph's Hospital, after a short illness, on May 24, aged 57 years.

Dr. CHARLES J. STOVALL of Bowling Green, Ky., a graduate of the Kentucky School of Medicine, Louisville, in 1891, died at his home on May 26, aged 62 years.

Dr. JAMES J. GIBSON of Lexington, Ky., a graduate of the Hospital College of Medicine, Louisville, Ky., in 1889, and a member of the Kentucky State Medical Association and the Fayette County Medical Society, died suddenly at his home, on May 28, aged 48 years.

Dr. WILLARD PARKER WORSTER of New York, a graduate of the College of Physicians and Surgeons, New York, in 1867, formerly physician to the Post-Graduate Dispensary, and a member of the Medical Society of the State of New York and the New York County Medical Society, died at his home on June 7, aged 74 years.

Dr. ALFRED KING of Portland, Me., a graduate of the Medical School of Maine, Portland, in 1886, and a member of the American Medical Association, the American Therapeutic Society, the Maine Medical Association, and the Cumberland County Medical Society, and a fellow of the American Surgical Association, died at his hospital on June 4, aged 55 years. Dr. King was professor of surgery in the Bowdoin Medical School and consulting surgeon at the Webber Hospital.

Dr. NATHAN JENKS of Detroit, Mich., a graduate of Cornell University Medical College, New York, in 1899, and a member of the American Medical Association, the Michigan State Medical Society, the Wayne County Medical Society, and the American Association of Obstetricians and Gynecologists, died at his home on May 30, aged 44 years. Dr. Jenks was associate professor of obstetrics and clinical midwifery in the Detroit College of Medicine and fellow of the American College of Surgeons.

Dr. ELIZABETH CORBETT, formerly of San Francisco and more recently of New York, a graduate of the University of Michigan, Department of Medicine and Surgery, Ann Arbor, in 1879, an honorary member of the American Medical Association, and sister of Dr. Harvey W. Wiley of Washington, died in the Washington Sanitarium, Takoma Park, Md., on June 4, aged 83 years.

Dr. THOMAS FRANKLIN SMITH of New York, a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1860, and a member of the American Institute of Homeopathy and the New York State Homeopathic Society, died at his home on June 6, aged 83 years. Dr. Smith was a charter member of the International Homeopathic Medical Association, was physician to the Metropolitan Hospital on Blackwell's Island, and during the Civil War was a surgeon in the United States Army.

Dr. ALFRED P. KEAM of St. Paul, Minn., a graduate of the Detroit Medical College in 1880, died at his home after a short illness, on June 1.

Dr. JAMES T. SHERMAN of Boston, Mass., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1869, died at his home in Dorchester on June 6, aged 67 years.

Dr. AMBROSE TALBOT of Kansas City, Mo., a graduate of Harvard University Medical School in 1885, and a member of the American Medical Association, the Missouri State Medical Association, and the Jackson County Medical Society, died suddenly in his office on June 1, aged 56 years.

Dr. FREDERICK H. SAGE of Middletown, Conn., a graduate of the New York Homeopathic Medical College and Hospital, New York, in 1884, and a member of the American Institute of Homeopathy and the Connecticut State Homeopathic Society, died in the Middlesex Hospital, on June 7, aged 55 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

CENTRAL MEDICAL WAR COMMITTEE ENROLLMENT SCHEME — COMPULSION — DISTRICT NURSING — PANEL SYSTEM—SETTLING ACCOUNTS.

LONDON, MAY 27, 1916.

THERE is a demand for a considerable addition to the medical officers serving in the Royal Army Medical Corps and a number of those in the Home Service have gone abroad. The Central Medical War Committee scheme of enrollment has not been quite completed so that volunteers from both the enrolled and the unenrolled are being taken on. This seems to offer attractions above conscription which has never been favored by the English people. The War Office scheme was entrusted to the Central Medical Committee, which represents the schools and corporations as well as the profession at large. It is also connected with the Insurance Commission and chief government departments, or all which officially consult medical men. The advantages of voluntary enlistment over compulsion require no argument. It is preferred by all concerned and approved by the general public. Of course, the success of the scheme depends on the number of enrollments, but at present the response has been satisfactory though no little anxiety is felt as to the early future. If the response should fail a resort to conscription would be required, and this would be the case with the profession as well as the general public.

The extent to which medical practice is being taken out of the hands of general practitioners calls for consideration by the profession. The Central Council for District Nursing in London has had referred to it the notification and nursing of measles and whooping cough, and some have even proposed to take these maladies away from medical practitioners and entrust them altogether to the care of nurses. That this scheme should have been considered reasonable is the consequence of the way in which the intrusion of nurses into the work of the doctors has been encouraged. Too often left to carry out the treatment under the slightest supervision, they have come to consider themselves the chief agents, and the doctor is needed only to bear the responsibility of serious cases.

The panel system is by no means approved by all, and many who are working under it express disappointment with it. Even from a monetary point of view, complaints are rife though some might well have been anticipated; a committee has resolved that they be invited to communicate their views as to the desirability of pressing for settlement of the accounts more promptly. The London Panel Committee resolved to bring about, if possible at once, a settlement of the accounts for 1914. Considering this resolution was not put forward until last March its terms are by no means forcible. It was however further agreed to represent strongly to the commissioners the growing indignation of those on the panel at the delay in settling those accounts. Their resolution said the delay was "most regrettable, and that the Insurance Commissioners and the committee should be so informed." In pursuance of this intention, the panel committee has been invited to forward their views as to the desirability of pressing for emergency settlement of their accounts for 1915.

NAUHEIM AT SARATOGA.

TO THE EDITOR OF THE MEDICAL RECORD:

SIR:—After reading your editorial in the issue of June 3 on Nauheim treatment at Saratoga, in reference to the position taken by Commissioner George B. Pratt, I venture to express my views on the situation. Saratoga has, within a radius of three miles, all the varieties of spring water that Nauheim and many other European spas have in a radius of many hundred miles. Consequently there is no occasion for her to attempt to increase her prestige by adopting the name or reputation of any other spa, either in our own country or in Europe. It is well known that the Drs. Schott, with their great skill in developing the resistant exercises, made Nauheim's wonderful reputation; and, further, that the same procedures, when followed out in connection with the use of our natural Saratoga waters, will have identical results. This has been repeatedly demonstrated by our physicians at Saratoga.

I am sure no one claims more for the bath (regardless of the name) than the effect on the economy through peripheral irritation and the congestion of the capillaries. Consequently, if the benefits derived from a course of treatment at any spa depend, as they do, upon a change of atmosphere, scene, and mode of living, diet, exercise, and rest, in combination with the use of natural mineral waters externally and internally—then when we have all this here at Saratoga, why should Saratoga promulgate the artificial? She certainly should *not;* if Saratoga cannot stand on her own wonderful resources as a health resort, she should not pose at all. We have had too long and too hard a fight to obtain the seal of our great State upon the genuineness of our waters, to accept modifications of these waters regularly.

However, if in the judgment of a physician, his patients require baths of a different character from that of the water as it flows naturally from the spring, they should have it, of course, without criticism. But the physician should write a prescription for such modification as he desires, and not simply use the word "Nauheim" and leave it for the bath attendant to interpret. I would suggest that if it is desired to increase the specific gravity of the Saratoga waters for a particular reason, instead of adding a mixture of salts for this purpose, our natural mineral water be evaporated to a definite constituency and that the brine thus formed be used to produce the effect desired. This brine would then have the same relative proportion of salts as the natural water.

D. C. MORIARTA, M.D.

SARATOGA SPRINGS.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 1, 1916.

1. Five Years' Progress in the Diagnosis and Treatment of Consumption by Massachusetts Physicians. John B. Hawes, 2d.
2. Disinfection of Septic Joints. F. J. Cotton.
3. A Classification of Renal Infection, with Particular Reference to Treatment. Hugh Cabot and E. Granville Crabtree.
4. B. Dysenteriæ as a Cause of Infectious Diarrhea in Infants. Carl Ten Broeck and Frank Garm Norbury.
5. Intraspinal Injections of Bichloride of Mercury. Edward Livingston Hunt.

1. Five Years' Progress in the Diagnosis and Treatment of Consumption by Massachusetts Physicians.—John B. Hawes, 2nd, bases this study on figures obtained

at the Massachusetts General Hospital and the Boston Consumptives' Hospital. From these figures he finds that there has been a distinct improvement in the early diagnosis of tuberculosis during the past five years, as shown by the increased number of diagnoses of incipient tuberculosis without the presence of positive sputum. There has been a vast increase in the number of patients who have gone to a doctor before they suspected that they had tuberculosis, as shown by the figures 77 out of 500 in 1911, and 408 out of 500 in 1915. In cases consulting a physician because of hemorrhage fewer have been told that they did not have consumption in 1915 than in 1911. This was, likewise, the case in regard to the patients who were told that they did not have consumption on first consulting their doctor. The improvement in these two respects was not as great as was to be hoped. It is not encouraging that at the present time out of 500 consumptives over 50 per cent. were not given to understand by their physicians that they had consumption. There has been an encouraging increase in the number of applicants for State Sanatoria which were made at the time of the examination of the patient or immediately after. Of the 1915 patients, 163 consulted only one physician, while 336 went to two or more physicians. Of the patients who consulted two or more physicians, 41 per cent. went to another physician to be sure the first was right, 23 per cent. because they did not improve, and 17 per cent. because the first physician advised them to do so. According to the statements given out by these 500 patients, it cost approximately $10 per patient for them to obtain diagnosis and treatment for their condition.

3. A Classification of Renal Infection, with Particular Reference to Treatment.—Hugh Cabot and E. Granville Crabtree review the various sources of confusion that surround the subject of renal infection and thinks this is justification for presenting the following classification of renal infections: 1. Infection in kidneys having no previous gross lesion and not part of a general and in itself lethal septicemia. 2. Infection in kidneys having an antecedent gross lesion, such as stone in the kidney or ureter or damage dependent upon obstruction of ureter or bladder. In the first group, to which the writers confine their attention in this paper, there are three quite distinct types of infection: 1. Those due to infection with the coccus group. 2. Those due to infection with the colon bacillus group. 3. Those due to infection with the tubercle bacillus. After discussing each of these types they summarize by stating that lesions produced by the coccus are far more likely to require surgical treatment because of their location and the tendency of the organism to pus formation. Such surgery, if required, will come during the comparatively early stages of the infection. As opposed to this, the colon bacillus infection produces a lesion which rarely requires surgery in its early stages, which is comparatively amenable to medical treatment, but which has a remarkable tendency to become chronic, and which may in time produce a lesion of the kidney which so completely destroys that organ that nephrectomy becomes necessary. The treatment of renal tuberculosis consists wholly in the removal of the kidney when the diagnosis has been made.

4. B. Dysenteriæ as a Cause of Infectious Diarrhea in Infants.—Carl Ten Broeck and Frank Garm Norbury during the summer of 1914 examined the stools of infants suffering from diarrheas in the Boston Floating Hospital and show that in the severe cases the dysentery bacillus was more constant in its presence than the other assumed etiological organisms and that the evidence in favor of its being the cause of the trouble was better than for other bacteria. During the summer of 1915 they decided to make a more thorough search for it and in those cases in which it could not be isolated to test for agglutinis for it in the blood. In 75 cases studied the dysentery bacillus was isolated from 74.6 per cent. Only 14 of 19 bacteriologically negative cases were studied for agglutinins, and 64.3 per cent. of these or 12 per cent. of the total number, gave a positive reaction, thus making a total of 86.6 per cent. of the 75 cases in which there was good evidence that the dysentery bacillus was present. The authors were unable to obtain any evidence that the *B. welchii* is ever the cause of infectious dysentery and all the results point to the dysentery bacillus as the etiological agent. In their cases all these bacilli belonged to the mannit-fermenting group. In spite of the apparent scarcity of the dysentery bacilli in the feces they believe that they are the cause of infectious diarrhea of infancy because of their universal association with the condition, the great numbers of these organisms in the mucosa of the cecum and the fact that the sick individual produces immune bodies against them, while such bodies specific for the other assumed etiological agents have not been demonstrated, and finally because experimentally they are known to produce a diarrhea.

5. Intraspinal Injections of Bichloride of Mercury.—Edward Livingston Hunt recalls that at a recent meeting of the Section on Medicine of the New York Academy of Medicine he reported forty cases of spinal syphilis treated by the intraspinous administration of mercurialized serum, and five cases treated by the direct intraspinous infection of bichloride of mercury. Since that time he has treated twelve additional cases by the direct administration of bichloride of mercury into the spinal fluid. These twelve cases consisted of cases of general paresis, tabes, tabo-paresis, hemoplegia, optic nerve atrophy, and one case of brain syphilis with complicating hemiplegia. They were given either 1/64 or 1/50 of a grain of bichloride of mercury at each intraspinous injection. The injections were approximately at intervals of two weeks. The patients were at the same time being given mixed antisyphilitic treatment. In a few of these patients it was not possible to obtain definite results, but in the large majority improvement was manifest. The writer concludes that the administration of bichloride of mercury directly into the spinal fluid gives practically the same results as the administration of mercurialized serum. It has the advantage over the latter of simpler technique, shorter method, and easier administration, with less opportunity of infection. Both the administration of mercurialized serum and bichloride injected directly into the spinal fluid can be considered as valuable substitutes for the administration of salvarsan. Whether the results will be as permanent as the latter remains to be seen. In no instance was any change manifest in the reflexes, but change was evident in the tremors, in the pains, in the spinal fluid content, and especially in the general condition of the patient.

New York Medical Journal.

June 3, 1916

1. The Definite Management of Pneumonia. Solomon Solis-Cohen.
2. Hourglass Gall Bladder. Russell S. Fowler.
3. Lye Stricture of the Œsophagus. H. Arrowsmith.
4. The Diagnosis of Ureteral Calculus. Victor Cox Pedersen.
5. Sarcoma of Tibia with Metastasis to Chest. E. Podleton Tompkins.
6. Presenile Gangrene—Thromboangiitis Obliterans. Charles Goodman and Eugene P. Bernstein.
7. A Device for Protection Against the Tubercle Bacillus. Robert A. Keilty.
8. Unusual Complications in a Case of Glaucoma from Atropine. T. Y. Sutphen.
9. Pellagra. James Macfarlane Winfield.
10. The Curatelli and Modern Psychiatry. George W. Jacoby.

6. Presenile Gangrene—Thromboangiitis Obliterans.—Charles Goodman and Eugene P. Bernstein present this serological study which has reference to the possibility of typhus fever as an etiological factor in thromboangiitis obliterans. They call attention to the fact that a study of the literature reveals that a number of authors have suspected the infectious origin of this condition. A study of the epidemiology of typhus fever shows dictinctly that in countries where this disease is quite common thromboangiitis obliterans is also abundantly found; on the other hand, in countries where typhus fever is lacking the condition is usually found less frequently. Since the specific microorganism of typhus fever has been isolated it has seemed advisable to make serological studies in thromboangiitis obliterans. Dr. Bernstein has done this, the cases having been sent him from the wards of Mount Sinai Hospital by Dr. Goodman. There were twenty-one cases diagnosed as typical cases of thromboangiitis obliterans, most of them having no recent lesions. In eighteen of the cases the serological reactions were negative. The three other cases gave quite marked reactions. In one case there was an almost complete agglutination up to a dilution of one in 200, and in two almost complete agglutination up to a dilution of one in 400. In three cases in which a previous typhus fever could not be excluded, a positive agglutination in a dilution up to one in 200 was found. Recent serological studies have made it evident that people in contact with typhus fever acquire a positive serological reaction because they have been infected by a number of bacilli too small to give the typical picture of the disease, but enough to set up immunological reactions. The view might be entertained that, because only three patients with thromboangiitis obliterans out of a total of twenty-one presented positive serological reactions, the thromboangiitis developed independently of the previous infection by the typhus bacillus. It was important, however, to remember that patients with typhus fever might lose their serological reactions within even as short a period as five months from the termination of the disease, and therefore some of the cases studied might have given a positive reaction at some previous time.

8. Unusual Complications in a Case of Glaucoma from Atropine.—T. Y. Sutphen reports this case in which, during treatment for glaucoma, a spontaneous sclerocorneal rupture and prolapse of the iris occurred. After treatment by repeated paracentesis vision was still 20/15 in the one eye. The delay in relieving the iris entanglement in the other eye resulted in an enormous corneal astigmatism. This, the writer thinks, emphasizes the great importance of relieving iris entanglements, especially in glaucoma. The immediate improvement in tension, when the pillars of the entangled iris were cut across was conclusive evidence that this should have been done earlier. This case also exemplified the danger of using atropine in some patients under forty years of age, though there was no other drug that gave such complete paralysis of accommodation.

9. Pellagra.—James MacFarlane Winfield submits the histories of eight indigenous cases of pellagra that have been seen in various parts of New York State since 1911. Five of these patients were inmates of State hospitals, two were in the dermatological service of the Kings County Hospital, and one was a private patient in Hornell, N. Y. All of these patients except one were females. Two of these patients had enlarged thyroids, three had evidence of pulmonary disease; in one the process was active, and in two others the disease had been arrested. It was not possible to learn what the diet of all the patients had been, but from what information could be ascertained it seemed that none of them had indulged to any great extent in meat. One gave a history of having eaten for years only beans, oleomargerine, and tea biscuits. Two had subsisted for a long time on bread and tea. The writer states that this experience leads him to agree with MacKee in assuming that there have been cases of pellagra in New York and the vicinity that have either been overlooked or incorrectly diagnosed.

10. The Curatelle and Modern Psychiatry.—George W. Jacoby concludes a series of articles on this subject in which he discusses very exhaustively both the medical and legal phases of this subject, and in conclusion directs attention to certain main points in which our curatelle laws require reform, and in which, as is shown by the German law of curatelle, they are capable of being improved. These are: 1. Agreement in regard to the fundamental views about the psychic states which necessitate the institution of a curatelle, namely, insanity, feeblemindedness, improvidence, and inebriety. 2. An extension of the interpretation of the term, inebriety, so as to apply to the habitual use of narcotics or other habit-forming drugs, so that it might be possible to place under guardianship, not only alcoholic inebriates, but also inveterate users of morphine, cocaine, or other drugs, and thereby permit all such unfortunates to be forcibly subjected to treatment. 3. Adoption of the concept, hitherto not accepted by Anglo-Saxon law, of restricted responsibility, through which it would be possible to place a person under guardianship without stigmatizing him as insane, or to refrain from placing a psychically defective individual under curatelle, if his capability to transact business properly is not affected by his psychic deficiency. 4. Appointment of the medical expert by the court in order to guarantee an absolutely impartial opinion.

Journal of the American Medical Association.

June 3, 1916.

1. The Nonspecific Factors in the Treatment of Disease. James W. Jobling and William Petersen.
2. The Treatment of Arthritis by Intravenous Injection of Foreign Protein. Joseph L. Miller and Frank B. Lusk.
3. The Value of Anaphylaxis in the Treatment of Gonorrheal Complications: Allergy, a Therapeutic Agent. Louis D. Smith.
4. A Study on Food and Fuel Value of the Dietary at the New York Municipal Sanatorium. Robert J. Wilson and Walter I. Ratbun.
5. Variations in Renal Function Dependent on Surgical Procedures. Donald F. Cameron.
6. Paralysis During Pasteur Antirabic Treatment with Report of Seven Personal Cases, One Terminating Fatally, and Six Other Previously Unreported Cases. Frank S. Fielder.
7. Congenital Stenosis of the Duodenum in an Adult. Wallace I. Terry and Alson R. Kilgore.
8. Pneumothorax of Uncertain Etiology. Arthur H. Terry, Jr.
9. A Case of Phlebitis Migrans. Carl A. Hedblom.
10. Abortive Treatment of Syphilis. Joseph J. Bansbach.

1. The Nonspecific Factors in the Treatment of Disease.—James W. Jobling and William Petersen call attention to the fact that one finds a not inconsiderable accumulation of evidence, both from the laboratory and the clinic, definitely indicating a much larger share of certain nonspecific and as yet ill-defined factors in recovery from disease. Early in the development of tuberculin therapy Matthes demonstrated conclusively that to all intents and purposes the reaction considered specific for tuberculin could be produced when deuteroalbuminose was used, and showed that whatever difference occurred could be explained by the fact that the tuberculin fraction contained certain toxic peptones in addition. The history of the treatment of typhoid fever with vaccines is quite similar and similar phenomena have been observed in other diseases. After discussing certain phenomena in vaccine and serum therapy in relation to leucocytosis, to hyperexia in certain conditions, to the mobilization of ferments, and to

the increase in antiferment, the writer concludes that it seems probable that the fundamental change on which the majority of the biological reactions which he describes are based is one of colloidal dispersion, in that the injections bring about a less dispersed state affecting not only the serum proteins but also the serum lipoids. Such an alteration is sufficient to account for the fluctuations in the ferment-antiferment balance, and in the coagulation mechanism, as well as in the opsonic and complement powers of the serum, although it does not at present explain the increased antibody titer. With this as a basis we can understand that so many and diverse substances can bring about a reaction almost identical clinically and therapeutically. But here, as in so many biological problems which have to do with the most complex of tissues, the blood, it seems probable that no single factor can be identified as responsible for all the changes that occur, but that a whole train of events is inaugurated when the equilibrium in some of the delicate serum balances is disturbed, all of which tend toward a condition favorable for recovery from infection.

2. The Treatment of Arthritis by the Intravenous Injection of Foreign Protein. — Joseph L. Miller and Frank B. Lusk cite evidence confirmatory of that already recorded, making it quite apparent that the sudden termination of certain diseases is not due to the specific character of the vaccine used but probably to the action of a foreign protein. With this fact in mind it was decided to apply this method of treatment to acute, subacute, and chronic arthritis. Only those cases were seleced for study in which the disease was of a persistent type. They gave a 4 per cent. proteose solution in doses of 2 c.c. The patient reacted by a chill, rise in temperature, and moderate leucocytosis. The day following the injection there was a moderate but definite improvement in the joint symptoms. As the supply of protein was limited a typhoid vaccine was substituted for the proteose. The reaction was the same as when the vaccine was given to a typhoid patient, except that the leucocytosis was much more marked. In three of ten cases of acute articular rheumatism, immediately following a single intravenous injection of 150,000,000 the fever terminated by crisis, the joint tenderness began to disappear, and within twelve to twenty-four hours the joints were apparently normal. The seven remaining patients were much benefited following a single injection, but the results were either not permanent, or soreness still remained in some of the affected joints. Three or four injections, however, sufficed to relieve all symptoms. Results quite as satisfactory were obtained in six cases of subacute arthritis of from three to nine months' duration. Results were even more striking in cases of chronic gonorrheal arthritis of from two months to three years' duration. The authors state that they believe the same process is active here that is responsible for the termination by crisis in typhoid, following the intravenous injection of vaccine. That the febrile reaction following injection is not solely due to the foreign protein injected is suggested by the much milder reactions in patients with low degrees of infection. Whether or not this method of treatment is of value as a therapeutic agent it will at least give further evidence of the non-specificity of vaccines. It does not, however, involve the specificity of vaccines for preventive purposes.

4. A Study on Food.—Robert J. Wilson and Walter L. Ratbun present an exhaustive study of the fuel value of the dietary at the New York City Municipal Hospital and of the various problems involved in providing a suitable dietary in such an institution from which they draw the following conclusions: 1. In all institutions for the care of the tuberculous, food studies, including the caloric content of the dietary and food waste, should be carried on at regular intervals, preferably for one week or more during the various seasons of the year, and these records should be made available for comparative purposes. 2. Special training, though advisable, is not a necessary requisite for the carrying out of a successful dietary study in an institution. It is, of course, essential that the doctor who directs the work should be thoroughly familiar with the problem. It is only necessary that the person or persons who are doing the work should be intelligent, careful, and willing to follow conscientiously the "rules of the game." 3. The elimination of meats and eggs from the morning meal and the substitution of milk is a sound and justifiable economy. 4. The dietary of the tuberculous should be high in caloric value, but confined to three daily meals in all but exceptional cases. 5. Males consume more food than females, both in total amount and in number of calories per pound of body weight, but in spite of this fact, females make much larger gains than males, enough so as to indicate that rapid accumulation of weight is a characteristic of the female sex. 6. The avoidance of frequent repetition of foodstuffs is very important. 7. A four weeks' menu, when used as suggested, is of great aid to those controlling the dietary, and tends to do away with repetition. 8. The treatment of small children, in separate units, in institutions with adults, is both feasible and advantageous in that it results in economy of foodstuffs. 9. Small initial servings with as many "seconds" as may be desired is satisfactory to the patients and prevents much plate waste. 10. The plate waste in institutions for the tuberculous is of necessity higher than in hospitals for the insane or in general hospitals.

5. Variations in Renal Function Dependent on Surgical Procedures.—Donald F. Cameron reports his observations of the changes in renal function produced by operations performed under general anesthesia and of the variations in renal activity dependent on relief from the back-pressure of urine. For this work the rate of excretion of phenolsulphonaphthalein and the concentration of urea in the blood have been taken as the indices of renal activity. The writer believes these tests are of great importance in selecting the most opportune time for operation so far as renal function is concerned. Following an operation under a general anesthetic there is, as a rule, an increase in blood urea concentration. This increase is most marked after operations on the urinary tract, and especially on patients who already have diminished renal function. In a small series of cases this increase was slightly more marked following operations under gas-oxygen-ether anesthesia than following similar operations under ether. Blood urea determinations are of great value in the diagnosis and prognosis of uremic states. Not infrequently blood urea concentration can be determined when other renal function tests are very difficult or impossible. In this investigation definite symptoms of uremia in uncomplicated cases appeared when the blood urea concentration reached 180 to 200. There is a definite group of patients who have a low phenolsulphonaphthalein excretion, but a normal or approximately normal blood urea concentration. Many members of this group withstand a general anesthetic without any complication due to renal insufficiency.

6. Paralysis During Pasteur Antirabic Treatment.—Frank S. Fielder reports seven cases, one terminating fatally, and six others previously unreported. He states that the administration of antirabic treatment is not entirely devoid of risk, since paralysis complicating the Pasteur antirabic treatment, though very rare, doubt-

less occurs. It affects adults chiefly, young children almost never. The prognosis is good in cases of mild or moderate degree, but the mortality among the severe cases is high. The possibility of the occurrence of paralysis in any particular case, however, is so slight that it should not deter those who evidently need antirabic treatment. The slight risk of paralysis should always be explained to those who are inclined to insist on antirabic treatment in the absence of clinical or laboratory evidence that the biting animal was rabid. In most instances this paralysis is caused by the antirabic treatment itself, fixed virus infection or toxin, or both. It is not often due to street virus infection modified by treatment. Its incubation is shorter than that of most cases of street virus rabies. Variations in the strength of the fixed virus used are probably a factor in the etiology. Personal idiosyncrasy is an important predisposing condition.

The Lancet.

May 13, 1916.

1. Hunterian Lecture on Links in a Chain of Research on Syphilis. J. E. R. McDonagh.
2. Malignant Disease of the Nose and Accessory Sinuses. Advantages of Operating Through the Face (Moure's Operation or Lateral Rhinotomy); Record of Two Cases with No Recurrence After Five and One-Half and Three and One-Half Years. St. Clair Thomson.
3. On the Removal of Foreign Bodies from the Esophagus and Bronchi, with a Description of Some New Instruments. Irwin Moore.
4. On the Presence of Lead in the Urine in Four Cases of Trench Nephritis. Charles Powell White.

1. Links in a Chain of Research on Syphilis.—J. E. R. McDonagh says the recognized fact that twenty-four hours after the first injection of salvarsan no spirocheta pallida could be found in syphilitic lesions, yet it was necessary to repeat the injection of salvarsan several times, and to prescribe mercury afterwards, led him to doubt whether the statements made about the German discoveries were correct. Three questions confronted him: 1. If the spirocheta was the cause of syphilis why did one never see it divide? 2. If all the spirochetæ were killed within twenty-four hours after the first injection of "606" why was it necessary to continue the treatment? 3. If the spirochetæ cannot pass through the placenta, how can an apparently healthy woman bear a syphilitic child, since it is impossible to imagine that an organism as long as the spirocheta pallida should enter the ovum with a spermatozoon? It then occurred to the writer that the spirocheta pallida was not the absolute cause of syphilis, but possibly only a phase in the life history of a protozoon. It seemed that the organism might perhaps be the adult male, or, at any rate, an end phase of a complicated protozoal life history. As a result of investigation with both live and fixed tissue he was able to work out the life-cycle of what was evidently a coccidial protozoon which he felt justified in assigning to the order *Sporozoa*, and to the sub-class *Telosporidia*. The species which most befitted it is the leucocytozoon, hence a good name for the syphilitic parasite would be *Leucocytozoon syphilidis*. As a result of some chemical investigations, he found that the phases of the protozoon consisted of a protein which had special properties. This then gave him a clue which enabled him to explain the rationale of the Wassermann reaction. The Wassermann reaction turned out to be a physical reaction dependent upon certain properties which the protein particles of syphilitic sera naturally possessed. Having found out these properties it then became clear how salvarsan worked. Further investigation into this subject soon unraveled the rationale of chemotherapy and opened the way along which future research might be expected to be most productive. The author presents an outline of all these investigations.

2. Malignant Disease of the Nose or Accessory Sinuses.—St. Clair Thomson describes the details of the operation of lateral rhinotomy or Moure's operation, which he finds precisely adapted for the removal of malignant tumors originating in the ethmoidal and antro-nasal wall, as well as for those starting in the roof of the nose, in the antrum, or in the sphenoid. He reports two cases that show that both an endothelioma and a carcinoma in the nasal area are susceptible of satisfactory treatment by this method. A comparison of this operation with the dangerous, difficult, and disfiguring operations formerly used demonstrates its advantages. In all cases there is no mutilation or disfigurement. Patients will readily consent to the operation. They are left with an intact roof of the mouth and require no troublesome obturator, as in the old operation of excision of the upper jaw. It is much easier after a Moure operation to keep a direct lookout in the nose and its accessory cavities for any suspicion of recurrence. Recurrences are more easily dealt with, either through the nasal orifice or by repeating the lateral rhinotomy, and patients are less likely to object to this than to a further facial disfigurement. Loss of smell is never complained of if the septum has been respected. The writer has met with no neuralgia or similar trouble, following operation even when the bone with the infraorbital canal in it has been removed.

4. On the Presence of Lead in the Urine in Four Cases of Trench Nephritis.—Charles Powell White says that on reading the accounts of trench nephritis it seemed to him that the incidence of the disease pointed to the possibility of its being attributable to the use of tinned foods in the diet. With this idea in mind he has examined five specimens of urine from trench nephritis for the heavy metals, two of them from the same case at different times; two specimens from ordinary nephritis, and a normal urine to serve as a blank experiment. Lead was present in all the specimens from trench nephritis, and in one of the mixed urines of ordinary nephritis. Iron was present in all the nephritis specimens and copper in most of them. Tin was also present in one specimen, a recent case that contained more lead than the others. This suggested the possibility of the lead being derived from tinned foods, though it was obviously impossible to draw conclusions from four cases only. The writer invites the attention of those who see these cases early to this subject, since it is probable that the lead many be present in larger quantities in the early cases.

British Medical Journal.

May 13, 1916.

1. Gerontal Constipation and Its Treatment. W. Ainslie Hollis.
2. Sarcoma of the Frontal Lobe Giving Rise to Ocular Signs Only. R. Beatson Hird.
3. Notes on Military Orthopedics. On Suture of the Nerves, and Alternative Methods of Treatment by Transplantation of Tendon. Robert Jones.
4. The Importance of Method in the Isolation of Pathogenic Organisms of the Typhoid Group from Feces. A Further Note of the Value of Telluric Acid Combined with Brilliant Green. C. H. Browning and L. H. D. Thornton.
5. Examination of Fifty Dysentery Convalescents for Carriers. J. A. Arkwright, W. Yorke, O. A. Priestley, and W. Gilmore.
6. An Easy and Rapid Method of Doing Widal's Reaction for Typhoid. Alfred C. Coles.
7. The Treatment of Wound Infections. W. Parry Morgan.

1. Gerontal Constipation and Its Treatment. — W. Ainslie Hollis calls attention to prostatic enlargement as a factor in gerontal constipation. He says that some, perhaps a majority of cases of enlarged prostate, begin with venous congestion. A serious change in the blood supply of the gland, which such a circulatory failure implies, would alone suggest the probability of some

central cardiac causation, either organic or functional, and this conjecture was strongly confirmed, if, as is often the case, we find the venules of the face, the nose in particular, affected. When this is so the elderly person, as a rule, suffers from symptoms suggesting "irritable heart." Another anomalous symptom was a feeling of distention in the upper rectum, probably due to the direct influence of the rectal tumor. In discussing the treatment of this condition, the writer says that drugs at best can be only palliative. With this limitation he suggests doses of aromatic syrup of cascara, which he thinks probably contains some constituent which acts specially on the mesenteric neuro-muscular plexus in the colon. As treatment for the senile heart he suggests tincture of strophanthus in a little water to which a few grains of sodium bicarbonate have been added. This mixture may be taken three times daily about one-half hour after a meal. As regards diet he calls attention to the value of fruits and the modified requirements of the aged man for meats. Cleanliness is the most important manipulative procedure. Pressure on the perineum just behind the symphysis will relieve the abnormal pressure of an enlarged prostate upon the rectum.

3. On Suture of the Nerves, and Alternative Methods of Treatment by Transplantation of Tendon. — Robert Jones concludes his article on this subject in which he has considered some general principles which should guide the surgeon in the treatment of limbs disabled by injuries involving nerves. He points out the importance of giving the muscles ample time and opportunity to recover by keeping them in a relaxed position for a sufficiently long period and discusses tendon transplantation as an alternative method of treatment where nerve suture is not possible. He considers in detail the transplantation operations which his experience leads him to recommend in various injuries to nerves of the upper and lower extremities. He says the chief lesson to be learned from what he has written is that there are many ways in which the disabilities following nerve destruction can be met, and that hardly any case is bad enough to justify a counsel of despair. Our knowledge of what can be done in poliomyelitis will invite us to take a cheerful outlook in traumatic paralysis. Not only does the author point out the value of keeping a paralyzed muscle relaxed by opposing the force of gravitation, but he indicates the great and ever-increasing field of usefulness that is opened up by utilizing tendon, whether that of an active or a hopelessly paralyzed muscle for the restoration of movement or the correction of deformity.

4. The Importance of Method in the Isolation of Pathogenic Organisms of the Typhoid Group from Feces.—C. H. Browning and L. H. D. Thornton state that in the examination of feces for typhoid and paratyphoid bacilli, the value of a simple fluid medium containing brilliant green, in addition to direct plating, as a means of increasing the number of positive results has been confirmed by a number of workers. A single fixed concentration of brilliant green (0.5 c.c. 1 to 10,000 per 10 c.c. of peptone water) seems to leave little to be desired as a medium for the isolation of *B. paratyphosus* B; but this fixed medium does not yield such good results with *B. typhosus*, for which a series of doses of green are required in order to secure the optimum concentration, which depends on a number of variables. In the examination of feces for *B. typhosus* a series of varying amounts of brilliant green along with telluric acid may be essential in order to isolate this organism in cases in which both direct plating and brillian green alone fail. The importance of detecting carriers for the prophylaxis of epidemic should, in the opinion of the writers, justify the time spent in this extension of the "one tube" method.

5. Examination of Fifty Dysentery Convalescents for Carriers.—J. A. Arkwright, W. Yorke, O. H. Priestley, and W. Gilmore examined fifty men who had suffered from dysentery contracted in the service. These convalescents were not selected but were the first fifty examinations completed in the course of a search for carriers. They all, with one exception, gave a history of having passed blood and slime for periods varying from three days to nine weeks. The examinations were made from three to six months after the onset of illness. Of these 50 men 9 were still excreting *E. histolytica* and 2 were still excreting *B. dysenteriæ* (Shiga). These eleven men were therefore potential sources for the outbreak of fresh epidemics.

6. An Easy and Rapid Method of Doing Widal's Reaction for Typhoid.—Alfred C. Coles finds the following a rapid and simple method of determining, or, at least suspecting, the presence or absence of typhoid in non-inoculated persons: 1. With a color grease glass writing pencil, or a piece of wax, draw a line across the middle of two slides at right angles to their long axes. 2. Spread a film of the blood to be examined on one-half of each slide, and, when dry, spread a film of one's own blood, or that of a person who has not had typhoid or who has not been protectively inoculated against it, as a control, on the other half of each slide. The film may be as thin as that ordinarily used for stained films, or a little thicker. Dry. 3. By means of a platinum loop or pipette place a small drop of an emulsion of killed typhoid bacilli on the center of each half of both slides, and with the platinum loop, or with a needle, rub the drop well over the film of blood, taking care not to pass from one-half of the film to the other without sterilizing the needle. 4. On one slide carefully place a cover glass on each half, taking care that the two cover glasses are well separated in the middle by the mark of the grease pencil. 5. Place the other slide on a piece of wet blotting paper, and cover with a Petri dish to prevent evaporaion for a period of 15 to 20 minutes. At the end of that time dry carefully over the flame, and then stain. At the end of 15 minutes distinct clumps of agglutinated bacilli will be seen on the first slide provided the case be one of typhoid or the blood of one who has been prophylactically inoculated. The film, stained with Leishman or Glemsa's stain, will show on one-half patches of agglutinated bacilli, while on the control half the typhoid bacilli are more or less uniformly spread over the film.

The Alcoholic as Seen in Court.—Victor V. Anderson has made a study of 100 cases of chronic alcoholics, those who are repeatedly arrested for drunkenness and seem more or less unmodified by any form of treatment. He gives statistics with reference to the number of arrests, the economic efficiency, the mentality, and the diagnosis in this series and finds that not more than one-half were capable of supporting themselves out in society. Fifty-six per cent. had the mental level of children below the age of twelve years. They were all suffering from conditions in general regarded as medical problems. For purposes of treatment they, in general, fall into two classes, namely, the steady drinker and the periodic drinker. The mentality of the former is either defective to begin with, or is so deteriorated from the insidious effects of alcohol as to require that he be confined or have prolonged care and hospital treatment. The periodic drinker, though in many instances he may require short periods of detention, as well as hospital treatment, is in general to be handled on probation and incorporation into society's scheme of living by means of well-directed medical, psychological and social service methods of treatment, methods that take full account of his peculiar mental make-up, his character defects, and temperamental difficulties.—*Boston Medical and Surgical Journal.*

Insurance Medicine.

Death Rates and Expectation of Life.—There are soon to be issued by Director Samuel L. Rogers, of the Bureau of the Census, a set of tables, which were compiled in the Division of Vital Statistics under the supervision of Prof. James W. Glover, of the University of Michigan. These tables will show death rates and expectation of life at all ages for the population of the six New England States, New York, New Jersey, Indiana, Michigan, and the District of Columbia on the basis of the population in 1910 and the mortality for the three years 1909, 1910, and 1911.

According to these tables, the average expectation of life, at birth, for males is 49.9 years; for females, 53.2 years; for white males, 50.2 years; for white females, 53.6 years; for native white males, 50.6 years; for native white females, 54.2 years; for negro males, 34.1 years, and for negro females, 37.7 years. Females are thus longer-lived than males to the extent of more than three years, and in the case of the native whites and negroes, more than three and one-half years.

The expectation of life at the age of one is considerably greater than at birth, being 56.8 years for native white males and 59.5 for native white females, and reaches the maximum at the age of two, when it is 57.5 for the former class and 60.1 for the latter. At the age of 12 the average native white male's expectation of life is 50.2 years; at 25 it is 39.4 years; at 40, 28.3 years; at 50, 21.2 years; at 60, 14.6 years; at 70, 9.1 years, and at 80, 5.2 years. Similarly, at the age of 12 the average native white female's expectation of life is 52.6 years; at 25 it is 41.8 years; at 40, 30.3 years; at 50, 22.8 years; at 60, 15.8 years; at 70, 9.5 years; and at 80, 5.5 years. A part of the difference between expectation of life for men and women is due to the greater number of violent deaths among men. Nearly four-fifths of these violent deaths—suicides, homicides, and accidental deaths —are of males, and such deaths form about 7 or 8 per cent. of the total number occurring each year. This fact, however, does not account fully, or even in major part, for the greater longevity of women. An examination of the table discloses a lower death rate for females than for males during each of the first 12 months of life, and in the case of the native whites, during each year of life up to the age of 94. During the first month of life the death rate among native whites is nearly 28 per cent. higher for boys than girls, and during the first year it is more than 20 per cent. higher.

To say that a person's expectation of life is a certain number of years is not the same as saying that he has an even chance of living that number of years. This is because expectation of life represents the averaging remaining length of life, at any given age, in a stationary population, whereas an average person in a given group has an even chance of living to what is called the median age at death, that is, the age below which half of the members of that group will die. The median age at death for all native white males in the assumed stationary population would be 60; that is to say, of a given number of such males born alive, half would die before reaching 60 and the other half at 60 or beyond. A native white male child at birth, then, has one chance in two of reaching this age. At the end of the first year, however, he has a trifle better than an even chance of reaching 64; and at 42 he has one chance in two of attaining three score and ten. Similarly, a native white child at birth has an even chance of living a few months past the age of 64; at the age of one she has one chance in two of living until she is nearly 68 years old; and at 22 her chance of reaching 70 is an even one. Thus a native white man at 42 and a native white woman at 22 have about the same chances of celebrating their seventieth birthday.

The relative healthfulness of city and country is strikingly shown by the tables, according to which the death rate among white males under one year of age in cities having 8000 inhabitants and over in 1909, and in cities of 10,000 and over in 1910 and 1911, is 13,380 per 100,000 born alive, whereas in smaller places the corresponding rate is only 10,326 per 100,000, or 23 per cent. less than the rate for cities. A similar difference prevails with respect to white females under one year of age, for whom the death rate in cities is 11,123 per 100,000 born alive, while in rural localities it is only 8497 per 100,000, or 24 per cent. less than the urban rate.

For white males the expectation of life, at birth, in rural localities is 7.7 years greater than in cities; at the age of 10, 5.4 years greater; and until the age of 39 is reached there is a margin of more than five years in favor of the country. Thereafter the difference becomes gradually less, but is always in favor of the country until the age of 88 is reached, at and after which the cities show a slightly greater longevity than the rural localities. For white females the difference between urban and rural longevity, while pronounced, is somewhat less than in the case of males. At birth the white female's expectation of life is 6 years greater in rural than in urban localities; at 1, 3.3 years greater, and until the age of 46 is attained the difference continues to be more than 3 years. Thereafter it declines until the age of 83 is reached, after which the cities have a slight advantage over the country.

Women as Examiners.—Dr. Harriet Doane of Fulton, N. Y., wrote to nine insurance companies to ascertain their attitude toward woman examiners. To each she sent the following questions: Do you insure women? Do you insure women at the same rates as men? When available, do you employ women examiners for women applicants? To the first two questions all replied in the affirmative; to the third, three companies reported that they did employ woment examiners; one said it was perfectly willing to do so when request was made; another answered that it had, in isolated cases, employed women physicians as examiners; two said it was not their practice to employ women physicians as examiners. The replies of the remaining two companies are not given in Dr. Doane's letter.—*The Woman's Medical Journal.*

The Confidential Report.—Dr. J. M. Ballew says that we are all aware of the importance of the confidential report, yet it is often the case that this report is given more credence by the medical director than the physician's report. He knows of such injustice having been done recently, but the misrepresentation was learned of and further investigation made in time to prevent rejection of an excellent risk. Such reports placed a conscientious examiner at a distadvantage unless full inquiry was made and opportunity had to verify such reports.—*Texas State Journal of Medicine.*

Book Reviews.

THE AFTERMATH OF BATTLE WITH THE RED CROSS IN FRANCE. By EDWARD D. POLAND; with a preface by OWEN WISTER. New York: The Macmillan Company.

THE Aftermath of Battle is a story, told in the form of a diary, by a young American who served as a jack of all trades in some of the war hospitals of France. Many awful and pathetic happenings are faithfully recorded and the book is interesting from the very fact that it is, like Pepys' diary, faithfully and painfully true. The little book is well worth reading on account of both its human and its medical interest.

ROADSIDE GLIMPSES OF THE GREAT WAR. By ARTHUR SWEETSER. Illustrated. New York: The Macmillan Company, 1916.

THIS is a tale of an American cyclist who visited the war zone and went through many weird and extraordinary experiences. He procured a German military pass to Paris, said to be the only one issued since 1870. Mr. Sweetser had some remarkable adventures, was a prisoner two or three times and escaped death more than once by the skin of his teeth. The book is well worth reading.

A LABORATORY COURSE IN SERUM STUDY. Bacteriology 208. Being a Series of Experiments and Diagnostic Tests in Immunology Carried out in an Optional Course Given to Medical and Graduate Students in the Department of Bacteriology, College of Physicians and Surgeons, Columbia University, New York, by the Writers, HANS ZINSSER, M.D., J. G. HOPKINS, M.D., REUBEN OTTENBERG, M.D. New York: The Macmillan Company, 1916.

THIS book provides the outline and directions for a very complete course comprising thirty-two exercises. The subjects are well chosen and logically arranged and the directions are clear and sufficiently detailed. It contains no theorizing and but little discussion and is in no way a manual of immunity and therefore must be accompanied by lectures and reading. It is natural that the authors should desire to see this course a required one, rather than an optional study, but the wisdom of such a change is debatable. While no doubt any medical man would be better off for knowing how to do Wassermann reactions and how to standardize diphtheria antitoxin, still such a course takes up a great deal of valuable time. The medical curriculum is already overburdened and the next step will probably be to split it up and lighten it rather than to add to it such highly specialized courses. As an optional course it is admirable and any one desiring to give such a course may profitably consult this outline.

PULMONARY TUBERCULOSIS. By MAURICE FISHBERG, M.D., Clinical Professor of Tuberculosis, University and Bellevue Hospital Medical College; Attending Physician, Montefiore Home and Hospital for Chronic Diseases, New York. Octavo, 639 pages, with 91 engravings and 18 plates. Cloth, $5.00, net. Philadelphia and New York: Lea & Febiger, 1916.

IN this new book on Tuberculosis, the first two chapters are concerned with the bacteriology of the disease; their correction by Dr. Park, Director of the New York Health Department's Laboratories, is a guarantee that they are up to date. Dr. Frederick L. Hoffman and his associate have helped in the compilation of the statistical data, which is likewise proof of accuracy. The chapters on the epidemiology, predisposition, and pathology reiterate what is known to-day of these important phases of the tuberculosis problem. The conservative phthisiotherapeutist would, however, take exception to the statement that "Facts have been quoted to disprove the transmissibility of tuberculosis, but in the light of our present knowledge they must prove that reinfection is impossible." The reader need hardly be reminded that new lesions have frequently been found alongside of evidences of healed early invasions which, according to clinical history, antedated the new tuberculous infection by many years. The denial of a predisposition, that is to say, the possibility that the fetal system could be influenced by the toxins of a tuberculous mother, is an equally hazardous statement.

The chapters on the symptomatology are excellent, but strong objections should be taken against the statements that "Many tuberculous patients show a remarkable change in their mental traits and character, a disturbance in their emotional life, a striking divergence from their previous customs, habits, affections, and tastes," and that "A psychic trait of the consumptive which has been noted by most writers is selfishness. He becomes egotistical and egocentric . . . he will eat costly food while his children starve." Had Dr. Fishberg said *some* tuberculous patients show remarkable change in their mental traits, character, etc., instead of *many*, the paragraph on psychic traits might have had some justification. We have but to think of the master minds in tuberculosis science, all seriously afflicted with the disease, such as Laennec, Grancher, and Daremberg of France, Brehmer and Dettweiler of Germany, and in our own country our beloved Trudeau, all of whom showed traits exactly contrary to those mentioned by Fishberg, namely, unselfishness, devotion to others, and lives consecrated to the highest ideals of science and humanity. It would be difficult to give the long list of American tuberculous physicians, still living and active, who represent a veritable galaxy of scientists and humanitarians of the highest order.

The chapter on diagnosis, which includes excellent skiagraphic reproductions, is admirable on the whole. It is unfortunate, however, that the author merely speaks of auscultation with the aid of the stethoscope. All teachers of physical diagnosis insist, and justly so, upon both immediate and mediate auscultation. At least the character of the respiratory movements should always be determined by putting the ear directly to the patient's chest. Our only criticism of the chapter on institutional treatment is that it is inaccurate so far as historical data are concerned. It was not, as Fishberg says, a German, Dr. Dettweiler, in 1859, but an Englishman, Dr. Bodington, who established the first sanatorium as far back as 1840. Dr. George Bodington, of Sutton Coldfield, Warwickshire, England, was not only, as Fishberg admits in another chapter, an early advocate of the open air treatment, but he really gave us the first conception of sanatorium methods by treating tuberculous patients hygienically and dietetically under his personal supervision in a separate house located near his home. The first German sanatorium was established in the Silesian village Goerbersdorf, in 1859, and not by Dettweiler, as Fishberg says, but by Dr. Hermann Brehmer. Dr. Peter Dettweiler came to the Goerbersdorf sanatorium in 1872, first as patient and later on he became Brehmer's assistant. The sanatorium at Falkenstein was established in 1878 and Dr. Dettweiler became its first medical director. Aside from the few points here criticized, which the author may thing worth while to consider in a future edition, the work is not only a good textbook for the general practitioner, but a tuberculosis specialist can also learn much from it.

THE PRACTICAL MEDICINE SERIES, comprising ten volumes on the year's progress in medicine and surgery, under the general editorial charge of CHARLES L. MIX, A.M., M.D., Professor of Physical Diagnosis in the Northwestern University Medical School. Chicago: The Year Book Publishers.

VOLUME IX. SKIN AND VENEREAL DISEASES, edited by OLIVER S. ORMSBY, M.D., Professor and Head of the Department of Skin and Venereal Diseases, Rush Medical College, with the collaboration of JAMES HERBERT MITCHELL, M.D., Research Fellow in Pathology, Rush Medical College. Miscellaneous Topics edited by HAROLD N. MOYER, M.D. Price, $1.35.

THE many interesting cases which the book reports render the volume profitable reading for the general practitioner as well as the specialist.

THE MEDICAL CLINICS OF CHICAGO. Volume I. Number IV. (January, 1916). Price, $8.00 per year. Philadelphia and London: W. B. Saunders Company.

THIS number contains seventeen reports from eight clinics and a brief article on the Schick reaction by G. H. Weaver. There is a good discussion of primary carcinoma of the liver and two interesting cases of meningitis are reported. The adherence to the stenographic style of reporting these clinics continues to lead to a good deal of loose usage of language as evidenced on page 671 where the Doctor is made to say, "There is a great deal of *pathology* in the lung." Surely if the material is worth printing at all, especially since it is printed so expensively, the proof should be more carefully revised. There is possibly room for some such publication as this but when one compares it with the information obtainable from a first class medical journal it seems as though it were hardly worth while.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Sixty-Seventh Annual Session—Held in Detroit, Mich., June 13, 14, 15 and 16, 1916.

(Special Report to the MEDICAL RECORD.)

HOUSE OF DELEGATES.

Monday, June 11—First Day.

THE PRESIDENT, DR. ALBERT VANDER VEER OF ALBANY, IN THE CHAIR.

President's Address.—Dr. ALBERT VANDER VEER delivered this address in which he first referred to the loss the Association had sustained in the death of Dr. Rodman. It was his earnest desire to perpetuate Dr. Rodman's memory by faithfully prosecuting his work. He also referred to further losses which the Association had experienced which were not easily repaired in the death of Dr. Frank J. Lutz of St. Louis, Dr. Wisner R. Townsend of New York, Dr. Henry L. Elsner of Syracuse, N. Y., Dr. Henry B. Favill of Chicago, and others, all of whom had left them a heritage of work well done and an incentive to continue with the same diligence which they had always shown. He urged upon the members their duty in respect to medical legislation, and especially the importance of preventing evil laws, and advancing good ones. They had had the experience in New York State of having legislators from time to time who would not pass a law unless it had the approval of the medical profession. They had recently secured an amendment to the medical practice law, giving the Board of Regents power to exercise its judgment in increasing the requirements of those applying for a license to practice medicine. In regard to the medical inspection of schools it was indeed gratifying to note material progress; more than one-half the States recognized the value of school inspection and were conducting campaigns of child welfare. This was a practical work of preparedness, for without healthy children there was little to be hoped for in the direction of military preparedness. The laws of workmen's compensation should have more attention from the medical profession, but of this they would hear later. Dr. Vander Veer said he wished to bring more prominently to their attention the Trudeau School of Tuberculosis at Saranac Lake, which had been opened on May 17, where a great deal of information on the subject of tuberculosis could be acquired under teachers who were numbered among the most eminent men in America. He had just learned that the entire fund of $500,000 which had been asked as an endowment fund for the school had been obtained. He then spoke at some length on the subject of preparedness, recalling what unpreparedness had meant at the outbreak of the Civil War and also during the Spanish-American war. The American Medical Association was a strong organization in connection with the Red Cross work and thoroughly alive to the situation and to the requirements that would be made of the medical profession and was prepared to lend its support. During the fall of 1915 the Clinical Club of Albany discussed a plan of preparedness, and by December had it so perfected that it was presented to the Surgeon General, who gave them a great deal of encouragement. It had also been commented on editorially in the *Journal of Military Surgery* as the "Albany Idea." This was a very practical method of preparation, the first preliminary of which was a course of reading, lectures, and discussion on the organization and duties of medical officers. It took as a definite basis the conditions that might arise if both New York and Boston were held by the enemy and the American forces were retiring toward Albany together with 100,000 men, women, and children. At the same time a spy had contaminated their drinking water. They had also assumed that there would be 10,000 wounded to be cared for. The club took account of all the local resources for caring for, nursing, and feeding this large number of people. Every detail was gone into thoroughly. For instance, just the milk supply was provided for under fourteen different subheads. This plan had been well received, and they had been asked to cooperate with the American College of Surgeons, the Clinical Surgeons of North America, and the Physicians of the American Red Cross. Such a plan as had been worked out by the Clinical Club of Albany might be worked out to advantage in other localities. Dr. Vander Veer described the hospital units which had been established in New York City. The organization of such units, at a cost of $24,000 each, had been completed, and funds for a fourth had been given by two public-spirited citizens. Each of these units provided for a base hospital, complete in every respect; medical staff, nursing staff, and supplies.

Report of the Secretary.—Dr. ALEXANDER R. CRAIG of Chicago presented this report. He said that the Fellowship of the Association on May 1, 1915, was 42,366. During the past year 441 Fellows had died, 1,540 had resigned, 713 had been dropped as not eligible, 658 had been dropped for non-payment of dues, and 17 had been removed from the rolls on account of being reported "not found," making a total of 3,369 names to be deducted from the Fellowship roll. The Fellowship of the Association on May 1, 1916, was 43,181, a net increase for the year of 815. This gain in the number of Fellows was largely due to circularizing subscribers who were eligible, urging them to become members. It was suggested that the status of the Wyoming State Medical Society be referred to the Judicial Council with power, at the discretion of this Council, to revive the present organization or to arrange for a new organization of the profession in Wyoming to become the constituent association of the American Medical Association from that State.

Report of the Board of Trustees.—Dr. W. T. COUNCILMAN of Boston presented this report. He said that considering the work of the Association as a whole, what it had accomplished in the past and the promise of the future, one was filled with a sense of pride in being a member of the body. This work, while of benefit to the medical profession, extended much wider than this and benefited the nation. In considering the work of the Association, he asked if they might not say that it had accomplished a still higher task, that of uniting the medical profession. There had never been a time when it had been so free from faction. And the great idea on which this unity was based was that of service. No ignoble aim could have accomplished it, and the ideal of service was evident in all the activities of the medical profession as represented by this Association. The weekly average of the issue of the *Journal* during 1915 was 67,390, and the percentage of physicians in the United States who were receiving the *Journal* was 45.3. The Association had continued its endeavors to increase the membership of the organization and this work was undertaken only after the assistance of the constituent State Association had been secured. With the cooperation of the officers of the State organizations and the officers and members of the component societies, men in the employ of the Association had been sent into certain of the States to solicit subscriptions to the *Journal* and fellowship in the Association, as well as to present the advantages of membership in the organization of physicians of the localities visited. The Propaganda Department continued its work with regard to medical frauds. The layman's interest in the work was shown by the increasing number of inquiries concerning advertised substance which were received. People who advertise were recognizing the fact that for their own protection the advertisements could not be fraudulent. There was a growing interest in the subject among educational institutions. State and municipal boards of health, civic organizations, women's clubs, etc., continued to call on the department for information. The report of the Council on Pharmacy and Chemistry showed that it had continued its work and had published reports on practically all the widely advertised proprietary mixtures. It was confronted with many difficulties, not the least of which were the questions of radium and the mixed vaccines. Only time could establish the true place of these substances as remedial agents. The work of the Council had reached a stage when little more could be done by the efforts of the Association as a whole; the continuance of the work and the final accomplishment depended upon the individual members. There was much evidence that the individual members of the profession were prescribing and using the very substances which as a combined body they condemned, and many of the journals which they supported advertised and recommended these substances. No great progress would be made until the medical profession awakened to the fact that the remedy against fraudulent proprietary medicines lay in its own hands—until the profession resolved to believe rather the evidence which was presented by the scientific investigations of the substances than the

biased statements of the agents, whether presented by word of mouth or by advertisements. With regard to the memorial to Congress regarding proprietary medicines, there was a prospect that the request for a government investigation would be granted. Such an investigation would lead to a wider knowledge of the matter and possibly to some remedial legislation. But even this would not avail unless the individual members of the profession would act on the information obtained. Great assistance in procuring such a commission could be rendered if the members of the House would bring the matter to the attention of their Congressmen and urge the measure.

Report of the Judicial Council.—Dr. ALEXANDER LAMBERT of New York presented this report. He said that as the volume of business coming before the House of Delegates had grown, there had been a growing realization from year to year that the mass of business was having an undesirable effect in that it crowded, often into hurried discussion, many important matters. There had been a growing feeling among the delegates that this situation should be remedied and that it would be best remedied by pushing forward the meeting of the House of Delegates, bringing the first day on the Saturday before the general meeting of the Association. In considering the matter it seemed to the Judicial Council that it were wiser to push on to a later day the general meeting of the Association and the first meeting of the Scientific Assembly; that was, that the House of Delegates should continue to meet on Monday and Tuesday and the Scientific Assembly should begin on Wednesday, breaking up Friday evening instead of Thursday evening, as was now done. To bring this change about, the following amendment to the by-laws was necessary and was recommended by the Council: "The House of Delegates shall meet annually on the two days preceding the opening of, and at the same place, the Scientific Assembly of the Association." There has been a growing conviction among many delegates that a great deal of time was unconsciously and unavoidably wasted in the House of Delegates in the transaction of its business. The Judicial Council, therefore, recommended to the House of Delegates that it take up the question of the election of a speaker of the House. This required a change of the constitution, and section 1, article 9, of the constitution should read: "The general officers of the Association shall be a president, four vice-presidents, a secretary, a treasurer, and a chairman of the House of Delegates." The Judicial Council further recommended that the constitution be amended to read: "No trustee shall be eligible to any other elective office the term of which runs concurrently with the term for which said trustee has been elected."

Report of Committee on Social Insurance.—Dr. ALEXANDER LAMBERT presented this report to the Council on Health and Public Instruction. He said the importance of this work had recently grown more and more evident, and it seemed that in all probability this subject would be in the next few years one of the most important that would occupy the attention of the profession both from an economic and a purely medical and surgical point of view. This committee was appointed with the understanding that its purpose and duties were to be the careful compilation of information in reference to social or health insurance and the relations of the physician thereto. They were to do everything in their power to secure such constructions of the proposed laws as would work the most harmonious adjustment of the new sociological relations between physicians and laymen which would necessarily result therefrom, and they had been authorized to carry on this work wherever it seemed most desirable. The services of I. M. Rubinow, M.D., Ph.D., chief statistician of the Ocean Accident and Guarantee Corporation and president of the Actuarial Society, were secured as executive secretary, and a bureau had been opened at 131 East Twenty-third Street, New York City. The Committee on Social Insurance presented to the House of Delegates a statistical study of the medical profession of the United States in its various relations, both in the ratio of physicians to population, their geographic distribution, and various other statistical facts that were of importance and interest to the profession. In the near future it was the intention of the committee to undertake to educate the American medical profession in the general principles of social insurance, particularly health insurance, the economic and social significance of the movement to obtain such insurance throughout the United States, and the absolutely essential part which the medical profession must play in a successful adaptation of this new legislation to American conditions. The bureau would consider it a part of its work to answer all questions which any physician might desire to write to it, asking for information facts, or figures bearing on social insurance in any of its phases, and to be in reality a bureau of information to the medical profession in regard to the details of organization and of medical aid in various forms of insurance, both in European countries and in the United States. The committee considered it among its duties to appear before legislative bodies in this country with a view to bringing about friendly understanding between all parties concerned and to protect the legitimate economic interests of the profession in the laws coming up for discussion concerning social insurance. The work of the committee should be directed in such channels as to avoid the conflict which had arisen in England at the beginning of a similar movement and which had resulted in a very large amount of bitterness between the profession and the public. It was the intention of the committee to undertake the following lines of work: (1) To collect a bibliography on social insurance with special reference to medical questions involved; (2) to undertake, by correspondence, to get in touch with the various sickness insurance organizations in Europe so as to obtain first-hand information as to their experience; (3) to undertake a statistical study of hospital and dispensary facilities in this country in view of the possibility of these institutions assuming a broader function under health insurance; (4) to study the conditions of lodge practice both from the point of view of the physician and the patient; (5) to gather all available information regarding the status, earnings, etc., of the medical profession in regard to which problem the wildest statements were current without any basis of fact underlying them. The report then gave a very thorough review of the entire situation with reference to compulsory and voluntary social insurance in the various countries of Europe. The status of insurance in the United States was presented and shown to be in general that which had prevailed in Europe before the passage of their comprehensive health insurance laws. The report of the Commission on Industrial Relations showed in general the mass of systematic and yet incoordinated attempts that had gradually been developing to bring about health insurance in the United States. In the final report of the Commission on Industrial Relations the following conclusions were found: Each of the thirty odd million wage-earners in the United States lost an average of nine days a year through sickness. At an average of $2 per day, the wage lost from this source was $500,000,000. At the average cost of medical attendance of $6 per head per year there was added to this, at the very least, $180,000,000. Accidents caused one-seventh as much destitution as sickness and one-fifteenth as much as did unemployment. Sickness among wage-earners was primarily the direct result of poverty, which manifested itself in insufficient diet, bad housing, inadequate clothing, and generally insufferable surroundings in the home. This emphasized the well-known vicious circle of sickness, unemployment, and poverty. The responsibility for the disease causing conditions rested on the employer, the public, and the employee. A system of sickness insurance was the most feasible single remedial measure. A system of federal insurance, as drawn up by the Commission on Industrial Relations, was outlined, and health insurance standards and a tentative draft of a health insurance act were presented. The report also considered the relation of the physician to health insurance laws, the remuneration of physicians, the specialist in health insurance practice, the place of the hospitals and dispensaries under health insurance. Finally, in commenting on this voluminous report, Dr. Lambert stated that no pretense had been made of arguing either for or aginst health insurance, or of bringing together the advantages and disadvantages to be gained by the community, or its desirability as a measure of health or social necessity. They had simply offered a compilation of what had been done abroad, and in the United States, and had presented facts that might be of interest to the medical profession in preparing a study of the situation in any given state where health insurance was likely to be brought up and placed on the statute books.

Report of Council on Health and Public Instruction.—Dr. HENRY M. BRACKEN of Minneapolis presented this report. He said that the death of the chairman, Dr. Henry B. Favill, not only deprived this council of its chairman and its chief inspiration, but the American

Medical Association of one of its strongest, most effective and valuable members, and the medical profession of the country of one of its finest representatives. He urged that a committee be appointed to draft suitable resolutions for adoption by the House of Delegates. The work of the council during the past year had differed from that of previous years in that many of the plans that had been under consideration and development in the last five years had this year produced definite results, while the formation of new plans and activities had been somewhat checked by the necessarily limited appropriation made for the council's work this year. The council was endeavoring to develop the program outlined in 1914 and reaffirmed in 1915. This program included: (1) A thorough investigation of present public health conditions in the United States with a view to securing more accurate information on all phases of the public health program than was then available. (2) Education of the public by every possible means in order that the people might understand the enormous advances in scientific medical knowledge during the last generation and the possibility of utilizing such knowledge in the prevention of disease, the reduction of the death rate and the prolongation of human life. (3) The crystallizing of such educated public sentiment in necessary public health laws, regulations and ordinances which would render possible a conservation of human life, commensurate with our advancing knowledge, and which would render such laws more effective through an educated and enlightened public opinion. A tentative plan had been formulated for a study of the public health activities of the Federal government which it was hoped would be developed during the next year. The survey of State public health activities had been summarized in a comprehensive report by Dr. Charles V. Chapin, commissioner of health of Providence, R. I., including a rating sheet of forty-eight State health organizations and exhaustive tabulations of their various activities, appropriations, expenditures, etc. This report was ordered published and distributed to members of State boards of health and officers of the association. This survey and the publication of this report it was hoped would mark the beginning of as distinct a movement in the public health field as the first report and classification of medical colleges by the Council on Medical Education inaugurated in the educational field. Prior to the publication of Dr. Chapin's report there was no way in which the public health work being done in different States could be compared and estimated. It was to-day impossible to determine, except in terms of individual opinion, what was the ideal or desirable form of state public health organization, what such an organization should include, how many men were required to conduct it, or what should be its cost. It was impossible to determine whether, for the amount that was being expended, the people of any State were getting value received for their money or how near they were coming to such a realization. The council had been desirous of inaugurating a survey of municipal public health work similar to that made by Dr. Chapin in State public health work, but so far had been unable to devise any feasible plan for this purpose. Practically all our leading cities and many of the smaller ones had during the past twenty-five years established some kind of municipal health organization; the form which this organization had taken has been largely accidental or determined by the views of those responsible for its organization or administration. During the past year a number of requests had been received for information and advice as to what kind of a health department should be organized in a town of a given size, how many men would be required, etc. During the coming year the council hoped to make a study of this problem and to present a report showing what was actually being done in municipal health work. In the fourth field of investigation, that of voluntary public health organization, the report of the Central Committee on Public Health Organization was published in pamphlet form. This pamphlet contained the tabulated reports of forty-six voluntary public health organizations, was immediately accepted as authoritative, and had been in great demand. The most marked development of the past year in the educational work of the council has been the number and variety of the pamphlets on different subjects printed and distributed by the council. These numbered altogether 1,133,500. The pamphlet entitled "Minimum Health Requirements for Rural Schools" had the largest edition, 750,000. The entire edition had been printed, bound, addressed and mailed to every rural school teacher and rural school board member throughout the country, as well as to every state and county superintendent of education and every state normal school. This work was a striking example of the value of intelligent cooperation between various organizations interested in the same line of work. The pamphlet was prepared by the joint committee of the American Medical Association and the National Educational Association; the funds were supplied by the Elizabeth Macormick Memorial Fund, and the addressing and distributing was done through the Federal Bureau of Education. A second instance of cooperation was found in the printing and distribution of 281,000 copies of "Save the Babies" pamphlet. In connection with child welfare work in twenty-nine cities cooperation was established between the drygoods stores and the local medical organizations; the medical societies furnished speakers and the dry goods stores furnished a place of meeting and advertised the meetings to the public.

The Medical Legal Bureau had been at work on three digests mentioned in the report of 1915. These were the digest of the Supreme Court decisions on the medico-legal relation of physicians, the digest of Supreme Court decisions with reference to malpractice, and the digest of Supreme Court decisions on the powers and duties of State boards of health. The first of these digests was about one-half completed, 874 cases out of a total of 1,697 having been abstracted and cited. Each of the other digests would also include a large number of cases. During the past year 89 inquiries had been received on medico-legal subjects.

Legislation.—Quite a number of laws had been introduced into Congress during the past winter touching on public health matters and of interest to physicians. To date none of these had passed excepting a bill providing for the national control of leprosy.

A Standard Study Program for Women's Clubs was presented by Dr. S. J. Crumbine at the annual meeting of the Conference of State and Provincial Boards of Health of Kansas. This program proved so popular that in a short time many requests from all parts of the State were received for it. The demand for this program had continued and 3,000 copies were recently distributed at the New York biennial of the General Federation.

Special Activities.—Following the custom of the past five years, the secretary of the Council, with the cooperation of a local committee, arranged to furnish speakers on public health topics for every church in Detroit desiring such an address. It was recognized that one of the serious defects in the annual program of the Association was that there was no marked event which brought the annual session to a close. This fact and the growing interest of the public in health topics had led to the arrangement of a program for Friday, June 16, as Public Health Day. A public health parade under the auspices of the State Board of Health would be held just before the meeting. An invitation had been issued to the people of Detroit to attend this meeting as the guests of the Association. It was hoped that the success of this first meeting would justify the Council in making it a permanent feature of the annual sessions of the Association.

Reports of Sub-Committees of Council on Health and Public Instruction. — *The Committee on Women's and Children's Welfare* reported that they had adopted the policy of developing one line of action. At the present time the baby health movement was the one of most immediate interest and seemed to offer the greatest possibilities among the various phases of public health work, and attention had therefore been centered on this work. Their first year's work had resulted in the giving of the official score card to the public. In November, 1915, Miss Julia Lathrop issued the bulletin "Baby Week Campaign," which described the three acceptable types of conferences, namely: baby health conference without score card, baby health conference with score card, and baby health improvement contests. The baby health conference without score card was the ideal conference and the one the Federal bureau carried out. From the beginning State and county fair associations had been among their strongest cooperative influences. During the second year of their work an anthropometric table had been compiled based on data secured from score cards. During the third year 10,000 score cards had been secured and a new anthropometric table had been published by Mr. F. S. Crum. It was also their intention to tabulate all remedial defects from these cards. Seven States were planning to issue bulletins in which would be tabulated all facts of statistical value connected with this investigation of remediable

defects. It was urged that other States furnish the names of physicians who would be responsible for collecting and sending them duplicates of score cards secured from baby contests in their vicinity.

The Committee on Cancer submitted a report stating that as a committee they had done very little during the past year, but that each individual had done his share in disseminating knowledge as to what could be done when cancer was recognized early. After mature deliberation it was deemed best to allow the American Society for the Control of Cancer to take the more active part, as it in a large measure came into being through the efforts of the laity and they had contributed mainly to its support. It had been the desire of this committee to avoid duplication of work, and this accounted for their apparent inactivity. This committee, however, was doing excellent work in an advisory capacity and stood ready at any time to supplement the endeavors of the American Society for the Control of Cancer when it might be necessary.

The Committee on Conservation of Vision reported that this committee and their State managers had had much to do with the enactment of eye legislaion in several States. It had also much to do with the prosecution of a number of individuals, physicians, midwives, and others who had disobeyed the State laws concerning the welfare of eyesight. They were endeavoring to teach the cheapness of health. It was cheaper to keep people well than to allow them to be sick. It cost $100,000,000 a year to educate 3,000,000 "repeating" American school children; that is, the unprogressive school children. This was mostly unnecessary, since only about 3 per cent. of these children were mentally defective. Preventive eye work was very cheap, but its results were big. The wearing of goggles in shops and the use of protectives for dangerous machinery would cost but little, and would almost entirely prevent injury to eyes in shops. Control over the manufacture and sale of wood alcohol, in its various seductive forms, would save many eyes and many lives, and would cost practically nothing. This committee was endeavoring to inspire the different States with the necessity for State activity along the lines of visual conservation. The most efficient manner of doing this was by means of lectures in the different towns and cities. These were arranged by the several State managers, whose duty it was to bring competent lecturers and receptive audiences together. During the year 384 lectures had been given to a total audience of 84,900. The committee had undertaken the compilation of all the eye laws in the United States. In concluding they emphasized their need of funds for stereopticon pictures and more pamphlets, and pointed out that their work should include conservation of hearing as well as conservation of vision.

Report of the Council on Medical Education.—Dr. ARTHUR DEAN BEVAN of Chicago presented this report. He stated that each year since 1905 the report to this body had shown a continued progress in medical education. The large oversupply of medical colleges had given away to a more normal supply of greatly improved institutions. In 1905 conditions were ripe for the campaign which the Council on Medical Education had since been conducting. As a result of this eleven years' work the oversupply of medical schools had been reduced about 40 per cent.; the number of higher standard colleges had been increased by over 80 per cent. In 1904 the number of medical colleges was 162; in 1915, 95. In 1904 only 2.5 per cent. had the higher requirements; in 1915, 87.4 had higher requirements. In 1904 the number of medical students was 28,142; in 1915, 14,891. In 1904 only 6.3 per cent. of these were in high standard colleges; in 1915, 80 per cent. were in high standard colleges. In 1904 the medical graduates numbered 5,761; in 1915, 3,536. In 1904 only 369 were from high standard colleges; in 1915, 2,652 were from high standard colleges. Notable improvement had been brought about through the Medical Students' Register, which was established in accordance with the action of the House of Delegates in 1910. Through the facts known through this register and the information obtained by inspections, the conditions in all medical schools regarding the administration of entrance requirements, methods of teaching, facilities, etc., were now well known. Although the number of medical colleges had been greatly reduced, there was still no dearth in the supply of colleges. Statistics showed that fifty or sixty medical colleges could have cared for all the students enrolled in the ninety-five which held sessions last year, without the expenditure of another dollar for teachers or equipment. The number of medical colleges would doubtless be further reduced, but statistics showed that the lowest ebb in the attendance of medical students had perhaps already been reached. During the last twelve years the Council had endeavored to secure the general adoption of the standard referred to as the "ideal" standard. This had been secured in so far as the year of physics, chemistry, and biology, and the four-year medical course were concerned. It had been adopted by 85 of the 95 medical schools in the country. As to the hospital interne year, a large majority of the medical school graduates voluntarily secured such work before beginning independent practice. As a result of the influence of colleges and universities, the ideal standard urged by the Council had been somewhat modified. Educators generally advocated two years of pre-medical college preparation instead of one, and the medical colleges gradually accepted the standard, so that at present 54 of the 95 medical colleges now required for admission two years of college work. It was evident that the twenty schools which would survive out of the remaining forty would likewise adopt this requirement. It was evident that the American standard of medical education that was to-day most widely accepted and which in the near future would be legally required in every State was as follows: A four years' high school course; two years of collegiate work, including courses in physics, chemistry, biology, and a modern language; a four-year medical course, and a year as interne in a hospital. It could be confidently predicted that such a standard would be the legal requirement in this country in 1920. When these requirements were adopted by all States, American medical education would be on as high a basis as that of any other country in the world. From the standpoint of providing proper training for the interne many hospitals were weak, but one could not expect the ideal condition at once. The inspecting and classifying of hospitals of the country was an important matter, and the Council had this work in hand. It had not had sufficient funds to prosecute the work more rapidly. In the meantime the Carnegie Foundation had given the American College of Surgeons $10,000 a year for three years to be devoted to hospital inspection. The developing of satisfactory medical education in this country had been hindered in some of our important centers by the fact that instead of one strong medical school there were several which had different standards and conflicting interests. In this connection Dr. Bevan said he had just heard of the affiliation of three medical colleges in Philadelphia, the Medico-Chirurgical, Jefferson Medical College, and the Medical College of the University of Pennsylvania. In most of the centers of medical education in Europe there was but one medical school, which received the undivided support of the people, the profession, and as a rule, of the government. Such a system possessed many advantages. It would insure uniform requirements and advantages which could be obtained without interference with established university organizations, and much confusion and expense might be saved by a common administration. They could with proper conditions exchange credits, municipal hospitals could be better utilized, endowments could be more easily secured, and post-graduate work could be better organized. It should be no more difficult to get several medical schools to cooperate in this way than to get a number of railroads to cooperate in a great union depot plan or to get a number of steel plants to form a steel trust. It would require breadth of view, hard work, and organizing ability, but the end sought was worth all the hard work necessary to accomplish it, and some such plan was necessary to bring about the best result in American medical education.

Remarkable progress had been made in State board requirements since 1908, prior to which no State was requiring more than a four-year high school education as the minimum standard of preliminary education. There were now thirty-three States which had adopted the higher standard, fifteen of which required as a minimum two years of premedical college work. As a result of special investigation, it was found that only ten States had provided any control over the chartering of educational institutions, and in two of these the restrictions did not apply to irregular professional schools or corresponding colleges. In thirty-eight States it therefore appeared that any coterie of men could open an institution with the avowed purpose of granting degrees, no question being asked as to whether the institution was properly equipped or had sufficiently qual-

ified teachers to furnish the education usually demanded before such degrees were granted. The largest number of these institutions was found at present in Illinois, and California and Missouri were close seconds. In the interests of the public there should be provided in every State some competent board or authority to have in charge not only the chartering of all educational institutions, but also the right to revoke the charter and close the doors of every institution which was not being conducted in an honorable manner and for a proper purpose. New York appeared at present to have the most complete control of educational institutions. The professional relations between Canada and the United States had always been most cordial. Consequently, it was with surprise and regret that it was learned that discrimination against even the best medical colleges in the United States had been established in two provinces of Canada, Quebec and Ontario. Graduates from the highest grade medical schools in this country in order to secure licenses in the two provinces named were required to have taken an additional year's work in one of the medical schools of those provinces. No objection could be raised if only graduates of some of the lower grade medical schools in the United States were thus debarred, but it was clear that no exceptions were made, even for graduates of Johns Hopkins University, Leland Stanford, Jr., N. Y. University, Cornell, Columbia, Western Reserve, and others which required two, three, or four years of college work for admission. A survey of the situation showed that the conditions in education in the two countries were quite parallel, except that the entrance standards were now higher here than in Canada. There were now in the United States thirty or forty medical schools which would compare favorably with the medical schools of any other country. Considering these things it was to be hoped that our good medical friends of Quebec and Ontario would have their license laws so amended as to correct this unfair discrimination against the high grade medical colleges of the United States. This called attention to the fact that the time had arived when a more careful discrimination should be used by the licensing boards of this country in the acceptance of credentials from foreign medical schools and in licensing the graduates from such institutions. There was also the question of providing reciprocal relations with other countries in the recognition of the graduates of high grade medical schools. As was well known, there had for the past fourteen years been talk of a national board of medical examiners. It was seen that no national body with legal powers could be established without first securing an amendment to the national constitution. It was, therefore, quite evident that the board to have this matter in charge would need to be a voluntary organization and its certificate to be of value would need to be based on unquestionable qualifications. This matter was brought into prominence a year ago by Dr. Rodman with the result that the Council on Medical Education held a business meeting in Washington Nov. 27, 1915, the object of which was to examine into the organization, the personnel, and the methods of the National Board of Medical Examiners. The executive committee of the national board as then organized, on invitation, was present. The Council was favorably impressed with the personnel of the membership of this board. However, they felt that further investigation was necessary, and a symposium on the subject was arranged at the twelfth annual conference of the Council in Chicago, in February, 1915. A detailed report of these conferences was presented and, although no examinations had yet been held, the Council felt confident that the certificates granted by this board would be worthy of acceptance by every State licensing board. The Council believed, further, that through the examinations given by this board the number of physicians in the Medical Reserve Corps who could be called on to aid the government in any national emergency would be greatly increased. It was believed also that through the examinations conducted by this board an avenue would be provided by which reciprocal relations in medical licensure might be established with other countries, offers of which had already been made by some of the countries of South America. The Council heartily recommended to the House the endorsement of this national board as it now stood.

Report of Council on Scientific Assembly. — Dr. J. SHELTON HORSLEY of Richmond, Va., presented this report. He stated that this was the first report of this Council. They had carefully considered the report of the Committee on Sections and Section Work and agreed with the report that there was no doubt that too many metings were held at the same time to the disadvantage of the fellows who attended the annual sessions. They further agreed that the duplication of subjects presented at the different sections at the same time could and should be avoided. Owing to its small membership and the fact that no program had been provided for this year, they recommended that the Section on Hospitals be discontinued. As to reducing the number of papers they believed this could be done without in any way curtailing the value of the sections. They suggested that the term "unit" be applied to one meeting of a section held either in the forenoon or afternoon and recommended that the average number of papers assigned to a unit be six, and that the maximum number of units assigned to any section be five.

Report of Committee on Red Cross Medical Work.— Dr. GEORGE M. KOBER of Washington, D. C. presented this report. He stated that the object of this committee was to stimulate in every county medical society the creation of a committee on Red Cross medical work so as to provide a body of representative physicians of approved qualifications to direct or participate in medical work carried on by the Red Cross in different localities in time of war or emergencies, and to advise with the representatives of that society in handling medical and sanitary problems incident to such an occurrence. It was desired to have in every county a committee of five physicians, two of whom should be president and secretary of the county medical society *ex-officio*. In case of disaster these county committees would be called upon to nominate qualified medical men in their respective counties for Red Cross service and also to serve in an advisory medical capacity to the Red Cross in time of disaster and in other lines of Red Cross activity. During the present European war many of these committees had been called upon to report on the qualifications of physicians and surgeons offering to serve the Red Cross in Europe. The endorsements had been invaluable in the selection of men, as it was highly important that reputable men only be chosen in order to protect the American Red Cross and the reputation of the medical profession whom they represented abroad. The reference committee on reports of officers at the session of the House of Delegates, held June 21-24, 1915, deemed it advisable that the activities of these committees be directed through the State committee rather than with the county committees. As an appendix to this report the regulations of the National Committee on Red Cross Medical Service were given in detail as well as the duties of the committee. In addition the duties of State and county committees were described, and the rules and conditions of enrolment.

All of these reports were referred to the respective reference committees for consideration.

OPENING MEETING.

Tuesday, June 13, 1916.

THE PRESIDENT, DR. ALBERT VANDER VEER OF ALBANY, IN THE CHAIR.

AFTER a call to order by the president the meeting was opened by a brief invocation by Bishop Charles D. Williams of Detroit.

Address of Welcome to Michigan.—The Hon. WOODBRIDGE N. FERRIS, Governor of Michigan, delivered this address. He said, in part, that he would not consume much time in telling the audience about the great State of Michigan or the beautiful city of Detroit, but would simply bid them welcome this morning. Long years ago he had had a dream that he wanted to be a physician, but his father had discouraged him. Four years later, however, he entered the medical department of the University of Michigan and pursued a course of lectures. At this time it did not require much preparation to enter the medical school; there were only two classes, freshmen and seniors. Some of the freshmen went out and taught school or followed other remunerative pursuits, and then came back and got a senior note book and soon went out as full-fledged physicians and surgeons. They were required to know but little, and little was expected of them. He had concluded before taking that course that it would be of value to him, and he had since found that it was invaluable, and if he had his way he would have educational authorities require such a foundation as a part of any educational scheme, because without a knowledge of how to preserve health education availed little. When he com-

pared the requirements of the University of Michigan in those days and thought of the changes that had been wrought in and of the great university as it was to-day, he marveled; this was but indicative of the progress of the medical profession, the greatest profession in the world. He said that he supposed that some of the great physicians and surgeons who were with them to-day had pursued the same limited medical course, but they had gone on learning. He then proceeded to relate some of the achievements of medicine during the last seventy-five years. At that time some of the greatest gifts which medicine had given to the world were still unknown. When one recalled the work of Darwin, Huxley, Spencer, Haeckel, Gray, Dana, Yoemans, and others who had created a new era in scientific research, it would be recognized that it was modern science that had given to medicine the high place it now occupied. A few things that they all knew were worth while recalling. A new Prometheus had appeared in the amphitheater of a Boston hospital when anesthesia was given to the world. Prior to that time the world was a literal hell, in the description of which even a Jonathan Edwards could not have done justice. More widespread was the relief of disease through the growth of sanitary science and the knowledge of asepsis. They had been enabled to abolish smallpox and typhus fever, and typhoid fever was now driven to the last ditch. Cholera could now be controlled, and coming closer to our own time was the work done on the Isthmus of Panama. For four centuries the Isthmus of Panama had been the white man's grave. It was said that before Dr. Gorgas went there the mortality was 170 per 1,000 population. The health reports from the Canal Zone were the most interesting sanitary reading of the present day; they showed on an average a mortality rate of 8.91 per 1,000 population, a lower percentage than any city in the United States. After referring to the sanitary control of yellow fever as one of the finest achievements of modern science, Governor Ferris said he would like to tell what they were doing in Michigan along the lines of preventive medicine, and he hoped that before they left Detroit they would get some definite idea of their work. It was important to care for and to cure the sick, but it was quite as important to awaken people to what God had offered in the way of healthy living. As Governor of Michigan he had placed special emphasis on matters relating to health and sanitation. He stated that he belonged to that class of men who believed in preparedness, but he believed that there were other factors of preparedness just as important as carrying a gun. He did not disapprove of carrying the gun, but he did not want it used unless it was necessary; but what he did want was something under the gun; he wanted a high standard of citizenship. He did not believe in any of the "pathies," and scientific medicine had little to fear from them. Science would prevail in education, in medicine, in religion, and even, perhaps after a long time, in politics. Much had been done to eradicate the white plague, and he hoped that physicians might soon be able to eradicate the black plague, not by the attempt to cure it but by education so that there would be no occasion for treatment. In closing he said that aside from the more practical work of practising medicine, the men of the medical profession should get in touch with the people, many of whom still lived in ignorance and superstition, and should endeavor to shed the light of their knowledge not only throughout their own country but throughout the world.

Address of Welcome to Detroit.—Hon. ALLEN FRAZIER representing the Hon. Oscar B. Marx, Mayor of Detroit, made this address. He presented the regrets of the Mayor that he had been unable to be present and extend the welcome his heart had desired. It was his function to tell them how to enjoy life while in Detroit, and this he would do. Detroit was a place not without traditions. A study of its history showed that it had grown up under three flags, the Fleur de Lis of France, the flag of King George III, and, greatest and best, the Stars and Stripes. It had grown to be one of the greatest cities of the United States, famed not only for its automobiles but for its stoves, pharmaceutical preparations, and many other manufactures. Its great industries were controlled by men of high integrity who were more than gasoline kings. The character of these men was shown by the way in which they treated those who labored for them. They were treated not as machines or serfs but as civilized men, and were paid a living and honest wage so that they could live like American citizens. They had sanitary homes and their children went to school. They had medical and surgical attention not only for the purpose of curing any trouble, but were also told how to avoid the source of that trouble. The children were educated to love and honor the law, the government, and the flag under which they lived. This was the kind of preparedness their government was taking up; they were making their men happy, self-respecting, and moral people. The city had also provided liberally for the recreation and amusement of her people. He hoped they would go about and see all these things for themselves.

Address of Welcome by the Medical Profession.—Dr. A. W. HORNBOGEN, president of the Michigan State Medical Society, made this brief address. He recalled the occasions on which the American Medical Association had honored Detroit by making it a meeting place. The association had first met here in 1856, then in 1874, again in 1892 under the presidency of Dr. Henry Marcy of Boston. He recalled the service that Michigan had rendered the profession through Dr. Beverly D. Harison, who had done more for the medical profession than any one present. He had been instrumental in 1901 in urging a national medical licensing board. He was responsible for the present reciprocity in the United States. There were now about three-fourths of the States in the Union which participated in this reciprocity. In closing Dr. Hornbogen extended the welcome of the medical profession of the State to the members of the American Medical Association.

Inauguration of the President.—Dr. ALBERT VANDER VEER said he felt that he had successfully fulfilled his mission and took pleasure in introducing the Surgeon-General of the Public Health Service of the United States, who would now be inaugurated president of the American Medical Association, Dr. Rupert Blue of Washington.

President's Address.—Dr. RUPERT BLUE then delivered the presidential address (see page 1071).

SECTION ON MEDICINE.

Tuesday, June 13—First Day.

DR. ROGER S. MORRIS OF CINCINNATI IN THE CHAIR.

Blood Transfusions, with Special Reference to Blood Grouping.—Dr. WALTER V. BREM of Los Angeles, Cal., presented this study which was based on two hundred transfusions of defibrinated, citrated and whole blood. The diagnosis of the cases, the reactions and the results were discussed. A rapid method of blood grouping was described, and this was illustrated by lantern slides.

Dr. RICHARD LEWISOHN of New York said he wished to make a few remarks regarding the citrated reactions and the dose. Fourteen months ago he suggested the use of the citrated blood for transfusion, and the delicacy of this method was based on the small dose required which overcame the dangers that had been pointed out. At that time he said that sodium citrate was only an additional toxin, but the transfusion of but small quantities, such as one-fifth of 1 per cent. was not so dangerous. He had used this in about 75 cases, and he had never seen any severe reactions follow. It was certainly, at least in his hands, a very simple method and one that used to be left entirely in the hands of the surgeon, but which now could be placed with entire safety in the hands of the general practitioner. What he should be taught was just where to insert the needle. With regard to reactions, he believed that although they had seen some reactions, they had been less than when other methods had been employed. Out of these 75 cases, in 15 there was a rise in the temperature to 101° or 103° F., but this soon fell to the normal. He believed that they knew about what was going on in the blood from a biological standpoint. This method, simple as it seemed and sounded, needed a great deal of care, especially in regard to estimating the clinical results. He emphasized the fact that after the use of the method he advocated he had never noted any bad reactions.

Dr. GEORGE R. MINOT of Boston said that at the Massachusetts Hospital the results obtained accorded with those of the reader of the paper—the citrated suspension of the cells without washing was an advantage.

Dr. F. G. NOVY of Ann Arbor, Mich., said he wished to emphasize the fact that serum was always a poison. This agent had been used extensively for transfusion purposes, and the fact that it was a poison should always be kept in mind. The use of whole blood was even more dangerous.

Dr. A. Jacobi of New York asked Dr. Novy if the serum when injected into the spinal canal was as dangerous as when given in the usual way.

Dr. Novy replied that he could not answer Dr. Jacobi's question, because he had had no experience in that line. His experience had been purely with the giving of the serum intravenously.

Preliminary Observations on the Apparently Immunizing Behavior of the Mixed Serums of Immune and Hypersensitive Guinea-Pigs. — Drs. Henry Sewall, William C. Mitchell and Cuthbert Powell of Denver presented this communication, which was reported by Dr. Sewall. Having found that guinea-pigs might be made either hypersensitive or insensitive to the action of horse serum following a few instillations of it into the nose, according to the amount of serum absorbed, it was sought to determine whether or not the blood of the two groups of pigs contained specific bodies capable of reproducing the respective production and anaphylactic effects. For this purpose the serum from treated animals was injected into normal guinea-pigs, which later received series of intravenous injections of horse serum. In general the serum of the "protected" pig enabled the recipient animal to withstand two intravenous injections of horse serum. The mixed serums from protected and hypersensitive pigs occasionally enabled the recipient animals to withstand an indefinite number of horse serum injections.

Dr. F. G. Novy of Ann Arbor, Mich., said that he was exceedingly glad to hear Dr. Sewall present his conclusions regarding the treatment of anaphylactic shock; he had described a protective action. It seemed to him that immunity began with the presence of shock itself. He thought that they had made a mistake in the past in looking upon the chemical changes in the body as the most important things concerned. He was glad they were so satisfied with the results of the intensive work that had been carried on. This had been carried on for some time, and the results showed that in all probabilities this was a purely physical one from start to finish and that there was no chemistry connected with it.

Dr. Samuel J. Meltzer of New York said that possibly Dr. Sewall was the first one to test the effect of serum, not by its action on anaphylactic shock, but by its action when it did not kill and later when it protected. Subimmunity was protective. But all this must be confirmed before it can be accepted as fact. Anaphylactic shock had not been well studied. What the gentlemen had presented in their paper must be confirmed by other workers before their results could be accepted. The speaker was quite convinced that Novy's method was a very good one. However, after all had been stated, it should be remembered that personal experience at the bedside gave them facts which were as good as any statement that might come from the laboratory. The physicians who worked at the bedside should not become frightened by any laboratory statement that the patient was not doing well. Observations made at the bedside were as good, in his opinion, as any made in the laboratory.

Dr. Sewall in closing said that taking the serum by mouth in his experience had resulted in negative results. The foreign proteids there were slowly absorbed.

Comparative Results in Antirabic Treatment with the Pasteur Method and with Desiccated Virus. — Dr. Downey L. Harris of St. Louis said that observations had been made during the past five years on the use of desiccated rabies virus in antirabic treatment. Animal experiments had been made to test the relative value of this material with the classic method of Pasteur. Desiccated virus conferred immunity in animals earlier than Pasteur's virus and the immunity was greater. The average length of treatment was from seven to nine days, compared to eighteen to twenty days with the Pasteur treatment. Its use in the treatment of persons bitten proved it to be as efficient as the old method. The cost of administering desiccated virus was much less than the cost of the Pasteur virus. The modification of the Pasteur method which he wished to describe was founded on Shackwell's investigations on the effect of desiccation *in vacuo* at a low temperature. This method had for its object the preservation of "fixed virus" in order that it might be prepared in quantity and be always available for treatment at any time. If the value of this material in the treatment of rabies could be judged by a record of 1159 cases treated with but two failures, the results obtained would compare favorably with those obtained by other modifications of the original method. Assuming from these data that the material had an efficient immunizing power, it possessed another advantage; the time required for the complete administration of the treatment was less than one-half the time required by the Pasteur method. The 936 cases treated by Couret and by him averaged less than ten days per patient, a saving of over 9,000 days of treatment had they followed the Pasteur scheme.

Dr. Meltzer said that from the point of view of the virus he would perhaps look upon the facts presented as sort of confirming what Dr. Novy had stated, that the virus was an enemy in the tissues.

Dr. Robert A. Peers of Colfax, Cal., said he was particularly interested in the paper because of the experience they had had in California during the past few years, an epidemic of rabies spreading from the southern to the northern part of the State. Many of these cases had been treated at the State Laboratory at Berkeley. If a patient had been bitten by a dog during the epidemic it was not advisable to kill the animal at once because the animal might be killed before there were any evidences or signs of rabies in the brain tissue.

SECTION ON SURGERY, GENERAL AND ABDOMINAL.

Tuesday, June 13—First Day.

Dr. E. Wyllys Andrews of Chicago in the Chair.

Chairman's Address.—Dr. E. Wyllys Andrews of Chicago read this paper. He spoke of the relation of the practical surgeon to the pure scientist. If there were an antagonism between the two he would despair of surgery. It was well to say that surgery rested upon the fundamental sciences, but was it doing its share of creative work? The great surgeons were the men who did their own investigating. When surgery let slip the surgical pathology of the biliary tract or of the gastrointestinal tract, it would give up its birthright. One obstacle to surgical progress was some antagonism between the routine surgeon and the pure scientist, but this did not exist between the real leaders. There was, also, some separation in some medical schools between the clinical and preclinical studies, some of which was due to accidental and in other instances to deliberate causes. He believed that the bigoted practitioner was more hopeless than the narrow-minded academician. The Pasteurs, Welches, Chittendens, and Rosenows were not of the latter class but medicine itself. Sometimes, it appeared, the pure specialist was the most fallible in other fields than his own. There was hope in the young idealists who were joining the ranks of the pure scientists and who were in the hospitals. It was a profit for the older men to teach them. They carried the poor efforts of their teachers into discovery. Men of broad scientific training should guide our scientific courses and make the laboratory and the clinic one, not adjuncts of each other.

Practical Results of Newer Methods in Surgery of the Stomach and Intestines.—Dr. George W. Crile of Cleveland read this paper. He based this paper upon the operations performed by himself and his associates. These included 468, of which 128 were by Dr. Sauer and himself. In these they had only three deaths, when the rule was three times that many. He attributed these results to anoci association. Ulcer, cancer and other lesions of the stomach interfered with the digestion of the food, as did the operation itself. Acidosis and death might follow. It was necessary to introduce water, sodium bicarbonate, and glucose, and to eliminate the acids as far as possible. The fate of the ulcer-bearing area was important. The development of ulcer into cancer was shown by the Mayo clinic. Rodman favored excision of the ulcerous site. The after care of stomach ulcer was as important as that of exophthalmic goiter. Avoidance of traumatization, a large incision, and in bad cases urea hydrochloride gave good results. Slides and moving pictures. It made little difference, in his opinion, whether the pylorus was excluded or not. If it was, the Brewer or Bartlett methods might be used. He used gut with the Bartlett needles for the buried sutures and silk, interrupted, for the outer ones. It was a good plan, too, to place three or four anchor sutures at each end of the suture line in gastroenterostomy. It was important, as Cannon and Blake had shown, to locate the stoma near the pylorus, but its direction, whether oblique or horizontal, made no difference. The direction of the efferent jejunal loop was regarded of importance. He used novocaine 1/400. He emphasized the value of the "cobbler's stitch," which was an effective safeguard against bleeding.

Dr. A. J. OCHSNER of Chicago said that Crile had used good surgical judgment in recognizing the small margin of safety in his stomach cases. That margin was reduced if traumatization and nervous shocks were avoided.

Dr. R. C. COFFEY of Portland said the results of Crile's work were encouraging. He, like Crile, was getting better results with the two-stage operation for his excision cases. This mortality was reduced four times. He believed these ulcers due to silk or linen sutures, although he had two ulcers develop subsequently in one person and two recurrences in another. It was difficult not to enter the stomach or intestine at some point in the anastomosis, and it was this suture that caused the trouble.

Dr. MARCY of Boston said that he had showed thirty years ago the necessity of chromicizing catgut sutures for intestinal work. He used the cobbler's stitch, but with one needle.

Dr. J. B. DEAVER of Philadelphia said that he knew nothing about anoci-association. Pyloric occlusion was of no value. He favored excision of the duodenal as well as of the gastric ulcers. He had performed forty without a single fatality. Excision was easy in the first part of the duodenal and was facilitated in the second part by dissection of the pancreatic head or by passing a probe down the common duct into the pappilla. He emphasized the importance of gastric lavage.

Dr. ALFRED A. STRAUSS of Chicago said that the temporary closure of the pylorus was not sufficient for chronic ulcer. He had had three cases in which the bismuth passed through the occluded area in twenty-one days. Rest of ulcer site was desirable. If occlusion was necessary, should use Von Eiselsberg's method or the fascial-band device of his own.

Dr. CRILE concluded the discussion. He said he had seen three lesions diagnosed cancerous, clinically; present at the first operation, but absent two weeks later at the second operation. From this it appeared a prolonged technique was unnecessary. Patterson's alkalinity theory might explain the good results in these cases.

Suggestions as to the Method of Teaching Surgery.—Dr. JOHN A. WYETH of New York said that it was recognized that effective teaching rested upon the aptness of the student. Dexterity with both hands added to technical perfection. Surgeons, properly qualified, were sent to the laboratory to acquaint themselves with abnormal and morbid anatomy and experimental surgery. Internes should follow their cases to autopsy if the opportunity offered itself. He had instituted group study at the Polyclinic Hospital. This gave the student practical instruction as an assistant at the operation. Moving pictures. He reported eighteen amputations at the hip joint. He urged the application of tourniquets above and below the tumor and the placing of rubber tubing above the uppermost tourniquet. He illustrated amputation, injection of hot water for thyroidectomy, removal of external carotid artery, and Bodine's herniotomy under local anesthesia.

Dr. A. D. BEVAN of Chicago said the moving pictures could not replace the operations for teaching purposes. He said one should differentiate the teaching of men for general practice and for special practice of surgery. For general practice one year's internship was necessary. For a skilled specialist one should spend three years in the hospital and medical school. It was desirable to improvise a method of paying such house surgeons.

Dr. STODDARD of Philadelphia said Dr. Wyeth's paper was far-reaching in its importance. Teaching, in a sense, was intuitive. One should know when to operate and when not.

Dr. WYETH ended the discussion by recommending the group method of teaching surgery.

Nitrous-Oxide-Oxygen Anesthesia in Major Surgery.—Dr. A. BENNETT COOKE of Los Angeles said that he had performed 300 operations under gas-oxygen in the past three years. Local anesthesia was an important adjunct. He had had no fatality chargeable to the anesthetic. The difficulties were: (1) Obtaining a competent anesthetist; (2) cumbersome apparatus; (3) the high cost of gas, and (4) the necessity for using pure gas. There were no limitations excepting for operations on the nose, mouth and air passages. The advantages were the safety and comfort for the patient. Nausea, vomiting, and postoperative pneumonia were rare. Patient was returned to his room conscious and quiet.

Dr. W. I. TERRY of San Francisco said he had used gas for the past four years. He was convinced that it was best for the patient when supplemented with local anesthesia. The absence of postoperative heart, lung, and kidney conditions was a factor of safety. The lack of trained anesthetists and the high cost of gas kept gas from general use. Relaxation was secured by local anesthesia or by adding ether to the gas-oxygen.

Dr. CHARLES K. TEETER of Cleveland said gas plants were installed at Cleveland in St. Luke's and the Lakeside hospitals about ten years ago. It was sufficient for all minor surgery. The gas should be 75 to 80 per cent. pure. It was necessary to give morphine and atropine before operation. Even though some ether were given the patient, some would be saved and that would be beneficial to the patient.

Tuberculosis of the Cervical Lymphatics.—Dr. CHARLES N. DOWD of New York said tuberculosis of the neck occurred most often in childhood. He had studied 687 cases of neck tuberculosis covering a period of twenty years. The first group included those in whom the glands appeared in the upper parts of the neck and followed infections through the pharynx. There were 452 of these, 354 of whom he had traced. The results were good. The second group followed involvement of the greater part of the neck glands. These occurred in older people. He had 185 of them, of whom 68 per cent. were cured and 23 per cent. recurred. There was a mortality of 2.4 per cent. The third group were cases of general tuberculosis. There were forty-four of these, and most of them recurred. He emphasized the importance of safeguarding the eleventh nerve.

Dr. JOHN F. GOLDEN of Chicago said neck tuberculosis occurred in childhood and in adult age. In childhood the tendency was toward cure. There was another type incidental to tuberculosis elsewhere. Tuberculin was serviceable in separating these types and in curing the patients. He administered 1/20 drop tuberculin and took the temperature twenty-four hours later to determine the presence of another focus of tuberculosis.

Dr. ROBERT T. MORRIS of New York said the majority of cases of tuberculosis of the neck did not require operation at all. He recommended tuberculin, hyperemia, *x*-rays, and alternate heat and cold.

Dr. W. O. LADD of Boston said he had followed Dowd's methods for the past four to five years. He had cured 93 out of 130 cases. In 70 to 80 per cent. the portal of entry was the tonsil. He believed it as illogical to remove glands without tonsils as tonsils without glands. If cases were treated palliatively they became more involved and more difficult to treat operatively. His statistics seemed to show 50 per cent. of bovine origin.

Dr. WILLY MEYER of New York said the section of the sternocleidomastoid facilitated neck dissection in the males especially. In girls, Dr. Dowd's incision was admirable; it left little scar. He had placed an elastic band about the neck for eleven hours at a time, and aspirated and injected iodoform and glycerin after softening had occurred.

Dr. DOWD said many of the large glands were hyperplastic and should not be removed. He never saw any cures from tuberculin. Bovine tuberculosis occurred in forty-six cases.

Incorrect Technique as a Cause of Failure in the Application of Bismuth Paste in Chronic Suppurative Sinuses and Empyema.—Dr. EMIL G. BECK of Chicago said it was necessary to know the formation of sinuses. He regarded them as shriveled abscesses. Of 136 cases of hip-joint disease, six had rectal fistulæ; 25 per cent. rectal fistulæ come from disease higher up. Errors included insufficient incorporation of bismuth with vaseline, unsuitable instruments, too frequent injection, and insufficient patience. Bacteriological examinations should be made before injection. Sequestra, if present, should be removed. Radiograms should be taken. The speaker had not seen one case of bismuth poisoning in 1,800 cases.

Dr. A. J. OCHSNER of Chicago said one case operated upon seven times, and reoperated upon by him, was successfully treated by Dr. Beck. Bismuth presents a smooth surface for the discharge and is antiseptic. Failures followed from other pastes and too rapid injection. Immobilization and general hygiene were important in addition to the paste.

Dr. BECK added that he used bismuth subnitrate 30 per cent. and vaseline 70 per cent. Said he never operated upon glands of the neck, but had cured fifteen cases by bismuth injection.

SECTION ON OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY

Tuesday, June 13—First Day.

DR. EDWARD REYNOLDS OF BOSTON, CHAIRMAN.

The Uterine Secretions, Spermatozoa and Ovaries in Fertility and Sterility; from Microscopic Studies.—Dr. EDWARD REYNOLDS of Boston delivered the chairman's address, taking this as his subject. He stated that sterility must be considered biologically as a failure in mating, the fault being sometimes due to the male side, sometimes to the female. In a little over 50 per cent. of cases it was due to the male. The fertility of the male was to be determined by a study of the spermatozoa, and the ordinary microscopic examination was of little value. Experimental studies on guinea-pigs divided the semen into two classes, according to the number and motility of the spermatozoa. Unless this was first class in both respects, it was found that the animal was sterile. It was calculated that in ejaculation there were as many as 200 million spermatozoa, but an examination of post coital secretions of a woman showed that but twenty or thirty reached the cervix and from one to three reached the fundus, of all this number. But one might reach the ovum, so that if the original number were diminished by 10 per cent. the result would be sterility. In Dr. Reynolds' own experiments, forty-five specimens, which were washed in (1) undiluted semen, (2) vaginal secretion, (3) cervical secretion, (4) artificial media, were watched by his assistants for forty hours. They were able to determine three types of normal motion: (1) progressive vibratile motion enduring many hours; (2) an undulatory tactile motion; (3) a distinctly pushing motion into some cleft. These three motions were successive in a cycle and were evidently adapted to the function of the sperm cell in reaching the ovum. It was evident that pregnancy was the result of effective ova as well as of effective spermatozoa and ovarian sterility had been considered mysterious. This point of view, however, would cease when there was a definite anatomical conception of the conditions accompanying ovulation. This was evident in gross and microscopically. The normal ovary was of uniform outline with one mature follicle projecting. In the sterile woman the ovaries were hard dense organs with a number of imperfect corpora. Dr. Reynolds here showed slides illustrating three forms of follicles and two forms of corpora. He showed normal ovulating ovaries and those which had undergone a degeneration from pressure and which would be sterile, the former having one mature follicle and the latter numerous imperfect follicles, which pressed upon one another. Experiments showed that if this pressure were relieved by puncture, normal pregnancy could result. Differential diagnosis could be reached only by tactile sense and by careful comparison of this with the clinical history. The flora of the vaginal tract was also dealt with in this paper, the conclusion being that in virgins and fertile women the coccal forms were most frequent and in sterile women, pregnant women, and puerperal women there were bacillus forms. That is, bacillus forms were present in non-ovulating women. Also in hyperacidity of the tract or where a microscopical mucous mesh existed, spermatozoa were destroyed. Thus an accurate clinical and laboratory knowledge was necessary for diagnosis in these cases. Sterility could be treated only in the light of an accurate knowledge of the failures in physiology which caused it.

Dr. EMIL NOVAK of Baltimore said that the degeneration of epithelium was not so common as the changes ocurring in the majority of the Graafian follicles. As many as 70,000 follicles were found in the ovary of an infant girl. A great many of these must undergo degeneration. He believed that many degenerating cells gave rise to the cysts characteristic of fibrocystic ovaries, but he did not believe that these follicles ever formed a corpus luteum. Probably they did form atretic follicles, somewhat resembling theca cells.

Dr. E. G. ZINKE of Cincinnati said that the points which the chairman had presented were of great scientific and theoretical interest. No one who had not seen it could realize the manner in which some unfortunate women, who did not become pregnant, were treated by their ignorant husbands. The explanation which the chairman had made relieved in a large measure the blame placed upon these women. One point, however, should be added. Pregnancy depended (as Lawson Tait had expressed it) upon three wheels traveling around one pivot—a healthy woman, healthy ovum, healthy spermatozoa. If these three things happened at the same time the woman became pregnant. The machinery, however, might suffer serious disorders which prevented pregnancy. He believed, however, in the majority of instances, women were unjustly blamed. The blame should be put on the other side of the house.

The Corpus Luteum; Its Life Cycle and Its Rôle in Menstrual Disorders.—Dr. EMIL NOVAK of Baltimore presented this subject. Dr. Novak quoted Fraenkel's work in 1903 on the relation of the corpus luteum to menstruation and to early pregnancy, and that of Meyer in 1911, who established the facts that the corpus luteum underwent cyclic histological changes corresponding to the menstrual cycle. His own work was upon the relationship between character and degree of lutein structure to the disorders of menstruation, such as metrorrhagia and menorrhagia. One hundred and thirty-seven cases had been clinically studied at Johns Hopkins Hospital. Cases in which both ovaries were removed were studied, for the better standardization of corpus luteum study. Numerous sections were made and a study of the Grafian follicles and of atretic follicles was done. One point usually overlooked was that in early stages the corpus luteum was very insignificant. It should be studied from the standpoint of origin in the lutein cells, whether granulosa or theca. In all cases a very accurate menstrual history was obtained. Dr. Novak showed slides illustrating corpus luteum formation early and late; the mature Grafian follicle; the endometrium in the early corpus luteum stage; the appearance of blood (sixteenth day of menstrualcycle); the corpus luteum approaching vascularization; the corpus luteum matured, the blood indicating organization; also showing distinctly glandular theca cells. The latter's function, Dr. Novak said, was a problem of biological chemistry. It might be concerned with the fixation of the ovum in pregnancy, the glandular structure indicating some important function, as yet not known. In clinical application, cases of amenorrhea showed characteristically corpora lutea. It was absent in young girls and in the fetus, also in the menopause. With amenorrhea of lactation it was present, the functionating breast probably presenting an inhibiting secretion. In metrorrhagia and menorrhagia there were negative findings and no histological changes could be found connected with menstrual disturbances.

Dr. C. CULBERTSON of Chicago said that this was a very important paper and should not be passed over without recognition because there had long been a question as to where lutein cells originated. He was glad to hear Dr. Novak say that the origin was probably in the granulosa. He had also come to that conclusion, and in his opinion the function of the theca was to provide membrane for the granulosa. That meant that the ovarian hormones used the granulosa cells. In all probability the cells acquired blood supply after the ovum was cast off. There was dilatation of the capillaries of the theca interna which accounted for the formation of a distinct internal theca, that is to say, corpus luteum depended upon folliculation and ovulation and throwing off of the ovum. The blood clot remaining was secondary to the vascularization of the granulosa cells. A clinical application could be made to the metrorrhagia of puberty, in which there were two factors—the presence of the new element of an active ovary and the presence of the mucuos membrane of the uterus. That meant over activation of the uterine mucosa which might be nothing more than vascularization.

Dr. NOVAK, in summing up, said that the theca interna instead of advancing from lutein cells simply regressed. The granulosa cells were formed before the lutein cells, and the latter were formed from them. Meyer and others who worked on the subject of making corpus luteum found that the important point was that the internal secretion went back into the blood. The vascularization was a very important point as the lutein was carried back into the blood vessels.

The Rôle of the Anteposed Uterus in the Causation of Backache and Pelvic Symptoms.—Dr. HENRY T. HUTCHINS of Boston read this paper. He said that the upright position in woman had been the cause of many symptoms, as in this position the uterus was poorly supported. The position of the fundus was of little importance in the causation of pelvic symptoms. It might be backward of forward, but the amount of

descent of the cervix was the determining factor. The chief support of the uterus were the cervix, the broad ligaments, and the pelvic floor. In seeing patients who complained of backache, the important point was to test the drag on the broad ligaments and utero-sacral ligaments. If pain could be produced it was an important diagnostic point. A treatment by tampon for forty-eight hours was given, to push the uterus up, if the backache was relieved, suspension would give permanent relief; if not relieved, another cause must be sought. A pull on the infundibulopelvic ligaments was the cause of congestion of the ovarian veins. These were poorly equipped for extensive circulation. There was frequently need for suspension of a uterus which was anteposed. This would give relief whether the fundus was retroposed or anteposed. Differentiation of cases needing suspension should be exact and proof should be forthcoming from the patient as from the surgeon. In cervical descent the patient often slept on the abdomen to obtain relief and comfort. Retroposition of the fundus to the third degree caused little drag, but unless the cervix was held up there would be pelvic drag.

Dr. C. W. BARRETT of Chicago said this paper introduced a subject which bore upon the general support of the uterus and the entire relationship of intra-abdominal pressure and the ligaments and pelvic floor. But it bore more particularly upon the subject of the anteposed uterus that still had descended. It had been long recognized that the retrodisplaced uterus had a more or less marked degree of descent, but the subject of the anteposed uterus having marked degrees of descent was not so well recognized. Dr. Hutchins had pointed out the difficulties of the upright position. One would hear little of malposition of the uterus if it had retained the horizontal position with an outlet at a higher point, but the changes in position had brought about changes in conditions of support. One of the changes had been the introduction of a firm pelvic floor instead of the pale muscles of animals with the horizontal position. The uterus had changed from a line with the vagina to right angles with the vagina. Dr. Barrett said he would lay more stress upon retrodisplacement that did Dr. Hutchins, because, though there might be retrodisplacement without backache, the uterus in line with the vagina was an undesirable thing, no matter how desirable a horizontal uterus was to an animal. In the human, social habits and the milliners had adapted themselves to this upright position and woman could not go back to the horizontal. In correcting malposition, one should get as near as possible to nature's plan of support of the organ. One must have a good pelvic floor. Besides acquired weakness, by childbirth, there was often atavistic tendency to weakness, and a solid pelvic floor was the first requirement. He would therefore be more inclined to correct retrodisplacement than Dr. Hutchins. He no longer considered anteverted uteri as pathological.

Dr. A. GOLDSPOHN of Chicago said that one saw anteposed uteri and anteflexed uteri. In the anteposed the long axis was in the normal position but the organ was too near the symphysis. The uterus that was tipped forward too much was another thing. When a mistake was made in correction of the retroverted uterus, an anteposition was caused by shortening the uterine ligaments instead of the round ligaments. The main point seemed to be that descensus uteri and not retroversion caused symptoms. With this he agreed only partially. The symptoms produced by any kind of uterine displacement *per se* depended upon the inflammatory complication. Long years of observations on living and dead women had revealed retroversion as a pathological entity. Lesions were caused by the torsion of the broad ligaments. The ligaments became cord-like, and though the arterial blood could pass the venous blood was obstructed. Descensus and version were two factors; the one the doctor would relieve, and he should also relieve the other. As to suspension, Dr. Goldspohn heartily agreed with Dr. Hutchins' statements; but he would suspend the uterus higher in the pelvis. He felt that anteversion was a normal position of the uterus in the pelvis, and in the absence of inflammatory conditions caused no symptoms.

Dr. MANTON of Detroit said that he agreed heartily with what the doctor said in his paper. He had for many years been carrying on a similar method of treatment. It only took a very minor degree of abdominal displacement to produce severe symptoms in anteflexed or anteposed uteri and consequent fundus congestion. He did not quite agree with the doctor that all of these cases needed operative treatment. If one could relieve a fraction of a degree of decensus one could obtain the necessary result. He had found in many cases a use for the old-fashioned Smith-Hodge pessary, properly adjusted; this would do as well as suspension or shortening the round ligaments.

Dr. MONTGOMERY of Philadelphia said that he thought that too much attention was frequently paid to displacements and not to the complications associated with it. In a great majority of cases with anteposed or anteflexed uteri there were no symptoms unless there was some inflammatory condition. This might be, of course, the result of protracted congestion from the displacement, the veins being thin walled and more susceptible. A good many of these cases of both retrodisplacement and antedisplacements could be relieved without resort to operation. The patient should assume the genupectoral position and practise deep breathing, which would allow the blood to be aspirated out of the pelvis during the deep inspiration. Practised for fifteen minutes, this would be beneficial to the condition. The patient could be relieved by palliative measures and graded exercise and wearing of the right sort of clothing.

Dr. CARSTENS of Detroit said that it seemed to him that this was a very complicated subject. Reading of the different operations that had been devised for overcoming this condition showed that there were many difficulties and complications. One man advised one operation, another man strongly advocated another. He agreed with Dr. Montgomery that often uterine displacements caused no trouble, but adhesions to the tube or the rectum, or some kind of infection, would cause trouble. Removal of the adhesions would relieve the patient without further operation. One operation found very successful was to take out a diseased ovary and lift the womb up to the stump and suture it to the stump. This had been very successful, because a woman could again become pregnant. For a woman after the child-bearing period a vaginal hysterectomy was the best operation. There was no positive statement, however, to be made as to the best operation. Judgment should be according to the pathology.

Dr. HUTCHINS said in closing that the discussion had brought out many interesting points. Drs. Barrett and Goldspohn had called attention to the fact that he had paid little attention to retroplaced fundi. This was the point of the paper. He would always correct retroposition where causing symptoms. That was the classical malposition. His paper dealt with anteposed uteri simulating symptoms of retroposition. Dr. Manton called attention to another fault. Dr. Hutchins said he would never advise operation until every other means had been tried, but there were patients who would not do exercises and who did not want to be bothered with a pessary, and in some cases a pessary did not give relief; in these cases he would advise operation for anteposed uteri. He could not agree that in all of these cases symptoms were caused by adhesions or disease. These cases formed a class by themselves. He felt that there was a group of cases of anteposed uteri that would cause symptoms without pelvic disease or adhesions.

The Value of the Wassermann Test in Pregnancy.—Drs. F. H. FALLS and J. J. MOORE of Chicago presented this paper, which was read by Dr. Falls. He said that this subject was important from many standpoints, the sociological, in that many more women than men contracted syphilis innocently and that it had been found that 33 per cent. of pregnant and 30 per cent. of nonpregnant women were syphilitic. The lesions in women were slight, evanescent, and hard to diagnose, but a careful and thorough examination was necessary on account of liability to miscarriage, puerperal sepsis, and the birth of diseased children. Of children born dead, 35 per cent. were proven syphilitic. In those syphilitic children born alive, early and intensive treatment gave them the best chance. A high percentage (50 per cent.) of those mentally deficient had positive Wassermann test. In criminals there was a high percentage of positive Wassermann tests, but it was hard to say which came first, the degeneration or the disease. For the proper protection of society generally care in clothing, towels, drinking cups, etc., should be exercised, and for the protection of physicians rubber gloves should be worn, as chancre of the forefinger was not uncommon. A positive Wassermann in a patient warned medical attendants to be careful. As to the percentages of positive Wassermann tests in primary syphilis, 80 per cent. were positive after three weeks; in secondary spyhilis 90 per cent. were positive; in tertiary 95 per cent. were

positive. A positive Wassermann test indicated early treatment, and the latter should be continued till the Wassermann test was negative. The Wassermann test was not purely an antibody-antigen reaction, but recent work with pure spirochete antigens showed that spirochetes contained lipoids and that in cases where fat-splitting ferments were increased, as in pregnancy, syphilis, or pneumonia, or where lipoids were increased, interference might be expected. The value of the Abderhalden test seemed to be mainly negative; that is, it would show when women were not pregnant. Percentage of syphilis in dispensary patients was higher in single than in married women; that is, 13 per cent. to 10 per cent. In negroes syphilis was three times as common as in white women.

Dr. DAVIS of Philadelphia said that this interesting paper conveyed a most important warning. He felt that the Abderhalden test was conclusive only in pregnancy; during the menstrual cycle and in non-pregnant women it was absolutely unreliable. While there was much of possible value in the Abderhalden and Wassermann tests, they must not rely exclusively upon these. The Wassermann test was of value in the detection of latent syphilis, but there should always be a groundwork of clinical observation, which should never be neglected for laboratory findings.

Dr. LOSEE of New York said that in regard to syphilis of pregnant women they had observed 2,000 cases at the Lying-In Hospital in New York, and had found 3 per cent. positive Wassermanns. There was a difficulty in treating these, because the patients would not come back. A very large sociological organization was necessary to deal with them properly. In the hospital 50 per cent. of cases of macerated fetuses were syphilitic. Syphilographers would probably put it higher than that. Syphilis had been credited with the death of eighteen fetuses at delivery, but fourteen cases showed complications, so that he thought that more deaths had been attributed to syphilis than were actually due to it.

Dr. FALLS said that he agreed with Dr. Davis about the value of the results of the Abderhalden and Wassermann tests, and that they must be careful about interpreting any biological test without accompanying clinical evidence. But, with the Wassermann reaction in the hands of expert laboratory workers, they had a test which could be relied upon in a large majority of cases. The employment of this test would give the mothers a better chance and the babies a better chance. As to the Abderhalden test, two years ago he had pointed out its fallacies in non-pregnant women. It simply showed that a woman was not pregnant. If it was positive she might or might not be. The Wassermann test also depended upon lipolytic ferments, and in syphilis the ferment content of the blood was altered. It might be supposed that pregnancy would throw out the Wassermann test, but apparently from their study it did not. In regard to Dr. Losee's statement about the death of the fetus, sometimes with a negative Wassermann test. Slemons of Yale found spirochetes in the cord and placenta of a syphilitic mother. There should therefore be a careful search for evidence of syphilis. This was of as great importance to the physician as to the mother and baby.

Adenomyoma of the Rectovaginal Septum.—Dr. T. S. CULLEN of Baltimore read this paper and showed lantern slides illustrating the rectal mucosa in these cases. He stated that Jessup had reported two cases four years ago. Then Lockyer in England had reported two cases. Stevens had reported six. The growths were usually back of the cervix, attached to the cervix and rectum, sometimes in the vaginal vault and sometimes in the broad ligament. The rectal mucosa was usually intact. Painful defecation asociated with profuse menstrual flow was the usual symptom. In the early cases the nodules might be shelled out, and where back of the cervix they could be removed without hysterectomy. In some advanced cases it was impossible to remove the growth without taking out the anterior rectal wall. There was no possible excuse for making a mistaken diagnosis in these cases because the rectal mucosa was intact, the growth coming from the outer surface. The cells were typical uterine mucosa with non-striped muscle and fibrous tissue. There were often accompanying small fibroids in the uterus. Sometimes there was involvement of the whole pelvic floor. In this case the cecum had to be cut across and the lower end closed, making a permanent colostomy. When the patient had regained some measure of health, the growth could be taken out of the pelvis.

Dr. CULBERTSON of Chicago said that this was relatively new pathology. It would strike one as being extremely rare and almost a freak at first. However, many cases had appeared in the literature in a short period of time: two of Jessup and six of Stevens, then the cases of Green and Myers. The German idea seemed to be that this was an inflammatory process, especially those cases asociated with dense adhesions and retroflexion of the uterus. One worker called it fibroadenomatous serositis, and another paravaginal adenomyositis. These growths, however, seemed to be circumscribed and free from dense adhesions. As so many cases had been noticed in a short time it was likely that in past years many cases had been overlooked. In many cases of hysterectomy where the broad ligament has had to go and the ureters have had to be dissected out and the rectal wall has been approached very closely, this condition has probably been present and has not been recognized. In the Webster clinic this condition had not yet been recognized, but recently a case was seen where Dr. Culbertson suggested this type as a factor. The symptoms were extreme pain, but there was no hemorrhage from the rectum. The general opinion was that there was carcinoma, and the patient refused a second operation, having already had one. He had hoped that Dr. Cullen would bring out the origin of these cases, whether due to inflammatory conditions or not, whether to salpingitis or to embryonic rests.

Dr. T. S. CULLEN said that he had overlooked one case entirely himself. This was the last and most interesting specimen. Inflammation absolutely played no part. In the early cases there was intact peritoneum. There was no polymorphonuclearcytosis. The whole thing was a typical uterine glandular structure.

Obstetrics and Gynecology under Ideal Conditions in a General Hospital.—Dr. F. C. HOLDEN of Brooklyn read this paper, illustrating by charts a general plan of the New York Municipal Hospital. The chief points of interest were the organization of three departments: medical, surgical, and obstetrical and gynecological. A paid resident was over the internes, and he was responsible to the attending, and could take responsibility under him. There was a paid resident pathologist and Roentgenologist. The department of gynecology and obstetrics had two wards with twenty-five beds each, two labor rooms, delivery room, and sterilizing room, examining rooms, quiet rooms, and a large roof garden on the same floor. The roof garden had thirty beds. The dispensary was in close cooperation with the hospital, so that men could follow the treatment of patients sent into the hospital, and also follow the results of hospital treatment afterward in the dispensary.

Dr. J. O. POLAK of Brooklyn said he was interested in this presentation of Dr. Holden, and he was glad that they had been at last able to convince the commissioners that a separate service for gynecology and obstetrics was necessary. There was a similar organization in Brooklyn in the Long Island College Hospital. The appointment of a resident over the interne staff was a feature highly to be commended. The average three-months' interne caused a great deal of harm, and it was impossible to teach them in a short time. With the resident system one could keep a man two to five years, and the night work was taken off the shoulders of the attending. These men would raise the standard of gynecology and obstetrics when they went on to other institutions. The development following this system was shown by the fact that they used to handle 300 cases, and now with this system it had grown to 1500.

Dr. BACON of Chicago said that patients were now flocking to the hospitals for obstetrical care; one-fourth of the cases were often obstetrical. He felt in the plan given by Dr. Holden there should be more arrangement for teaching of the students and more laboratory facilities; there was no provision for research rooms. He would also like to know the cost of the building and equipment.

Dr. NEWMAN of Chicago said he took exception to the teaching of students in gynecology and obstetrics. They wanted more trained men.

Dr. HOLDEN said that they had six senior students as clinical clerks—two medical, two surgical, two obstetrical. They kept patients often a long time because they were poorly nourished and anemic. The students had plenty of time to observe the cases. Internes were trained to take histories and make prognosis and diagnosis. There were five rooms entirely devoted to laboratory and experimental work. The cost of the building was $900,000, $4,500 per bed. The cost of feeding

was 16 cents per capita per day and, so far, the patients appeared happy and contented with this rate.

SECTION ON DISEASES OF CHILDREN.

Tuesday, June 13—First Day.

Dr. T. C. McCLEAVE OF OAKLAND, CAL., IN THE CHAIR.

Chairman's Address.—Dental Care in Childhood; The Most Neglected Feature in Pediatric Medicine.—Dr. T. C. McCLEAVE of Oakland, Cal., delivered this address. He said that modern medicine was concerned with the prevention of disease, and nowhere was there a wider field for its application than during childhood. It was during this time that there was the greatest incidence of infections, which determined the disabilities and deformities of later life. If disease was to be prevented in later life, methods of control must be applied during childhood. The importance of caring for the teeth of children was not as widely recognized as it should be. In some of the larger cities there were dental clinics, but in most localities no special provision was made for the dental care of children. Unfortunately, many dentists did not realize the importance of proper care of the teeth in childhood. Most dentists did not care to undertake this work, and argued that it was not worth while caring for the deciduous teeth, and when reminded that the premature loss of the first teeth was likely to result in deformity in the permanent teeth they would say that no one could tell whether the permanent teeth would have been deformed or not. So it seemed that ignorance was the largest obstacle in the way of securing proper dental care for children. The writer then referred to the various deformities due to faulty development which resulted in malocclusion, and this, in turn, had its effect on nutrition. Dental deformities frequently meant much more than merely deformities of the teeth. The bones of the face and jaw were deformed, and this affected the shape of the face and the features. Beauty was more than skin deep, it was "bone deep." Malocclusion not only prevented proper mastication, but was a factor in the production of adenoids, nasal hypertrophy, and tonsillar enlargements. Of the nutritional disturbances, the interference with starch digestion was the first step. The digestion of starches could not be normal if the mastication was defective. Infections of the teeth caused dental caries and pyorrhea. Several theories had been advanced to account for dental caries. The chemicobacterial theory was the one now generally accepted. That was that caries was the result of a fermentative process. In this connection the writer stated that the soft, sweet, sticky foods, mostly the starchy foods of which children were so fond, might be considered as a cause of caries, since it favored the retention of particles of carbohydrate food in the crevices between the teeth. In speaking of pyorrhea the writer said it was always due to an extension of other infections, and it might be responsible for infections such as adenitis, tuberculosis and the numerous focal infections familiar to all. As to the means for the relief of the present situation, first, the medical profession must be made to realize the significance of dental hygiene. Their interest must be stimulated so that they would awaken an interest in this subject in their several communities. Then the dentist must learn that he was not merely an artisan and a mechanic, but that he was working in a definite field of medicine and that the child must be regarded as important. Parents must be made to realize the importance of proper development and care of the teeth in childhood, and that such care was worth paying for if they were able to pay for it. Provision should be made for the care of children whose parents were unable to bear this expense. Every clinic for children should recognize that a dental department was an inherent part of its organization.

The Effect of Cold Air on the Blood Pressure in Pneumonia in Childhood.—Drs. JOHN LOVETT MORSE and DAVID M. HASSMAN of Boston presented this contribution. They stated that the cold-air treatment of pneumonia had been generally adopted during recent years. It had been believed that the blood pressure was diminished in serious and fatal cases of pneumonia and that the good effects of the fresh-air treatment were due to the fact that the blood pressure was raised by this treatment. More recent investigations had shown, however, that there was no constant rule for the blood pressure in pneumonia, and considerable doubt had been thrown on the statement that the blood pressure in pneumonia was increased by exposure to cold air. The writers had made a study of the effect of cold out-of-door air on the blood pressure in pneumonia in children at the Boston Children's Hospital, during the past winter. In all, 387 observations were made on thirty-two children. They found that the temperature of the surrounding air had no constant effect on the systolic, the diastolic, or the pulse pressure. They further showed that there was no definite relation between the systolic pressure, the diastolic pressure or the pulse pressure and the severity of the disease. The rate of the pulse and respiration were also counted in many instances at the same time the blood pressure was taken to determine, if possible, what effect the temperature of the surrounding air had upon them. In general, the temperature of the surrounding air had no constant effect on the rate of the pulse or respiration. There was, however, a slight tendency for the rate of the pulse and respiration to be somewhat lower out of doors than in the wards. The mortality was high in this series of cases. A study of the cases of pneumonia treated at the Children's Hospital since its foundation by Cunningham, showed that the mortality had been slightly higher since the institution of the cold-air treatment. The writers concluded that there was no constant relation between the systolic, the diastolic, or the pulse pressure and the severity of pneumonia or the temperature of the surrounding air. The patients symptomatically seemed more comfortable when they were out of doors than when they were in the house. No conclusions were justified as to the effect of cold-air treatment on the mortality of pneumonia in childhood.

Dr. HENRY DWIGHT CHAPIN of New York said he simply wished to speak from the clinical standpoint and to say that children with bronchial pneumonia did not do well with the cold-air treatment. Some years ago they had put out all their pneumonia cases, and they had observed that the cases of bronchial pneumonia were depressed by the cold air. A distinction should be made betwen bronchial and lobar pneumonia, and a protest should be made against treating feeble babies with cold air.

Dr. HENRY POPLIK of New York said that since the open-air treatment of pneumonia had become popular, the general practitioner was prone to treat babies with bronchopneumonia by placing them in the open air. There were certain babies that should not be put in the cold air; they should have fresh air, but not cold air. On the other hand, there were some babies that were restless in the ward and were improved from the clinical standpoint by being placed in the open air. Therefore, the point to be emphasized was that the babies suitable for open-air treatment in pneumonia must be carefully selected.

Dr. E. E. GRAHAM of Philadelphia said he had been treating both forms of pneumonia in wards, and in rooms of the roof garden where they received an abundance of fresh, cool, moving air, and his experience taught him that if they could keep the children warm and their hands and feet well bundled up the cold air never did harm, and it sometimes did good.

Dr. L. R. DEBUYS of New Orleans said he believed in the classification that regarded lobar pneumonia as a secondary pneumonia. The lobar pneumonias did much better with plenty of fresh air. He had been impressed by the short duration of the cases, both of bronchial and lobar pneumonia, when treated with oxygen. He gave about eighteen drops a minute. This was giving the outdoor treatment indoors, and it was very effective in shortening the course of the disease.

Dr. JOHN HOWLAND of Baltimore expressed the opinion that, clinically, children with lobar pneumonia did better outdoors than indoors.

Dr. JOHN ZAHORSKY of St. Louis stated that several years ago they had used cold air in the treatment of pneumonia in young babies with disastrous results. The general impression was that the children were more comfortable in cool air, but not necessarily cold air. On the other hand, there was one bad case with low blood pressure and a weak heart, and after it had been put out of doors for a few minutes the heart stopped. Cold air should be used with a great deal of discretion. In some cases cold air was harmful.

Dr. CHARLES GILMORE KERLEY of New York said that the employment of cold air in pneumonia was a therapeutic measure and, like everything in therapeutics, was applicable to selected cases. In small, weak babies with bronchopneumonia and a tendency to spasm, cold air might be fraught with a great deal of danger. On the other hand, in strong husky children with lobar

pneumonia much benefit might be had by the proper use of cold air. The cases for cold-air treatment must be carefully selected, and after the cold-air treatment has been instituted they must be very carefully watched.

Dr. Clifford G. Grulee of Chicago said he did not wish to discuss the paper but to discuss the discussion, that it might be emphasized that the keynote of the discussion had been the proper selection of cases.

Dr. E. C. Fleischner of San Francisco said Dr. Grulee had emphasized the point that was important; it lay in the proper selection of case. From observations made in California it might be said that practically all cases of lobar pneumonia recovered, but these cases were of a type not so severe as that seen in the East. In bronchopneumonia they had the same experience in California as elsewhere; they did not do so well when placed in the cold air.

Dr. Morse of Boston, in closing the discussion, said that he should have mentioned that his paper dealt only with lobar pneumonia, and the cases were in children and not in very young babies. The results of the study should not be taken either for or against the value of cold air in the treatment of pneumonia.

Grip in Children.—Dr. Lawrence T. Royster of Norfolk presented this paper, in which he related his personal experience with the epidemic of grip last winter as he had observed it in children. He stated that grip seemed to be endemic, but at times it took an epidemic form and then became more severe. Grip was a general infection. The prevailing type was characterized by sudden onset, a rise in temperature lasting from two to five days, and ranging from 102 to 105 or 106° F. When the onset was sudden and the temperature high and there was great prostration, it was difficult to distinguish this form of grip from pneumonia. The pulse and respiration were often not greatly interfered with. Older children often complained of pains in almost any part of the body; these were described as sharp, violent and boring. There were a few cases with irregular heart action. There was one type of the disease characterized by bronchitis, laryngitis, and coryza which strongly resembled measles. Among the sequelæ were found bronchitis and lobar pneumonia and, in a few instances, bronchopneumonia. There was also a gastric type of cases characterized by persistent vomiting which had been mistaken by some physicians for cyclic vomiting. In these cases the evidence of diacetic acid in the urine was very slight, and they were not like cyclic vomiting. Diarrhea as a complication of grip was to the writer a new experience, and it differed in no way from that type of diarrhea so common in summer; it was not of the cholera infantum type, neither did it follow the catarrhal type in any instance. Some of these cases convalesced rapidly, and in others convalescence was long drawn out, and in others again there were exacerbations. In some there seemed to be a reinfection. In some cases there was an irregular pulse, and he felt that there was a myocardial involvement. Other complications that were encountered were otitis media and pyelitis. These conditions probably existed before the grip developed, but the lowered degree of resistance incident to the disease gave these other infections a chance to develop. In some children there was a persistent cough, which was harsh and peculiarly distressing. In a number of cases he obtained Despine's sign and thought it was caused by enlarged bronchial glands. A positive von Pirquet reaction was frequent in these children. It might be said that grip was second only to measles and whooping cough as an inciting cause of tuberculosis. As a means of prophylaxis in grip it was advisable to keep children from older persons having the disease. If a mother had grip and was nursing her infant, she should cover her mouth and nose when near the child. It was also well to protect the child from exposure in dry, windy weather. In the treatment of grip the writer had been using sodium salicylate and preferred the natural to the synthetic product. In the catarrhal conditions he used menthol, camphor, and white oil. When there was a severe bronchitis, opium should not be withheld. Cases with diarrhea should be treated as summer diarrhea was treated. When there was a persistent cough lasting for a long time after cod liver oil and general hygienic treatment, many of these patients, in spite of all care, continued to cough until warm weather came. Grip should be a quarantinable disease; especially was this true with respect to the schools.

Dr. Isaac Abt of Chicago said he wished to ask with reference to the etiology of grip. Bacteriologists had studied grip during the past winter, and, unless the bacillus of influenza was so illusive that it could not be identified, there was no ground for assuming that the bacillus influenza was the cause of the grip seen during the past winter. There seemed that seasonal or weather conditions were a factor in determining the incidence of grip. He believed that the adenitis and enlarged bronchial and mediastinal glands were not necessarily tuberculous, but might be due to something else. Pyelitis frequently followed grip, especially in children who had had pyelitis before. Urotropin was commonly given in this condition in young children. This practice was to be deplored. Urotropin should not be given to children under three years of age. More nephritis and acute hemoglobinuria were due to use of urotropin than to the organism of grip. These babies with grip should not be physiced.

Dr. Thomas F. Reilly of New York said that the type of grip varied in different localities. In New York the most of it had been of the respiratory type, and they had dealt with a peculiar type of pneumonia. It began with a long piping râle, and a few days later one was sure he was dealing with a pleurisy with effusion, but one did not get fluid. Pneumonia did not begin in the center of the lung but practically always peripherally, and one did not get signs of consolidation until it reached the roots of the lung, when the sounds could be carried through. One thing in the treatment was important and that was the use of creosote, and another thing that had proved useful was a hot poultice. This might sound heretical and old-fashioned, but it gave relief.

Dr. J. P. Sedgwick of Minneapolis said he was interested in what Dr. Abt had said of the relation between cyclic vomiting and grip infections. He had studied this matter several years ago, and felt that there was some connection between the cyclic vomiting and grip, and during the past winter he had been following these cases closely with the *x*-ray and the fluoroscope and had found some of the older ideas incorrect. In some cases of grip, in which there was nasal obstruction, the careful use of epinephrin gave relief.

Dr. F. S. Churchill of Chicago said he thought they ought to make an effort to be more specific. In most of these cases the bacilli of influenza had not been found, but they had found streptococci and other organisms. He asked Dr. Royster how if they retained the term grip to designate his respiratory cases which he had described, he was going to explain its etiology.

Dr. Joseph Brennemann of Chicago said he had had children with much the same symptoms as had been described and there were two symptoms that stood out conspicuously, one was abdominal pain. When he was told a child had pain in the stomach, he always looked in the throat or searched for an otitis media. He knew of one child operated on for appendicitis and it was found afterward that the glands were very much enlarged. There was also a tendency to hemorrhage in connection with the abdominal pain that seemed to have something to do with the pain. Grip also had a relation to some forms of exanthema. Early in the winter the rashes were not observed, but later there appeared a scarlatina-form rash in connection with the grip.

Dr. Jay I. Durand of Seattle said they had had such an epidemic of grip in Seattle, and there was no doubt but that they were dealing with a clear-cut clinical entity, and he believed it was purely a respiratory infection. They had prevented cross-infection in this disease by a double gauze partition between beds and the avoidance of drafts. In the wards where this was done they had no cases of cross-infection, while in the other wards every child got the infection.

Dr. N. S. Everhard of Wadsworth, Ohio, said she had obtained better results in the treatment of grip with potassium citrate than with sodium salicylate.

Acidosis.—Drs. Henry Dwight Chapin and Marshall C. Pease of New York presented this paper. They reviewed the various theories that had been advanced to account for the condition described as acidosis and referred to the work that had been done in estimating the degree of acidosis by the sodium bicarbonate in the blood and the carbon dioxide tension of the alveolar air. They stated that in 1913 they had their attention called to a certain class of intestinal cases. Many of these cases did not show acetone or diacetic acid in the urine, and the illness was out of all proportion to the symptoms. The children became cyanotic, then stuporous, and finally coma supervened. The tongue might be coated and might have a red margin. The temperature was not high except that the ante-mortem tem-

perature might rise to 104° F., or more. There might be early vomiting which ceased as the stupor and coma came on. The cases were characterized by a modified Cheyne-Stokes respiration. The condition seemed to be due to a negative alkaline balance. Dr. Chapin advanced the theory that the acidosis might be due to damage to the epithelium of the intestinal tract, making it easier for the split proteins to find their way into the blood. It might be due in a less degree to the withdrawal of water. They had studied thirty-four cases in all, six of these dying within a few hours after admission to the hospital. Later sixteen more died, or 45 per cent. Twenty-six of the cases did not show acetone or diacetic acid in the urine. They all showed a lowered carbon dioxide tension. The lowest gave a carbon dioxide tension of 22, while the average was 28. In some of the cases after the administration of sodium bicarbonates the carbon dioxide tension rose for a brief period and then fell below the normal gain. In some children the acidosis produced a permanent effect, as shown by recurrent attacks. In such children milk modifications containing high protein and fat content should be avoided. Dr. Chapin said he had not met a case of acidosis in a child fed on a carbohydrate diet. The conclusions in reference to diet were based on experiments with sugar-free diet, fat-free diet, sugar and fat-free diet, low-vegetable proteid and starch diet, and starvation. The cases were treated by the employment of sodium bicarbonate administered in the various ways—by mouth, rectum, hypodermically, and intravenously. They felt that they had shown conclusively the relation of cow's milk to this form of acidosis.

Conditions in Infancy and Childhood Associated with the Production of Abnormal Quantities of the Acetone Bodies.—Drs. JOHN HOWLAND and W. MCKIM MARRIOTT of Baltimore presented this contribution. They said that acidosis in children was dangerous, but often an acute, self-limited disease. It was not merely an acetonuria, but depended on a loss of the acid-base equilibrium of the blood. Hyperpnea was the clinical sign: laboratory tests were the indexes, these being carbon dioxide tension of alveolar air, H-ion concentration of blood, and alkali reserve of blood. The natural low level of carbon dioxide tension and low H-ion concentration in the young explained susceptibility to acidosis. Onset of acidosis was marked by hyperpnea; coma soon ensued, the alkali reserve might be restored, but unless done quickly, death followed. The presence of acid phosphates in the blood in excess (from five to fifteen times the normal), continued long enough would rob the body of bases. Restoration of bases did not always stop the accumulation of acid phosphates. Acidosis was seen in many diseases of infancy and childhood, and should always be kept in mind; its early, rational treatment might be the means of saving life.

OFFICERS.

At the meeting of the House of Delegates on Thursday afternoon the following officers for 1917 were elected: *President*, Dr. Charles H. Mayo, Rochester, Minn.; *First Vice-President*, Dr. L. F. Barker, Baltimore, Md.; *Second Vice-President*, Dr. John F. Leaming, Chicago, Ill.; *Third Vice-President*, Dr. J. Henry Carstens, Detroit, Mich.; *Fourth Vice-President*, Dr. George F. Keiper, Lafayette, Ind.; *Secretary*, Dr. Alexander R. Craig, Chicago, Ill.; *Treasurer*, Dr. William Allen Pusey, Chicago, Ill.; *Chairman of the House of Delegates*, Dr. Hubert Work, Pueblo, Col.; *Vice-Chairman of the House of Delegates*, Dr. Dwight H. Murray, Syracuse, N. Y.; *Members of the Board of Trustees*, Drs. A. R. Mitchell, Lincoln, Neb.; E. J. McKnight, Hartford, Conn.; Oscar Dowling, Shreveport, La.; *Member of the Judicial Council*, Dr. H. A. Black, Pueblo, Col.; *Member of the Council on Health and Public Instruction*, Dr. Frank Billings, Chicago, Ill.; *Member of the Council on Medical Education*, Dr. William D. Haggard, Nashville, Tenn.; *Member of the Council on Scientific Assembly*, Dr. J. Shelton Horsley, Richmond, Va. New York City was selected as the place of meeting in 1917.

(*To be continued*)

Tabes and Mixed Sclerosis of the Cord.—At a meeting of the Philadelphia Neurological Society, on April 28, Dr. F. P. Clarke read a paper on the type of ataxia in these two affections, in which he said he had been unable to demonstrate that proximoataxia preceded acroataxia in tabes, in contradistinction to subacute mixed sclerosis due to profound anemia, in which it had been maintained that the reverse order of development took place.

MEDICAL SOCIETY OF THE STATE OF NEW YORK

One Hundred and Tenth Annual Meeting, Held at Saratoga Springs, May 16-18, 1916.

(Special Report to the MEDICAL RECORD.)

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SECTION ON PEDIATRICS

Wednesday, May 17—*Second Day*

DR. T. DE WITT SHERMAN IN THE CHAIR

A Lanternslide Demonstration of Achondroplasia.—Dr. CHARLES HERRMAN of New York gave this demonstration. He stated that this condition was apparently recognized in antiquity, as a number of statuettes representing typical examples had been found in Egyptian and Assyrian tombs. The old masters had frequently depicted this form of dwarfism in their paintings, those of Velasquez being especially well known. On account of their grotesque appearance and liveliness these dwarfs were much sought after as court jesters. The proportions of the different parts of the body in achondroplasia or fetal chondrodystrophy were similar to those of the normal fetus in the early part of intrauterine life. This would suggest a lack of proper growth of certain parts from that time. Dr. Herrman said he had studied twelve cases, and had observed them over a number of years. It has been stated in the literature that subjects presenting this form of nanism were always of normal intelligence, that they usually showed a marked lordosis, that the process affected only endochronial ossification, and that therefore the vertebræ escaped, that the vast majority of these individuals were females, and that the proximal portion of the extremity was usually shorter than the distal portion. He has found that in a certain percentage of patients the mentality was subnormal; a large number had a flat back, the apparent lordosis being often due to the tilting upward and backward of the sacrum; the vertebræ were sometimes affected; the sexes were almost equally attacked, and in only a small percentage of cases was the proximal portion of the extremity shorter. The series of slides demonstrated the principal features of the condition; the large head, with prominent brow and depressed bridge of the nose; the nearly normal trunk; the prominent buttocks, with the saddle due to the tilting of the sacrum upward and backward; the short muscular extremities, with peculiar articulation, especially at the knee, the "trident" hand with fingers of nearly equal length; the spoon shape of the hands, and the broad nails, the folds in the skin of the lower extremities, and the normal genitals. The changes in the bones and joints were also shown in the reproductions of the roentgenograms. The essential feature in the lack of growth of the bones was a disturbance of the normal ossification of the primary cartilage, an absence of the normal columnar formation of cartilage cells. Dr. Herrman also demonstrated the difference between this and other forms of dwarfism.

Dr. GEORGE DOW SCOTT of New York said that the fact that these dwarfs were court jesters and entertainers showed that achondroplasia coexisted with brains. The cause of this peculiar condition was unknown, whther it was from local nutritive disturbance in the cartilage, whether from infection both hereditary and direct, whether from intoxication both endogenous and exogenous, whether from genetic influences, race peculiarities, degeneration, defective function of the thyroid, mechanical pressure in utero, syphilis, alcohol, or as the result of diseases unknown to them; Reisman declared the condition had nothing to do with cretinism. It might be due to hypothyroidism. Many of these abnormalities were born prematurely or were dead at term. If they lived they often acquired great strength. A shortening of the extremities was found in both rickets and achondroplasia, in the former due to curvature of the long bones, in the latter due to insufficiency in the length of the bones. The achondroplasia remained so for life, not so the rickets. In achondroplasia the thyroid gland was found normally developed, which was a point against cretinism. These conditions might be treated, however, and were often found coincidental.

Dr. CHARLES HERRMAN, in closing the discussion, said that possibly from what Dr. Scott had said the impression might be left that these persons were of nor-

mal intelligence. He had found that about one-half of these individuals were not of normal intelligence. In many cases they had sufficient intelligence to earn their living as court jesters, vaudeville entertainers, etc., because of their peculiar appearance and a certain cleverness.

A Case of Leucemia in a Boy with Some Observations on Benzol.—Drs. Floyd Winslow and Walter D. Edwards of Rochester presented this communication. They said that leukemia was a disease of the hematopoietic system characterized by an enormous hyperphlasia of the leucocytic elements. In all probability the whole hematopoietic system, marrow, spleen and lymph glands, was inolved in every case of leukemia, the essential changes being an enormous leucocytic hyperplasia. In some cases the process was localized and proceded slowly; in others of the lymphoid type it was so rapid as to produce death before there was much involvement of the parts of the blood making system. The etiology of the condition was obscure. Streptococci had been demonstrated in the blood in some instances, but there was the question whether the demonstrated microorganism was the principal infection or merely a subinfection. The case reported was that of a boy, fourteen years of age, and the following observations were recorded: (1) Benzol produced a marked diminution of the white cells and its use was attended with benefit. (2) Benzol frequently produced marked irritation when given by mouth, by rectum, subscutaneously, or intravenously. (3) Benzol was a dangerous drug and its administration should be carefully watched for both the symptoms of benzol poisoning and for a too marked or too rapid reduction of the white cells. (4) Benzol could not be used intravenously.

Dr. Joseph Roby of Rochester said the interesting points in Dr. Winslow's and Dr. Edwards' paper were the rarity of this condition in children, the unusually high leucocyte count and the unusual size of the spleen, and that at one time the proportion of red cells to white was about 2½ to one. It was also worthy of note that the benzol seemed to have a stimulating effect. In another case, an adult weighing twice as much as this boy, a smaller dose of benzol reduced the count from 500,000 to 30,000 in a short time, but the blood count had gone back to the place where it had been before the administration of the drug. In this case the rectal administration of the drug worked beautifully. In both cases the blood transfusions seemed to have the effect of holding up the red cells, possibly acting as an antitoxin and increasing the general resistance of the patient.

Dr. William A. Groat of Syracuse said he did not believe in the use of benzol in this malady, since benzol was a toxic agent. If one used benzol the urine should be closely watched, as its toxic effect was just the same as that of phenol.

Dr. Charles Gilmore Kerley of New York cited one case of leukemia in a child four years of age that had come under his observation. This patient he had treated with benzol. The leucocyte count in this case was about 200,000, and as this count diminished the red count went up and there was a decrease in the size of the liver. He kept this child along on small doses of benzol given on a full stomach for some months, but the child finally died at the end of a year.

The Cell Counts of Cerebrospinal Fluids.—Dr. Joseph Roby of Rochester said that the purpose of his paper was threefold: (1) To defend more or less a statement made in an article in the *Journal of the American Medical Association*, and to mildly critize Abrahamson, DuBois and Neil for their technique in estimating cells; (2) to repeat the details of making a cell count of spinal fluid and to demonstrate the apparatus used in searching for the tubercle bacilli; and (3) to show some preparations of tubercle bacilli actually found. The spinal fluid removed by lumbar puncture would be one of four kinds microscopically; distinctly cloudy and even purulent, slightly hazy, bloody, or perfectly clear, with possibly some flakes in it when examined by transmitted light. A cloudy fluid meant a meningitis caused by the meningococcus, the pneumococcus, the influenza bacillus or one of the pus-producing organisms. usually a streptococcus. When the fluid was distinctly cloudy it was allowed to stand a short time and the clot or sediment should then be smeared thinly on slides, dried, and stained. It was not necessary to count the cells in this sort of fluid. A slightly hazy fluid might mean the early or late stage of one of the groups already mentioned, the admixture to a perfectly clear fluid with a trace of blood, might mean serous or tuberculous meningitis. It was here that the count would be of value. If there were quite a good many red cells and a few whites, it surely ruled out a meningitis due to the first set of organisms. With a distinctly bloody fluid one could also proceed as with a perfectly clear fluid, and such a fluid, or one containing a few flakes, might be any of the following: normal cerebrospinal fluid, meningismus, functional nervous disease, epilepsy, chorea, tetany, spasm, hydrocephalus, serous meningitis, a brain tumor, brain abscess, poliomyelitis, syphilis, or tuberculous meningitis. Often bloody fluid was rejected for counting purposes, but this need not be, for all one had to do was to subtract from the white count one white for every thousand reds counted. With spinal puncture in the functional nervous diseases he said that he had had no experience except in chorea and spasms, and in these there had been no increase in the cell count, nor was there any increase in hydrocephalus. In brain tumors he found no increase of the cells. These findings did not agree with those of Pfaundler and Schlossman, who found an increase of cells in functional nervous diseases and brain tumors. In syphilis he said he had never found more than 100 cells, and usually 30 to 50 in cases of tabes and general paresis. In tuberculous meningitis the limits of the counts had been 45 and 454, the vast majority running between 100 and 300. From these findings it might be concluded that in distinctly cloudy fluids it was not necessary to do a cell count. Smears might be made and the organism searched for. The cell count would not absolutely differentiate syphilis, poliomyelitis, or tuberculous meningitis; but a cell count between 5 and 50 would probably be syphilis or poliomyelitis; a cell count between 100 and 300 would in the majority of cases be tuberculous meningitis. Taken in connection with the onset of the disease and the clinical symptoms, it ought not to be difficult to make a diagnosis of tuberculous meningitis by a cell count alone, even if tubercle bacilli were not found. In searching for tubercle bacilli, the film method modified by the glass cylinder and cover slip had been most satisfactory.

Dr. William A. Groat of Syracuse said Dr. Roby was to be congratulated on his paper, his logic was reasonable and his conclusions sound and well drawn. He could agree that a count above five was abnormal, but he could not agree that it was no sign of inflammatory change. The presence of globulin meant inflammation, but its absence did not exclude inflammation. By Dr. Roby's method it was possible to make counts in bloody fluids, but one should not draw conclusions if the count was near normal. The test could not be depended upon to make a diagnosis in the borderline cases, and it was in these that it was needed most. One could be sure that when there was no true meningitis the count would remain down, and that in meningitis one would have a cloudy fluid, and that this was often the first sign of intracranial involvement.

Dr. T. Wood Clarke of Utica congratulated Dr. Roby on his device for finding the tubercle bacilli as we all knew that there was nothing more difficult than doing that with the ordinary means. It gave us a test that could be used by the busy practitioner and the man who was not doing a great deal of laboratory work or did not have a laboratory conveniently near.

Dr. Josephine B. Neal of New York City (Research Laboratory, Department of Health) said the counting of cells in the spinal fluid had not seemed to them of sufficient importance to warrant their doing it, inasmuch as, except in luetic conditions, it was not of definite diagnostic or prognostic value. The most difficult differentiation to make in clear fluids was between tuberculous meningitis and anterior poliomyelitis. While the cell count was usually higher in tuberculous meningitis, averaging between one and two hundred or under, and that of poliomyelitis averaged one hundred or under, there was such a wide range where they overlapped that very little reliance could be placed on the count. If too much reliance was placed on cystology, the bacteriology might be missed. The cell count was sometimes relied upon for treatment, and this might lead to very grave error as it occasionally happened that the number of cells decreased practically to normal while the organisms were still present. The complete disappearance of the organisms was the only trustworthy indication for ceasing to vigorously push serum treatment. The type of cells was of importance. In cases of tuberculous meningitis and anterior poliomyelitis there was almost always a high percentage of

polymorphonuclears (90 per cent.), except in the early cases of poliomyelitis. It occasionally happened that in rather acute cases of tuberculous meningitis the number of polymorphonuclears was in excess. In the purulent meningitides the polymorphonuclears were in excess, except sometimes late in recovering cases. In their experience in the examination of over 1900 fluids the bacteriology was found to be of first importance in diagnosis. A good deal of reliance could be placed on thoroughly estimated quantitative chemistry, albumin, globulin, and reduction of Fehling's. In a general way the albumin and globulin were less increased and the Fehling's better reduced in anterior poliomyelitis than in tuberculous meningitis, but there were exceptions to this. From their experience they felt that the cell count had been too much emphasized, often at the expense of other and more important factors.

Dr. JOSEPH ROBY of Rochester, in closing the discussion, said his purpose had been to disagree with Dr. Neal. He had presented his personal observations and not the textbook views on the globulin test. The average man could not estimate the amount of globulin, but with this method he could estimate the number of cells. The same was true of the reduction with Fehling's solution. He had not yet failed to make a diagnosis by this method within half an hour, and he had not yet made a mistake in a diagnosis when using this method. Poliomyelitis, tuberculous meningitis, and syphilis did overlay, and there was no way to make a diagnosis from the count alone without taking into consideration the clinical symptoms. Dr. Roby said it was possible to make an accurate count within ten to fifteen minutes after the spinal fluid was withdrawn.

Eczema in Infants and Young Children.—Dr. CHARLES GILMORE KERLEY of New York read this paper. Eczema in young children might be due to widely different causes; it might be the expression of faulty processes relating to food utilization or the evidence of an immediate reaction against specific food substances. Again it might be due to conditions entirely external, such as irritations. The application of strong soap, mustard, etc., might cause eczema as well as the wearing of woolen garments, exposure to moist and cold air, excessive perspiration, parasitic disease, discharges from the navel, ears, or nose. There was a wide variety of foods that might cause this trouble. He had repeatedly known children to tolerate eight, ten, or twelve ounces of milk daily, but when a larger amount was given, eczema resulted. In these cases by a gradual increase in the amount given, a tolerance might be established. Whole milk in sufficient amount for nutrition might be taken without inconvenience. Some infants possessed no tolerance whatever for orange juice; in some infants it caused a reaction in the form of red scaly patches about the mouth and an erythema of the cheeks and other parts of the body. Beef juice acted in like manner. Butter fat, milk and cane sugar, and orange juice had been proven through processes of elimination to be the most frequent dietetic cause of eczema in making observations on a large number of cases. Cow's milk protein was a rare cause of eczema. The Schloss scratch skin test for proteins had been of little value in determining protein capacity in infants for the reason that there were many cases not anaphylactic to protein that would tolerate but a given amount. In addition to eczema, asthma and urticaria were not infrequently results of protein incapacity. Cases of eczema due entirely to external agencies were readily relieved by removing the source of the trouble and by the application of protective dressings, soothing or stimulating in character. The most difficult of relief was the eczema intertrigo in infants. In such cases the child was taught to evacuate the bowels night and morning. Over the genitals a large bunch of absorbent cotton was placed to catch the urine, and citrate of potassium was given internally. As a protective dressing unguentum aqua rosæ, to which white wax was added in the proportion of 10 per cent., was used. The involved areas must be protected from scratching and irritation. In eczema in breast-fed infants, the first step should be to examine the mother's milk and if a high fat content was found to reduce it through dieting processes if possible. These children might be improved, but rarely cured. The baby, however, would almost always be cured by weaning and suitable bottle feeding. It was not, however, advisable to wean a thriving baby because of eczema. In the bottle fed, the best results had been obtained by the use of plain skimmed milk or evaporated skimmed milk cooked with starch, preferably rice or wheat. A high protein and a high starch food was given, often with the addition of olive oil to raise the caloric content. As early as the seventh month, squash, carrots, and mashed potato were added to the diet. The salt of fresh vegetables possessed an undoubted therapeutic value. In older children past the bottle age the treatment was along the same lines. Among the drugs for internal administration, citrate of potassium sufficient to neutralize the urine was the most valuable. Not all cases of eczema admitted of cure, but all might be cured if they dared draw their dietetic lines sufficient rigid. This might mean a clear skin, but it would be at the expense of a certain degree of faulty growth and malnutrition. There were cases in which it was not well to cure completely. Proper growth and right development were more important than personal appearance.

Dr. GODFREY R. PISEK said he thought the weight in these cases could be kept up by a careful regulation of the diet. One could give a sufficient amount of sugar and fat if they were properly diluted. In some cases small doses of thyroid might be helpful. Exposure to the air and moderate sunlight, as was now being done with burns, was also beneficial. Any one of the bland ointments was suitable as a protective dressing, and its use should be continued for a time after the eczema had disappeared in order to protect the sensitive skin. The exudate diathesis did not cause eczema, but it might be that a child of this type more easily acquired the disease. When a child having eczema was breast-fed, one should question the mother carefully as to her diet, for it sometimes happened that she had dislikes for certain foods or a craving for sweets, and that by properly regulating her diet the eczema in the child could be benefited.

Dr. CHARLES HERRMAN of New York said that it had been said that many of these cases had nothing to do with the exudative diathesis, that they were due to external irritation, etc., but there was a constitutional type which they were accustomed to speak of as the exudative diathesis. In the study of 200 babies and in following them up for some time he had found that 25 per cent. of them had the exudative diathesis. Dr. Herrman asked Dr. Kerley whether in following these children up for a number of years he found that they showed peculiarities other than skin diseases. He had heard his report-cases, and of recurrent bronchitis, and states that the children had had eczema in childhood. Many of these babies had a tendency to sprue during the first two weeks of life, and they all had peculiarly sensitive skins and respiratory symptoms. He did not think thyroid deficiency was an important factor in eczema.

Dr. CHARLES GILMORE KERLEY, in closing the discussion, said he had tried thyroid extract without much result. In growing children, not in babies, with malnutrition and dry scaly skin, he had given 1/15 or 1/20 of a grain two or three times a day, but it should not be given in large quantities because it was a great stimulator and caused wakefulness in children that were not appreciably abnormal. A child with eczema was likely to have associated conditions, such as urticaria, or cyclic vomiting, and was taken sick easily. That type of child was more susceptible to food conditions than a normal child, and hence they treated cases of common cold, frequent colds, cyclic vomiting, and recurrent bronchitis along lines similar to those outlined in this paper.

Hypertrophic Stenosis of the Pylorus in Children.—Dr. ALFRED HAND, Jr., of Philadelphia read this paper by invitation. He said he had been looking for cases of pyloric stenosis in children ever since attending the British Medical Association, when it met in Toronto some ten years ago, but until a little over a year ago he had seen none. Very few had been reported in this country. He had reported a case before the American Pediatric Society in May, 1915. Last September he had two cases in one week, and last week while preparing to attend this meeting he had another. He had found that the diagnosis was either easy or difficult according to the stage of the condition. The specialist in diseases of children did not often see these cases early, and hence it was frequently easy for him to make a diagnosis. When he was consulted at the time of the initial vomiting it was more difficult. The great preponderance of these cases occurred in the male sex. The history of the cases showed great uniformity. A majority of the breast-fed infants progressed satisfactorily for from two to six weeks before the vomiting began. Some children vomited and lost weight until the irreducible minimum was reached, constipation was

constant and obstinate, but not absolute. Laxatives might only serve to increase the visible peristalsis. One valuable diagnostic point in hypertrophic stenosis of the pylorus in children was the projectile character of the vomiting, but this was not sufficient evidence upon which to base a diagnosis. The tumor if present might be felt by deep pressure in the hypochondrium. When one had located it, it was possible to detect a hard cartilaginous lump, which was characteristic of the growth. It seemed to him that the history of these cases showed that the hyperplasia was progressive. When all the symptoms enumerated were present, there was no question as to the diagnosis. In the early stage it must be differentiated from catarrhal gastritis and spasm of the pylorus. No stated rules could be laid down for the dietetic treatment of these cases, but in making changes in diet one should be guided by some definite reason. At the Drexel Hospital in Philadelphia they had operated upon fifteen cases, with two deaths. The writer had had four cases, two in bottle-fed and two in breast-fed infants. They all required stimulation after operation. All of these patients were doing well, but one of them occasionally vomited a little bile.

Dr. Godfrey R. Pisek cited a case of pylorospasm treated successfully by lavage and careful diet. The *x*-ray was valuable in distinguishing between pylorospasm and pyloric stenosis. The only operation suitable for this condition in children was the Ramstedt operation, because it could be completed in twenty minutes and gave very good results.

Dr. Edward W. Peterson described the Ramstedt operation, and said that he had performed it successfully in eight minutes. For some hours after the operation no fluid could be given by mouth, and he had given instead 150 c.c. of normal saline intramuscularly by means of a record syringe. This was quickly taken up. The postoperative care of these cases was very important.

Dr. Charles Gilmore Kerley of New York related two instances in which children having this condition and apparently doing well on medical treatment died very suddenly. These cases served to show the danger of temporizing and of being too optimistic in the presence of pylorospasm or pyloric stenosis.

Dr. Charles Herrman of New York said that hypertrophic stenosis was rather a rare condition, and that when anyone reported a series of sixty cases, as Dr. Downes had done, it gave a rather false impression as to the frequency of this condition. It was probable that nearly all the cases of pyloric stenosis in children were sent to Dr. Downes, and consequently his statistics might give one a wrong impression as to its frequency. Dr. Herrman said he saw a great many babies, but he only saw about two cases of pyloric stenosis a year. The Ramstedt operation was the operation of choice. Papaverin had been used with some success in this condition. It is not always easy to distinguish between pylorospasm and hypertrophic stenosis, since one sometimes got the same symptoms in both.

Dr. T. Wood Clarke of Utica said he had had an experience at Ormsby in England, where he saw eight cases in three years, while during a service at the Vanderbilt Clinic he had seen only one case. The condition seemed to be more frequent in England than in this country. He said he had seen these children do well on skimmed milk and sodium citrate.

Thursday, May 18—Third Day.

Dr. T. DeWitt Sherman of Buffalo in the Chair.

The Early Diagnosis of Pott's Disease.—Drs. Stephen L. Taylor of Kenwood and Byron C. Darling of New York presented this paper, which was read by Dr. Taylor. He said that in spite of the advance that had been made in the treatment of tuberculosis of the vertebræ and the improvement in the methods of diagnosis, it still happened that the appearance of a fluctuating mass in the groin or elsewhere was the first suspicion that the physician had of the real nature of the trouble he was trying to treat. If it were possible to make a diagnosis before the bodies of one or more vertebræ were destroyed, it was obvious that much would have been done to prevent the most serious results of the disease, severe deformity and general tuberculous infection. Before the appearance of kyphosis or the development of an abscess the symptoms shown by the child were very indefinite and unpronounced, and likely to be overlooked. Symptoms, such as general debility, pallor, failure to gain in weight, lack of interest in play, disinclination to run or jump, unnatural attitude, change in gait, night cries, paroxysmal abdominal pain, or persistent attacks of pain in the chest or stomach should arouse suspicion, and the child should be examined with the clothes removed. On inspecting the spine it might then be noted that there would be a tendency to support the chin with the hands when sitting, when the disease was cervical. When the lesion was in the dorsal region, one or both shoulders might be elevated, the spine was held rigid in walking, or the child placed the hands on the thighs to relieve the spine when sitting. If the disease was lumbar, there was an exaggeration of the lumbar curves, throwing the abdomen forward. In asking the child to pick something up from the floor there was a characteristic squat instead of stooping. The degree of extension of the spine and the amount of lateral motion might be tested with the child lying with the face downward. The presence or absence of psoas contraction might be ascertained in this position also. In the analysis of a large series of cases J. Hilton Waterman and Charles H. Yager found that in young children the most frequent symptoms were unnatural attitude and pain. The pain was due to the sensitive articular surfaces and to irritation of the nerve roots. The former accounted for the mucular rigidity and the effort of the child to protect the spine in every way. The latter accounted for the location of the pain in so many parts of the body, it being referred to the periphery of the irritated nerve. In its early stages Pott's disease might resemble rickets, suppurating glands of the neck, lateral curvature, or a weak and atonic condition. The essayist cited a number of cases that showed the possibility of error in diagnosis and impressed one with the necessity of making repeated examinations. A number of the conditions that might be confused with Pott's disease could be excluded by the discovery of muscular rigidity. In doubtful cases the *x*-ray was often helpful, though if negative in the early stages it was not conclusive. Pictures should be taken in the anteroposterior position as well as in the lateral, and repeated *x*-ray examinations were often necessary.

Dr. Byron C. Darling of New York gave a lantern-slide exhibition illustrating this paper and demonstrating the value of the *x*-ray in making a diagnosis of spinal caries.

A Scheme of State Control for Dependent Children.—Dr. Henry Dwight Chapin of New York read this paper. (See page 1081.)

Dr. T. Wood Clarke of Utica congratulated Dr. Chapin on his work at Morristown, but thought the conditions in all institutions were not so bad as Dr. Chapin had stated. They had an institution at Utica which was admirably conducted, and they had had but ten deaths in thirty-five years. He was not always in favor of taking a child from an institution, placing it in a home, and then leaving it there. If this was done, very careful supervision should be kept over the child.

Dr. T. DeWitt Sherman of Buffalo also congratulated Dr. Chapin on his pioneer work at Morristown and related his experience in an institution in which there was an appallingly high mortality rate, from which he withdrew because he was unable to get the cooperation necessary to improve existing conditions.

Dr. Chapin, in closing the discussion, spoke further of the dangers of institutional life to young children, emphasizing particularly the danger of specific vaginitis among girls. He also emphasized the need of providing close supervision over all children boarded out. He said in New York they had 400 babies boarded out and only four nurses to look after them, so that the nurse saw these babies only about once a month; a nurse should see these babies every day. Doctors were responsible for prevailing conditions; they were always ready to accept positions in connection with these institutions, but they were not sufficiently independent to insist that the institution be conduced for the highest welfare of the babies. The doctor should be the lawgiver of the community instead of subservient to a board of managers.

Pinworms as a Cause of Appendicitis.—Dr. Alfred W. Armstrong of Canandaigua contributed this paper. He first made observations on the change of opinion that had taken place in modern times, that whereas formerly worms were supposed to be the source of all evil, it was now believed that they but rarely produced serious lesions. Pinworms were understood to be the most common of the intestinal parasites found in children, and they generally inhabited the lower portion of the colon, although they sometimes might be found in the small intestine, the stomach, and not very infrequently in the appendix. His attention had been attracted to this subject by four cases of appendicitis in

children in which pinworms were found in the appendix. These cases all presented the classical symptoms of appendicitis, and after the removal of the appendices there had been no return of the old symptoms. The presence of parasites in the appendix was admitted by all to be rare and yet if it was true that the female lived in the cecum until impregnation took place and then moved toward the rectum, it was easy to see how the appendix got its share. The literature on this subject seemed to be limited to reports of only a few cases in which the oxyuris had been found in the appendix, and most of the observations which had been recorded had been made in Europe. Bacterial infection was of course the real cause of appendicitis, but with the presence of numerous forms of bacteria constantly in the intestinal canal, their sudden activity on the occasion of an acute appendicitis must be accounted for. There seemed to be a pretty well established form of appendicitis in which the oxyuris had been found, which was characterized by considerable pain without marked inflammation. In these cases the gross appearance was one in which small hemorrhagic areas appeared in the mucosa and were confined to that part in which the worm was found. His experience in the four cases cited suggested the following practical thoughts in the treatment of intestinal diseases in children: (1) The possibility of the presence of pinworms in the intestines of children should not be disregarded. (2) Appendicitis was one of the most serious results of parasites in the appendix. (3) Treatment directed against the oxyuris might save some child from the necessity for the removal of his appendix.

Dr. FREDERICK H. FLAHERTY of Syracuse said it had been known for a long time that pinworms had been found in the appendix. To get a clear idea of the relation of pinworms to appendicitis one must consider the causes of appendicitis. Many causes had been suggested, but he believed there must be an exciting and an underlying cause. The anatomy of the appendix showed a poor circulation, which favored inflammation of the lymphoid tissue, and this plus the exciting causes produced appendicitis. As an exciting cause foreign bodies were not as common as was thought, and in a series of 500 cases of acute apendicitis in which the appendices were examined microscopically pinworms were found only once. In the speaker's case, in which pinworms were found, there were two masses, each containing thirty or forty pinworms, and they had precipitated the inflammation. What Dr. Armstrong said about the Chinese not having appendicitis as frequently as Western races could be explained by the fact that there was a difference in the anatomy in different races which might modify the blood supply of the appendix. It was well known that Indians rarely had appendicitis. There is one point with reference to the diagnosis of appendicitis in children to which attention might be called, and that was the value of rectal examination. There was no other one method by which one could so well find out if there was an inflammatory mass in the abdomen.

Dr. EDWARD W. PETERSON of New York said that they had had several of these cases in which pinworms were found in the appendix, but that this was one of the rare causes of appendicitis. In one instance in doing a hernia in which the hernial sac was large they had removed the appendix as a prophylactic measure and found half a dozen pinworms in that appendix. This case was reported in the *New York Medical Journal* several years ago. Whether or not they meant anything in this case he could not say, but in two of the cases reported there was no question but that the pinworms were the cause of the appendicitis. It might be advisable to take precautionary measures and see if by appropriate treatment directed against the worms one could clear up the symptoms of appendicitis.

Dr. SHERMAN of Buffalo emphasized the importance of examining the stools oftener than was generally done. Whether treatment directed against the pinworms would do any good depended on the sex of the worms. The males stayed up in the cecum, while the females traveled down. If the focus then was one of males, it might be that treatment would be of no avail.

Typhoid Fever in Children.—Dr. GEORGE C. SINCERBEAUX of Auburn presented this paper. He said the object of his paper was not to present anything new, but to emphasize the importance of the milk supply in relation to the spread of typhoid fever and to give a few facts gathered from his experience in the epidemic in Auburn last year. The pathological findings in typhoid fever in children were much less typical than in adults. Ulceration, while not infrequent, was often wanting. The course of typhoid fever in children was relatively mild, except in infants, and was liable to be shorter than in adults. The prodromal symptoms were slight. The attack was usually ushered in by slight malaise, gastrointestinal disturbance, vomiting, and constipation, the diarrhea, if any, appearing later. The temperature rose slowly for the first few days, running evenly with slight morning remissions during the second week, and declining slowly until normal at the end of the third week. The tongue might be clean, but more often was covered with a thick white covering with clean tip, the margins often exhibiting the red place, or typhoid triange, in the center of the tip, which was claimed to be pathognomonic of typhoid fever. The disease most likely to be confused with typhoid fever in children was miliary tuberculosis. But in this disease there was the irregular temperature, the spleen was not likely to be so large, the Widal reaction was negative, and there was an absence of bacilli in the blood. The essayist said his treatment might be considered empirical, but for the past few years he had been using collargolum and colloidal silver, one-half to one grain in capsule every six hours and salol in one or two-grain doses every four hours. The diet consisted of boiled water in plenty, milk, broths, gruels, eggnog, cereals cooked six hours, orange juice, and home-made ice cream. In the Auburn epidemic there had been thirty cases reported, of which sixteen occurred in children under seven years of age. The source of this epidemic was traced to milk from one creamery, and it was then learned that on one of the farms supplying milk to this creamery the son of the owner had had typhoid fever and that two wells on that farm were polluted. Admonition was given the people to drink only distilled or boiled water, and all the milk from that creamery was ordered pasteurized. With the institution of these measures the epidemic soon abated. In order to lessen the chances of cases and carriers of typhoid fever and to control them when once they were known the following means were suggested: (1) Cleanliness in milk production. (2) Vaccination of dairy employees against typhoid fever. (3) Isolation of infected persons. (4) Official supervision of dairies during the presence of illness. (5) Official supervision of the pasteurization of all milk.

Notes on Protozoan Infections Occurring at the King George Hospital.—H. M. Woodcock and W. J. Penfold, during the last six months, have examined the fees of 384 different cases, returned soldiers from Egypt and Gallipoli, for protozoan parasites, nearly all being examined two or three times. Of these, ninety-eight cases have shown one and sometimes more than one variety of protozoan parasite; the proportion of positives is 25.5 per cent. of whole. *E. coli* has proved the commonest of the parasites, occurring in 14.8 per cent. of the total number of cases and in more than one-half of the total positives. *Lamblia* has been the next most frequent, having been found in 5.7 per cent. of the total number of cases. The other flagellates have been less frequent. In ten cases in which *Isopora* has occurred the number of parasites in the feces has been scanty and there has been no sign of pathogenicity in connection with their presence. The *Entameba* of amebic dysentery and liver abscess, generally regarded as *E. histolytica*, has been found in one form or another in eight cases. The incidence of the cases of amebic dysentery in this hospital has been most interesting in relation to the occurrence of cases of bacillary dysentery and illustrates the liability to error of random sampling on a small scale when attempting to obtain any idea of the general numerical ratio between the two types. It is worth noting that out of fifty-nine known cases of either amebic or bacillary dysentery, only in one, or at most two cases, can it be said definitely that both types have occurred together. In the treatment of *Lamblia* infections beta-naphthol, together with bismuth salicylate, appeared to have effected a complete cure in two cases in which the remedies had been tried. Another drug was the French turpentine preparation, térébenthine, which when administered in small doses for some days, was also apparently successful in two cases, but had failed in two others. In one of the cases of cyst carriers the cysts were markedly different from the usual type of those occurring in infection with *E. histolytica* and the authors believe this was an instance of *Entameba "minuta."—British Medical Journal.*

State Medical Licensing Boards.

STATE BOARD EXAMINATION QUESTIONS.

PENNSYLVANIA BUREAU OF MEDICAL EDUCATION AND LICENSURE.

January, 1916.

(*Concluded from page* 1028.)

ANATOMY AND SURGERY.

1. In a patient upon whom an abdominal operation is to be performed, what local and general preparation would you advise?

2. In posterior luxation of the hip joint: Give method of reduction, with anatomical and mechanical reasons for manipulations employed.

3. What conditions may cause gangrene of the leg? State indications for and against the amputation of a leg in which gangrene has occurred.

4. Name the more usual localities in which carcinoma appears. State the more usual early symptoms present.

5. What surgical conditions may cause hematuria? Give the special symptoms of any one surgical condition capable of causing hematuria, and outline the surgical procedure for its correction.

6. What blood vessels may be involved in severe epistaxis? Describe methods of controlling severe epistaxis.

7. In fractures of the bones of the forearm, state three forms of splints that may be employed. Indicate location of fracture in which you would employ each, with anatomical reasons for the selection of the same.

8. Enumerate the conditions that would warrant the amputation of a leg. Outline the technic of amputation of the leg (upper third). State the anatomical structures severed.

9. For what conditions may resection of the elbow joint be performed? Outline the technic of the operation, giving the surgical anatomy of the parts.

10. Enumerate the various forms of hernia found in the groin. Upon what is the anatomical classification based? Describe a method of reducing by taxis in any one form selected, naming the form selected. Briefly outline the anatomical points to be considered in the radical operation for femoral hernia.

PRACTICE, MATERIA MEDICA, THERAPEUTICS AND HYGIENE.

1. Give the medicinal and dietetic treatment, and state your reasons therefor, of a case of vomiting of pregnancy.

2. Outline in brief the effects of the excessive use of: (*a*) Coffee, (*b*) tea, (*c*) chocolate, (*d*) alcohol, and (*e*) tobacco.

3. Describe the therapeutic action of: (*a*) Cocaine, of (*b*) veratrum viride, and of (*c*) apomorphine.

4. Outline the treatment of a case of pneumonia: (*a*) during the onset, (*b*) during the height of the disease, and (*c*) during convalescence.

5. (*a*) Describe the administration of spinal anesthesia. (*b*) What are the dangers of ether or chloroform anesthesia? (*c*) What precautions would you take in furtherance of their avoidance?

6. Outline the medicinal and dietetic treatment of chronic constipation. Describe any other means or measures you consider of importance in such a condition.

7. How would you combat therapeutically: (*a*) Excessive cough in tuberculosis? (*b*) a paroxysm of angina pectoris? (*c*) puerperal eclampsia?

8. Describe the local effects produced by a solution of: (*a*) Atropine sulphate, and of (*b*) pilocarpine hydrochlorate when dropped into the eye. What strength of the solution of each would you prescribe for the usual purposes for which they are used? What are the contraindications to the use of each?

9. State what articles of diet you would prohibit and what ones you would permit in a patient with arteriosclerosis and high blood pressure. What benefits would you expect from a reduction in weight of the patient?

10. How would you treat, other than by operative measures, abdominal ascites and the general edema occurring as a complication in hepatic and renal disease?

ANSWERS.

ANATOMY AND SURGERY.

"1. If possible, the patient should be under observation for at least twenty-four hours prior to the operation. During this time a careful study is made of the urine and the condition of the heart and lungs, and necessary treatment instituted. The diet should be restricted, and a purgative given the night before, followed by an enema on the morning of the operation. No breakfast, or merely a cup of beef tea, should be given on the day of the operation. The abdomen should be shaved and scrubbed thoroughly with tincture of green soap and sterile water for at least ten minutes on the night before the operation. A general bath should then be taken, giving special attention to the inside surfaces of the thighs and to the umbilicus. A soap poultice is applied to the abdomen and allowed to remain for several hours; this is removed, and the abdomen is scrubbed with alcohol and washed with mercuric chloride solution (1:1000). A towel wet with this solution is placed over the abdomen, and a binder is applied. (*Pocket Cyclopedia*).

2. In posterior luxation of the hip joint, the patient is placed on a mattress on the floor, and anesthetized. The leg is then flexed on the thigh and the thigh on the abdomen; this relaxes the Y-ligament, and brings the head of the femur down to the lower part of the acetabulum. The leg is then circumducted outward; this brings the head of the femur to the rent in the capsule. The limb is then extended to bring the head of the femur into the acetabulum.

3. The *causes of gangrene* are thus given by Stewart: (1) *Indirect gangrene*, which is caused by interference with the blood supply, includes senile, presenile, diabetic, post-febrile, Raynaud's, ergot gangrene, ainhum, gangrene from embolus, ligature of the principal artery of a limb, thrombosis of an artery, the result of injury, and obstruction of the principal artery and vein; (2) *direct gangrene*, the result of trauma, includes gangrene from severe crushes, prolonged pressure, chemical injuries, the *x*-ray, frost bites, and burns and scalds; (3) *mixed* or *microbic gangrene*, in which the tissue cells are directly killed by bacterial toxins and the blood vessels occluded by thrombosis, includes traumatic spreading gangrene, and hospital gangrene.

Amputation is indicated in all cases except, perhaps, senile gangrene with marked calcareous arteries and albuminuria or general debility; (2) diabetic gangrene with pronounced acidosis or beginning coma; (3) acute infective gangrene which has already invaded the trunk or in which septicemia is present.

4. *Carcinoma* is most usually found in the breast, uterus, stomach, pylorus, rectum, ovary and testicle. The chief *early symptom* is often impairment of function, without swelling or pain, these latter occurring later. Pain is due to the involvement of nerve-endings; when ulceration occurs, cachexia becomes marked. Other symptoms depend upon the location of the lesion.

5. *Hematuria* may be caused by renal calculus, tumors or injuries of the kidneys, cystitis, vesical calculus, prostatic congestion or ulceration or tumor, traumatism of urethra, parasites (especially the *bilharzia hæmatobia*. *Symptoms of renal calculus* consist of pain in the loin, markedly increased by exercise, especially on jolting. The pain may be referred to the thigh, groin, or testicle. The colic is associated with hematuria, and often pyuria exists with frequency of micturition. The kidney may be enlarged, and tender on pressure. A large stone may exist without any symptom whatever.

The most typical symptom consists in a sudden attack of excruciating and paroxysmal pain shooting down the loin to the bladder and testis. The attack is accompanied by vomiting, faintness, and collapse. Frequent efforts to pass urine are made, but only a scanty amount of blood-stained urine is passed (strangury). The pain ceases suddenly when the calculus slips back into the pelvis or reaches the bladder. (*Aids to Surgery*).

6. The blood vessels liable to be involved in epistaxis are: The spheno-palatine and descending palatine branches of the internal maxillary artery; the anterior and posterior ethmoidal branches of the ophthalmic, and the artery to the septum from the superior coronary branch of the facial.

Treatment.—In severe epistaxis, examine the nose by means of a head-mirror and a speculum. If a little point of ulceration is found, touch it with a hot iron. If the bleeding is a general ooze, if it is high up, or if the cautery does not arrest it, pack the nares. It may be necessary to pack one nostril or both. Pass a Bellocq cannula along the floor of one nostril into the pharynx, project the stem into the mouth, tie a plug of lint or gauze wet with Carnot's solution of salt and gelatin to

the stem, and withdraw it. Hold the double string which emerges from the nostril in the hand and pack gauze wet with gelatin solution from before backward. Tie the strings together over the plug; if both nostrils are plugged, the strings from one nostril are fastened to the strings from the other. Do not use subsulphate of iron, as it forms a disgusting, clotty, adherent mass. If a Bellocq cannula is not obtainable, push a soft catheter into the pharynx, catch it with a finger, pull it forward and tie the plug to it. Remove the plug in two or three days. Do not leave it longer. It blocks up decomposing fluids and may lead to blood-poisoning. Pick out the front plug first, hold the string of the second plug in the hand, push the plug back into the pharynx, catch it with forceps, and withdraw plug and string through the mouth. (DaCosta's *Modern Surgery*).

7. In *fracture of the shaft of the radius*, above the insertion of the pronator radii teres, the forearm is placed in full supination on an anterior angular splint, in order to bring the lower fragment in contact with the upper.

In *fracture of the shaft of the ulna*, an internal angular splint is used; this immobilizes the elbow, and places the forearm in a position half way between pronation and supination, and so keeps the two bones as far away from each other as possible and thus minimizes the danger of their union by a callus.

In *Colles' fracture*, a padded Bond splint or Levis splint may be used, so that the hand is semiflexed and adducted. A pad is placed on the back of the forearm over the lower fragment, and another on the flexor surface over the lower end of the upper fragment.

8. *Indications for amputation of the leg:* Compound fracture, compound dislocation, fracture with great comminution of bone, extensive laceration, laceration of important vessels, gunshot injuries, gangrene, extensive bone disease, elephantiasis, snake-bite, aneurysm; provided that these conditions are not amenable to less radical treatment.

In Sedillot's "method of *amputation of the leg* the point of the knife is entered a finger's breadth external to the spine of the tibia and carried outward, grazing the fibula, and is brought out as far as possible to the inner side; a flap three or four inches in length is then cut from within outward; the extremities of the incision are next united by an incision across the inner side of the limb, involving the skin only; any remaining muscular tissue is next divided and the bones are sawed. The long external flap is then brought over the ends of the bones and fastened to the edges of the incision on the inner side of the limb. Ashhurst modified this operation by cutting the long external flap from without inward, and made also a short internal flap in the same manner. By either method the resulting stump is a good one, with the ends of the bones covered by the tissues of the external flap." (Wharton's *Minor Surgery*).

The parts cut through in amputation at the upper third of the leg are: Skin, fascia; bones, tibia, and fibula; interosseous membrane; muscles, tibialis anticus, tibialis posticus, extensor longus digitorum, extensor proprius hallucis, flexor longus hallucis, flexor longus digitorum, peroneus longus, peroneus brevis, soleus, gastrocnemius, and the tendon of the plantaris; arteries, anterior tibial, posterior tibial, peroneal; veins, the venæ comites of the arteries, external saphenous, internal saphenous; nerves, anterior tibial, posterior tibial, external saphenous, communicans peronei, musculocutaneous.

9. *Excision of the elbow* is performed for: Chronic joint disease (generally tuberculosis); wounds; faulty ankylosis, or other deformity; disease of the articular ends of the bones; fracture dislocation; compound comminuted fracture.

"In excising the elbow joint, the forearm is slightly flexed and a longitudinal incision is begun about two inches above the olecranon process and a little to its inner side, and carried about three or four inches down in the line of the ulna; the tissues are then divided down to the bones, and the ulnar nerve is dissected from its groove behind the inner condyle of the humerus and held aside by a retractor; the tendon of the triceps is divided, and its attachment to the fascia and periosteum over the olecranon process is separated with an elevator or periosteotome and turned downward; the joint is next opened and the lateral ligaments divided as the forearm is flexed upon the arm. The upper part of the ulna and the head of the radius are freed with a probe-pointed knife and removed with a narrow-bladed saw, care being taken in making the section of the radius to divide its neck so that the attachment of the biceps muscle is not interfered with. The condyles of the humerus are next freed and removed with a saw. In freeing the bones at the anterior portion of the joint, great care should be used to avoid injury of the brachial artery and vein and the median nerve." (Wharton's *Minor Surgery*.)

10. The various forms of hernia found in the groin are inguinal and femoral hernia.

The anatomical classification is based on the relation of the hernia to (1) the inguinal canal and inguinal rings, and (2) to the femoral opening. The former are above Poupart's ligament, the latter below it.

The forms of inguinal hernia are:

(1) *The Direct*, in which the hernia does not occupy the inguinal canal, but leaves the abdomen to the inner side of the deep epigastric artery, through the space known as Hesselbach's triangle. There are two forms of this variety: (*a*) the hernia may escape between the epigastric artery and the obliterated hypogastric artery; (*b*) or it may escape between the obliterated hypogastric artery and the outer edge of the rectus muscle.

(2) *The Indirect* or *Oblique*, in which the hernia occupies, wholly or in part, the inguinal canal. An *oblique inguinal* hernia may pass into the scrotum or labium majus, when it is called *complete;* or may be retained in the inguinal canal, when it is called *incomplete* or a *bubonocele*. Other varieties are the *congenital, infantile*, and *encysted*.

Femoral hernia leaves the abdomen through the femoral ring and descends into the femoral canal; this canal is funnel-shaped, is about half an inch in length, and ends at the saphenous opening. Its course is first vertical, then forward, then upward over Poupart's ligament. The neck of the hernia is situated at the femoral ring; to its outer side lies the femoral vein, and to its inner side is Gimbernat's ligament; in front of it is Poupart's ligament, and behind it are the pubis, the pectineus, and the public portion of the fascia lata.

"*Taxis*, or the manipulations for the reduction of a hernia, should always be gentle, and should rarely be tried for more than five or ten minutes, because of the danger of rupture of the bowel. It should not be employed in the presence of inflammation or gangrene. Reduction is facilitated by having the patient recumbent, the thighs flexed (and that of the affected side adducted in femoral or inguinal hernia), and the pelvis raised. The administration of opium and belladonna and the application of heat or cold also are useful in securing relaxation. One hand is used to steady the neck of the sac, while with the other the hernia is compressed and pushed back into the abdomen. In direct inguinal and umbilical herniæ the pressure is backward; in oblique inguinal hernia it is upward, outward, and backward; in femoral hernia it is at first downward and inward, then upward and backward. The successful reduction of bowel is sudden and accompanied by a gurgle; omentum is forced back slowly without gurgling." (Stewart's *Surgery*.)

In addition to the points given above on femoral hernia, it must be remembered that sometimes the obturator artery arises (abnormally) from the deep epigastric artery. When this abnormal artery passes down the outer side of the crural ring, it is out of harm's way; but when it passes down the inner side of the crural ring it is very apt to be wounded in herniotomy.

PRACTICE, MATERIA MEDICA, THERAPEUTICS AND HYGIENE.

1. The vomiting of pregnancy is generally viewed as a toxemia with disordered protein metabolism and pathological conditions in liver and kidneys. The treatment then consists in diminishing the intake of protein food, and the administration of cathartics and diuretics. If the stomach rejects food, enemata may be tried. Sodium bicarbonate is useful because it hinders the production of acetone bodies and acidosis. Irrigations of the colon, particularly with solution of sodium bicarbonate, remove toxins from the colon and also supply fluid and an alkali to the body. The best food is milk, and cereals. Many drugs have been used in the past with doubtful benefit, such as: Cerium oxalate, bismuth subnitrate, iodine, bromide of potassium, citrated caffeine and chloral.

2. The *excessive use of coffee* retards peptic digestion; incites or keeps up gastric catarrh; induces muscular tremors, anxiety, nervousness, palpitation, brady-

cardia, heartburn, vertigo, constipation and insomnia.

The *excessive use of tea* retards digestion; causes gastric irritation and catarrh, flatulency, constipation or diarrhea, nervousness, insomnia, muscular tremors and palpitation.

The *excessive use of chocolate* may cause gastric dyspepsia.

The *excessive use of alcohol* may cause changes (chiefly cirrhotic) in the blood vessels, liver, kidneys, and other tissues; the brain and nervous system are likely to be affected by degenerative changes; it is said to be a predisposing factor in the following: gastritis, liver disorders, dilatation and hypertrophy of the heart, arteriosclerosis, aneurysm, nephritis, neuritis, apoplexy.

"The *continued use of tobacco*, by smoking or chewing it to excess, produces granular inflammation of the fauces and pharynx, atrophy of the retina, dyspepsia, lowered sexual power, sudden faints, nervous depression, cardiac irritability and occasionally angina pectoris. Used by the young it hinders the development of the higher nerve centers and impairs the nutrition of the body by interfering with the processes of digestion and assimilation. It has been credited with causing cancer of the lips and tongue, blunting of the moral sense, mental aberration and even insanity." (Potter's *Materia Medica, etc.*)

3. "*Cocaine* is a protoplasmic poison and induces complete local anesthesia. Coca leaves, when chewed, relieve hunger and fatigue and allay irritability of the stomach. The drug tends to stimulate the vagus centre, increase the pulse-rate, constrict the arterioles, and cause a marked rise in blood-pressure, though later the blood-pressure falls; the respiratory functions are at first stimulated and afterwards depressed, and under poisonous doses death occurs from asphyxia. The higher parts of the brain are at first stimulated and the muscular power greatly increased, while the various medullary centers are first stimulated and then depressed. There is primary stimulation of the spinal cord also, with exaggeration of the reflexes, and very large doses may cause strychnine-like convulsions. In the eye mydriasis is produced and accommodation impaired. Cocaine is eliminated chiefly in the urine. Cocaine is more largely employed to produce local anesthesia than any other agent; injected into the arachnoid space of the spinal cord it has also been used to cause general anesthesia for surgical operations. The preparations of coca are prescribed as stomachic tonics and in the debility of convalescence from acute diseases, and cocaine has been given internally in chorea, paralysis agitans, alcoholic tremors, and senile trembling." (Wilcox's *Materia Medica.*)

Veratrum viride: "On the skin it causes tingling, numbness and anesthesia, and, applied to the mucous membrane of the nose and throat, violent sneezing and coughing. Internally it produces gastrointestinal irritation, prolonged relaxation of striped and cardiac muscle, reduction of arterial pressure, depression of respiration, convulsions from stimulation of the spinal cord, free diaphoresis, and reduction of temperature. As a circulatory depressant, given early, in croupous pneumonia, pleurisy, hepatitis, maniacal delirium, etc., with strong, bounding pulse and other sthenic conditions; in puerperal convulsions and the early stage of peritonitis, phlebitis and other inflammatory affections of the puerperal state; also acute rheumatism, tonsilitis, aneurysm and wounds of the head, pericardium and peritoneum." (Wilcox, *Materia Medica.*)

Apomorphine acts on the vomiting center in the medulla, hence is emetic; it increases pulse, blood pressure, and rate of respiration; it is also an expectorant. Its *indications* are chiefly those requiring a prompt emetic; also as an expectorant in bronchitis and lobular pneumonia.

4. The *treatment of pneumonia* "depends entirely on the type of case, and the condition of the patient. Routine treatment is the worst of all treatments. Answer the following questions before prescribing: Is the patient full-blooded, and is there a full bounding pulse? Is the pulse feeble, irregular, or intermittent?

"In the first case, in a young and previously healthy adult, if there be cyanosis, or signs of dilatation of the right heart, blood-letting to the extent of a few ounces may perhaps relieve the strain, but more generally treatment should be directed to maintaining the strength from the outset.

"In the latter case we can hope for nothing from a depressing treatment, so stimulants must be resorted to, such as alcohol, ammonium carbonate, egg and brandy mixture, quinine, ether, etc. The giving or withholding of alcohol depends upon its effect upon the pulse; should the pulse rate fall and the tongue become moist it may be continued. In asthenic cases, strychnine hypodermically is necessary from the outset, and normal saline may be given by the rectum or by the skin. Oxygen inhalations are used where there is cyanosis, but it is doubtful whether they have saved many lives. When there is evidence of failure of the heart (weakness of the second pulmonary sound, etc.) digitalis should be resorted to. Many prescribe it from the outset.

"The diet should consist of milk, beef-tea or broths, white of egg, and so on. The patient should be as little moved as possible, and the bed-pan must be used. As in other fevers, an airy room and good nursing are essential.

"Remember that narcotics are not well borne in respiratory embarrassment as a rule. Chloral should be avoided, but *if pain be excessive* a hypodermic injection of morphine does *more good* than harm, notwithstanding that theoretically morphine is contraindicated. It should not be given later than the first few days of the illness. The pain may also be relieved by poultices, which, however, are of doubtful use if carelessly made, or by application of ice. Cold packs applied to the trunk only, and frequently repeated, are very useful in relieving both pain and fever. Depressant antipyretics are to be avoided.

"The results of *serum treatment* are not unequivocally encouraging, but vaccine treatment would seem to be of better promise. Where possible, an autogenous vaccine should be used." (Wheeler and Jack's *Handbook of Medicine*).

5. By spinal anesthesia is meant the employment of subarachnoid injections of cocaine or eucaine for the purpose of producing analgesia for surgical purposes. Between the fourth and fifth lumbar vertebræ is the spot usually selected. The surface is sterilized and the skin is made anesthetic by injecting into it one of Schleich's solutions. An exploring needle is then made to find its way into the subarachnoidean space, which is evidenced by the escape of some fluid. The syringe containing the cocaine or eucaine is then attached, and the anesthetic is injected. Rigid asepsis is necessary, and even then the procedure is dangerous. (*Pocket Cyclopedia.*)

The dangers of *ether* anesthesia are asphyxia (failure of respiration), and to a much less extent, heart failure. In *chloroform* anesthesia the chief danger is sudden death from reflex arrest of the heart; failure of respiration, and fall of blood pressure may also occur; delayed chloroform poisoning or toxemia is also possible.

The *chief precautions* against these dangers are: The employment of an expert anesthetist, and the use of the purest anesthetic; a thorough examination of the patient and due preparation for the operation; the elimination of all unnecessary dangers, such as undue exposure or prolongation of the operation, and having in readiness everything likely to be needed in an emergency.

6. *Treatment of chronic constipation:* "The cultivation of habits of regularity is of the utmost importance. The patient should go to stool at the same time every day, whether there is a desire to evacuate the bowels or not, and every such desire should be immediately gratified. The diet should comprise considerable fruit and vegetables (which leave a residue). A glassful of cold water before breakfast, an orange or oatmeal at breakfast, and stewed fruits and salads at dinner subserve a useful purpose in many cases. Persons of sedentary habits are often benefited by exercise; abdominal massage is useful in some cases, and an abdominal binder is of value to those with a pendulous flabby abdomen and visceroptosis.

Drugs should be dispensed with as long as possible. Medicinal measures when necessary vary with the nature of the causal factor, which must be diligently searched for. At the beginning of the treatment it is often advisable to clear the intestine thoroughly with castor oil, a blue mass pill, or calomel, followed by a saline aperient. In many cases, the best results are obtained by a daily injection of tepid water with or without soap; in other cases injections of oil are much better; but enemas should not be too long continued. Some patients are much benefited by a saline aperient water, sodium phosphate, or other saline, taken a half hour before breakfast. Should a course of medicine be necessary, the desired results may usually be secured by the use of cascara sagrada, which has the advantage that, having been continued for some time, the dose

necessary to secure a daily evacuation may be gradually reduced, and the drug ultimately dispensed with, should the patient continue habits of regularity. The pill of aloin (⅛ grain), strychnine (1/40 grain), and extract of belladonna (1/10 grain), though much abused, is very useful in many cases." (Kelly's *Practice of Medicine.*)

7. For *excessive cough in tuberculosis:* Rest, fresh air, and drugs such as creosote, guaiacol carbonate, codeine, heroine, morphine, and diluted hydrocyanic acid; the ordinary expectorants should be avoided on account of their nauseating tendencies.

In *angina pectoris:* Inhalation of amyl nitrite, and a hypodermic of morphine and atropine or inhalation of chloroform.

In *puerperal eclampsia: "The treatment of the attack* consists of the administration of chloroform by inhalation, chloral hydrate (gr. 60) by enema, and the fluid extract of veratrum viride hypodermically (gtt. 15 followed by gtt. 5, repeated frequently enough to keep the pulse at about 60 beats a minute, to control the convulsions, and free purgation by croton oil (gtt. 2, or 3, in sweet oil or glycerin), free sweating by the hot pack, and sometimes depletion by venesection to eliminate the poison. The after-treatment consists of free purgation by the salines, restriction of diet, and later the administration of tonics and stimulants. The obstetric treatment is usually noninterference." (*Pocket Cyclopedia.*) Sometimes *accouchment forcé* is indicated.

8. *Atropine sulphate,* when dropped into the eye dilates the pupil, destroys the power of accommodation, and increases intra-ocular tension. As a simple mydriatic a solution of ¼ grain to the ounce is generally used; as a cyclopegic a solution of 4 grains to the ounce may be used. It is contraindicated in glaucoma and old age.

Pilocarpine hydrochloride, when dropped into the eye causes the pupil to contract and lessens intra-ocular tension; it may also produce spasm of accommodation. It is used in solution of 1 to 4 grains to the ounce. It is said to be contraindicated in severe cardiac or pulmonary lesions.

9. In *arteriosclerosis,* the following should be *prohibited:* All indigestible food; dried, salted or preserved meats; cheese, pastry, sweets, nuts, cabbages, carrots, turnips. The following may be *allowed:* White fish, chicken, rabbit, game, one potato a day, mutton or well-grown lamb once a day, spinach, asparagus tops, onions, tomatoes, peas, beans, water, milk, weak tea, alcohol only when necessary. Only as much food should be taken as is necessary.

If the reduction in the patient's weight is due to the lessened intake of food, we may expect diminished blood pressure, less toxemia or intoxications, and general amelioration of health. If the patient had been overweight, a reduction should be accompanied by diminution in blood pressure, avoidance of the danger of impending apoplexy, and amelioration of subjective symptoms such as headache, dizziness, dyspnea, precordial oppression.

10. Purgatives and diuretics may be of use; elaterin. in doses of 1/20 grain; compound jalap powder. 30 grains; if salines are used they should be given in concentrated or saturated solution; citrated caffeine, and pilocarpine may be of service; the external application of heat may be tried. The amount of fluid ingested should be limited, and meat and meat products should be avoided; in renal cases salt is prohibited.

Books Received.

The MEDICAL RECORD *is pleased to receive all new publications which may be sent to it, and an acknowledgment will promptly be made of their receipt under this heading; but this is with the distinct understanding that it is under no obligation to notice or review any publication received by it which in the judgment of its editor will not be of interest to its readers.*

THE ART OF ANESTHESIA. By PALUEL J. FLAGG, M.D. Published by J. B. Lippincott Company, Philadelphia and London. 136 Illustrations. 341 pages. Price, $3.50.

A TREATISE ON BLOOD PRESSURE IN OCULAR WORK. With Special Reference to Factors of Interest to Refractionists. By EUGENE G. WISEMAN. Published by John P. Smith Printing Company, Rochester, N. Y. Illustrated, with 19 engravings. 267 pages.

Miscellany.

Rules for Typhoid Carriers.—The following instructions for the guidance of typhoid carriers have been issued by the New York City Health Department:

1. You must not have anything to do with food or drink to be used by others, either in your business or at home. Don't go to the icebox or refrigerator. Don't hand anything at the table. Have your own plates, cups, glasses, spoons, forks, etc., separate from the others, and washed and kept for you alone. If you happen to leave any food or drink, it must be thrown out and not be used by others.

2. Every movement from your bowels not passed into a toilet flushed with water and connected with a sewer must be disinfected with some good disinfectant, such as chloride of lime or cresol, letting it stand for some minutes. Keep a supply of the disinfectant on hand for this purpose. When a toilet with running water is used, thoroughly clean the bowl daily.

3. After using the toilet wash your hands with plenty of soap and water. Do this every time. Dry your hands well. Do not let other people use your towel.

4. Do not have a movement of your bowels except at a regular toilet. Try not to use the toilet when away from home during the day. If you have only an out-door privy to use, keep it disinfected all the time with quick lime, and screened from flies.

5. Keep yourself and everything about you very clean. Disinfect your underclothing before sending it to the laundry.

6. Every person with whom you live must be immunized against typhoid fever.

7. Keep the Department of Health informed of your whereabouts. Call for a personal talk and advice as to treatment or help in some other way. See that your stools are re-examined from time to time.

If there is a physician in attendance these instructions are sent to him to be transmitted to his patient; if there is no physician in attendance, they are sent directly to the typhoid carrier.

A Cancer Expert Defends a Nature Healer.—According to a communication in the April 18 number of the *Muenchener medizinische Wochenschrift* Dr. Zeller, assistant to Professor Czerny in the lat ter's Heidelberg Cancer Institute, gave expert testimony in favor of a nature healer of Dresden, who was under trial for malpractice in failing to give proper treatment to a woman dead of cancer of the breast. There had been no diagnosis, and the healer had promised to "take the hardness" out of the tumor. Later he had realized that the case was one of cancer and had sent the patient to a surgeon, who pronounced the condition no longer operable. Dr. Zeller took the stand, and was backed up by two other practitioners, Drs. Rohr and Böhm. None of the three admitted any evidence of malpractice. Zeller held that a non-medical man could not be held responsible for what he might say of a condition like cancer, so long as the profession itself was in such darkness as to the nature of the malady. He placed no faith in statistics. It was not the general custom, he said, to make a microscopical diagnosis after extirpation of a tumor, although he himself always insisted upon this practice.

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Original Articles.

WHAT IS THE POSITION TO-DAY AS TO THE VALUE OF BLOOD AND CEREBRO-SPINAL FLUID EXAMINATIONS IN THE DIAGNOSIS OF SYPHILIS OF THE NERVOUS SYSTEM?*

BY EDWARD D. FISHER, M.D.,

NEW YORK.

PROFESSOR OF MENTAL AND NERVOUS DISEASES, UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE.

IN speaking on this subject I would in no way discountenance the value of the laboratory investigations. No one to-day would be satisfied that he was doing justice to his patient, did he not have serological and cytological examinations made of the blood and spinal fluids, not only for diagnosis but also for information as to the course of treatment to be followed out. The clinical findings, however, are, in my opinion, most important and conclusive. Positive laboratory findings are merely confirmative and complementary, but negative findings by no means negate the clinical evidence.

Serology is a subject of recent date and has not attained accuracy. Contradictory reports are very common, and, even in cases with full knowledge of a positive luetic history, negative findings are not infrequently presented.

The reaction is due to the presence of a globulin in the blood produced by the destructive action of the syphilitic virus or its toxin upon the neuron. Why then should there be a negative reaction in blood as well as the spinal fluid, or again a positive reaction in the blood and a negative one in the spinal fluid? Pathologically speaking there is a meningomyelitis or encephalitis with an extensive exudate of plasma cells and lymphocytes in the perivascular lymph spaces with an accompanying endarteritis. The globulin, therefore, can not permeate through these vessels into the cerebrospinal fluid and the result is a negative Wassermann reaction. The reverse may be true, so that the fluid may be positive and the serum negative. If on the other hand the syphilitic virus be latent, no tissue destruction goes on and no reaction may be obtainable in either serum or spinal fluid. We may also find an explanation of the negative Wassermann reaction in Ehrlich's theory of immunity of an animal as due to the great energy of the cells of its body, which are able to appropriate nutritious substances for themselves, and in so doing to deprive parasites of them. It may not be illogical to assume that the neurons maintain their specific energy, as they are able to absorb all the nutriment and oxygen in the circulating fluids. And it is only when this specific energy fails that the parasites, glia cells, lymphocytes, and plasma cells absorb this nutriment and oxygen and actively proliferate while the neurons decay. This theory is hypothetical.

Clinically, however, the study of syphilis of the central nervous system goes back many years, and by the best minds in the medical profession. The various symptoms have been confirmed by pathological findings and experimental physiology with respect to the functions of the central nervous system. Clinically, therefore, we stand on sure ground.

The special methods of diagnosis are familiar to the laboratorian as well as to the clinician. It is the latter, however, who has evolved them and is the most familiar with them. He is the expert in diagnosis, and it is just here that the laboratory expert is apt to fail, for he depends on his findings without a painstaking clinical examination of the case and therefore may readily believe he has a disease which in reality is not present.

If this were merely an academic question it would be of no importance, but it is far from this, as it involves treatment which may not be carried out by the laboratory expert, but will be by the physician who reviews his reports.

The well known physical signs of diseases of the central nervous system consist of the disturbance in the motor, sensory, and reflex fields and diseases of various sense organs. In regard to motor changes we may have irritative or destructive conditions, *i. e.*, convulsions, tremors, or paralysis; in the sensory field, pain or loss of or impaired sensation. Reflexes may be lost or exaggerated, involving the brain, as in the eye reflexes, or the spinal cord. All these to the trained examiner are of positive value; are indeed all explainable from his knowledge of the anatomy and physiology of the nervous system. In other words, to-day we understand in a large degree the organic diseases of the central nervous system.

The question can be put, therefore, do we need this further method of investigation? My answer is yes, as it is confirmatory of the etiology of the affection we may be treating, and also as it is a guide as to our method and continuance of treatment.

Clinically I have always held, in various monographs, that cerebrospinal syphilis, using that term in contradistinction to meta- or parasyphilis, marked itself out by its early onset after the primary lesion and was acute in its course, sharing involvement of the blood-vessels and meninges, what Mott defined recently as the meningovascular form. Parasyphilitic diseases are slow in their onset and usually occur many years after the primary infection and involve the parenchymatous structures of the brain and cord as observed in general paralysis and tabes. The meninges are also involved in both these diseases. The serological findings are of

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greatest aid to the clinician, especially when positive. Should, however, these findings be negative, while the clinical symptoms are present, I would make a diagnosis from them alone. So much so that if patients come with positive serological findings but without clinical manifestations of the disease, I advise against specific treatment.

Numerous cases illustrative of the points I have made have been reported in recent literature, and of many I shall briefly report three in my experience:

CASE I.—Christine H., 30 years old, married, English. *Family history* negative. *Personal history:* Of the infantile diseases had measles, scarlet fever, varicella, parotitis, and pertussis. Pneumonia two years ago and made recovery. She began to menstruate at eleven. Denies venereal disease and never miscarried. She gave birth to five living children. Suffers from chronic obstipation. *Present illness:* Since April, 1915, patient began to suffer from stiffness of the neck and pain on motion. Gradually both shoulder joints, the elbows, and wrists became involved in the same manner. There was no swelling of joints. After a few weeks both hands became numb and pain increased in severity, being most intense at night. Toward the end of July there appeared edema of the legs, the right becoming involved first and accompanied by pain which was partially relieved on walking.

In addition to the above symptoms she now complained of loss of power and feeling in the arms and numbness and pain in the right epigastric region. Soon loss of power and feeling involved the right and then the left leg. This progressive involvement extended over the time between April and August 14, when she was still able to stand when supported. After this date she was completely paralyzed in the upper and lower extremities. Since the beginning of her illness she experienced a burning pain on micturition and had difficulty in starting. Later on there was retention and she had to be catheterized. At times she would have incontinence and dribbling without being aware of it. Toward the end of July she began to suffer from a continuous dull headache. There was no difficulty in vision, speech or hearing. Off and on she would have some difficulty in swallowing.

A month before admission to Bellevue Hospital she was delivered of her fifth child with very little pain after a normal labor. She did not feel the head coming. Nursed her child until Aug. 28.

She was admitted to Bellevue Hospital in the service of Dr. Carlisle on Aug. 29, 1915, complaining of pain in the back of the neck, with a complete paralysis of upper and lower extremities and incontinence of urine. *Status on admission:* Patient is poorly nourished, unable to move arms and legs. She appears not to suffer, although there is a toxic expression of her facies. The pupils were irregular and unequal and reacted sluggishly to light, but well to accommodation. There was pyorrhea of her teeth. The tongue was normal. The uvulva deflected to left. The apex of the heart was in the sixth space one-half inch inside the left nipple line; sounds of poor quality and rapid; pulse fair, 116. Lungs, expansion practically nil, intercostal spaces exhibit very little excursion, breathing sounds faint, no rales. Nothing abnormal with abdominal viscera. There was a profuse perspiration over left face and arm. Bones: slight tenderness over fifth to seventh cervical and first dorsal vertebræ, also a slight curvature to right over this region. Rigidity of neck and limited motion.

August 30.—*Upper extremities:* Atrophy of extensors of forearm, interossei and flattening of thenar eminences of both hands, most marked in the right. At times one notices twitchings in the muscles. Complete spastic paralysis. Elbow and wrist reflexes were increased. Touch sense was good, pain diminished. Complete thermanesthesia, deep muscle sense normal.

Lower extremities: Some atrophy in both, occasional twitchings, complete spastic paraplegia. Superficial and deep reflexes increased in both, ankle clonus and Babinski phenomenon present in right but not in left foot. Touch sense normal, pain diminished, complete thermanesthesia, deep muscle sense present.

Trunk: Chest emaciated, abdominal muscles wasted, paralysis of intercostals. Abdominal reflexes absent. Touch sense good, pain diminished, complete thermanesthesia.

On September 2, patient developed an area of complete anesthesia beginning at the last dorsal vertebra and extending down the entire body. This sensory disturbance progressed rapidly upward, and on Sept. 18 there was a complete anesthesia up to the level of the third rib except the inner sides of the calf, where there was an appreciation of deep pressure sense rather than pain sense. Babinski reflex and ankle clonus were now present on both sides.

A lumbar puncture was made on Aug. 30, 15 cc. of fluid were withdrawn under normal pressure. Blood was also taken on this date. The Wassermann of the spinal fluid and blood serum was negative. There were four cells to the cmm. of the fluid, globulin was negative, reduction test positive, there was also a trace of urea present. A vaginal smear was positive for gonococci. The radiographic examination was negative.

The urine analysis was made on several occasions. It was acid, of a varying specific gravity, 1010-12, contained faint traces of albumin, an occasional leucocyte and a few erythrocytes.

Blood-count.	Aug. 31, 1915.	Oct. 13, 1915.
Leucocytes	6,200	8,400
Polynuclears	59 per cent.	62 per cent.
Lymphocytes	31 per cent.	32 per cent.
Large Mononuclears	8 per cent.	4 per cent.
Eosinophiles	.....	2 per cent.
Basophiles	2 per cent.	.....
Hemoglobin	53 per cent.	80 per cent.
Red blood cells	3,860,000	4,820,000
Platelets	many	.....

A tentative diagnosis of a cord tumor was made and the operation performed by Dr. Stewart on Dec. 28, 1915. The cord was exposed between the seventh and second cervical vertebra. Cord appeared normal and no tumor was found. Her respiration, which became shallow and labored before the operation, improved somewhat after, but the general condition was unchanged and she expired on March 5, 1916.

Postmortem Examination (Dr. Douglas Symmers).—The meninges covering the cervical enlargement of the cord for a distance of about 3½ cm. are thickened, especially on the posterior aspect. The thickening is largely confined to the leptomeninges and sometimes reaches 3 mm. in depth. Microscopic examination of the leptomeninges of the cervical region reveals great thickening due to the overgrowth of fibrillar connective tissue and to the presence of hyaline material. Embedded in the thickened meninges are large numbers of markedly distended, thin walled blood vessels, each of which is encircled by a thick layer of round cells. In occasional instances the vessel wall is thickened and in at least one instance the vessel shows the lesions incident to a well marked end-arteritis obliterans. The meninges lying between the distended vessels are richly infiltrated by small round cells of the lymphocytic type. The meningeal prolongations into the cord are marked by the presence of enormous numbers of small round cells of the lymphocytic type, and many of the smaller vessels in the substance of the cord itself show circumferential cellular infiltration.

Microscopic examination of a posterior root ganglion removed from the upper cervical region shows the following changes: At one point the periphery of the ganglion for a considerable distance shows the presence of overgrowth of fibrillar connective tissue, some of which has undergone hyaline transformation. The tissue for the most part is richly cellular, the cells being partly of the type of fibroblasts and partly of the type of small round cells of the lymphocytic variety. The substance of the ganglion itself shows scattered areas of hyalinisation, small areas of necrosis, and foci composed of finely granular, pinkish staining substance in which rounded or cylindrical nuclei are to be made out. Many of the vessels embedded in the substance of the ganglion are thickened and some show the typical changes of endarteritis obliterans. At one point in the substance of the ganglion there is a focus made up for the greater part of small round cells with a sprinkling of epithelioid cells, and in the center is what appears to be a typical Langhans' giant cell.

Microscopic examination of the nerve fibers proceeding from the posterior root ganglion shows the presence of enormous numbers of small round cells lying in the perineurium as well as in the connective tissue septa between the individual nerve fibrils. The blood vessels in the perineurium are markedly distended, and all of them show a mantling of lymphocytes.

Microscopic examination of the smaller vessels at the base of the brain shows the presence of widespread

hyaline transformation of the adventitia. The adventitia is diffusely and more or less abundantly infiltrated by small round cells. The muscle layer is apparently well preserved. The hyaline lamina is noticeably thickened, and the sub-endothelial connective tissues are irregularly but markedly sclerotic.

Histological diagnosis: Syphilis of the meninges and of the posterior root ganglia of the cervical cord.

CASE II.—John F., 52 years, elevator man, Irish. Family history negative. *Personal history:* Had gonorrhea thirty-five years ago, denies a chancre, was alcoholic, is an inveterate smoker. Otherwise denies having ever been ill. *Present illness:* Four years ago had shooting pains in his limbs and a beginning weakness in the lower extremities. This condition became progressively worse until three years ago, when he became partially paretic. At present he has no pain and his paresis has markedly improved.

Physical examination: The pupils are equal but irregular, they react very sluggishly to light and well to accommodation. The ocular fundi are normal. Abdominal reflexes are absent, knee jerks and achilles reflexes are exaggerated. Ankle clonus present on both sides but no Babinski. *Sensory disturbances:* There is an area of marked hyperaesthesia around the body about four inches in diameter corresponding to lines between the lower border of the ribs and the crests of the ilia, the anterior and posterior aspects of the parts below this line and the lower extremities are hypæsthetic. No ataxia of the upper extremities, but sways considerably with eyes closed. The Wassermann reaction of the blood serum and spinal fluid is negative. The spinal fluid contains one cell to a cm., globulin reaction is negative, reduction test normal. *This seems to be a case of combined sclerosis.*

CASE III.—*Cerebrospinal syphilis simulating multiple sclerosis.* Henry K., æt. 23 years, salesman, American born of Russian parents. Family history negative. *Personal history:* Denies venereal disease, alcohol and tobacco. Was operated for trachoma ten years ago; had a hydrocele of his testicles. Otherwise negative.

Present illness—Seven years ago his vision began to be blurred. He did not pay much attention to this eye defect until he developed a diplopia a year later, when he consulted Dr. Weeks. Four years ago his speech became slow and somewhat scanning and at times stuttering. In June, 1913, the Wassermann of his blood was strongly positive and he received five salversan injections intravenously in intervals of five days followed by inunctions of mercury. After the last injection he developed an intention tremor in his hands which soon became very active and ataxic, so much so that he was unable to even hold a pencil or other objects and had to be fed.

In March, 1914, Dr. J. E. Weeks referred him to me with a diagnosis of a double optic atrophy following a neuritis. His Wassermann of the blood and spinal fluid at this time was negative; there were six cells to the cmm. of the fluid all lymphocytes, globulin normal and reduction test normal. He still had a diplopia with a paralysis of the right external rectus of the eye and lateral nystagmus. The pupils were unequal and sluggish to light. His gait was of the spastic-paretic type. The abdominal reflexes were absent, the cremasters present, the patellar and achilles reflexes markedly exaggerated, ankle clonus present on both sides, extension toe reflex to the Oppenheim method on right side only, no Babinski on either side. A few months after this examination the Babinski reflex appeared on both sides. The Wassermann of the blood remained negative up till to-day. The optic atrophy in the right eye is complete now and seems to be at a standstill in the left. His visual field in the left eye is concentrically diminished. During the time under our observation he has received injections of a soluble salt of mercury for a year alternately with iron arsenate. During the rest of the time no treatment whatever.

His tremor has since then completely disappeared, his speech has improved and there is no diplopia. His gait is fairly good. He is employed for the last six months as a clerk and writes as well as ever.

46 EAST FIFTY-SECOND STREET.

Rice Water.—To make rice water, which is serviceable in diarrhea and vomiting, especially of children and also as a drink in febrile diseases, boil one ounce of washed rice in a quart of water for an hour, strain through muslin, and flavor with honey and lemon juice.

MEDICAL TREATMENT OF GASTRIC AND DUODENAL ULCER.*

BY FENTON B. TURCK, M.D.,

NEW YORK

ALL cases of ulcer of the stomach and duodenum are primarily cases for the internist. Their symptomatology has been widely discussed by surgeons, largely with a view to the indications for operative procedure, while the role of the internist has not received the recognition it deserves. Even in such cases as seem to demand surgical relief, preliminary treatment, except in emergencies, is a most valuable and necessary factor in the problem. Again, after the surgical indications have been met, a prolonged after treatment by the internist is a vital necessity and fortunately is recognized as such and recommended by the modern surgeon. Moreover, there is a wealth of clinical experience which goes to show that many cases of gastric and duodenal ulcer yield to scientific and painstaking medical treatment with apparently complete restoration of digestive function, and it is such cases that compare very favorably with the statistics of surgical procedure, where temporary relief is followed so often by recurrence of symptoms.

It goes without saying that the prime requisite for any course of treatment is a convincing diagnosis, and this is not always a simple matter in the early stages of peptic ulcer.

Petren regards the following symptoms as cardinal: (1) *Periodicity,* in the course of the affection, *i.e.* periods free of illness several times as long as those in which typical symptoms are manifest. (2) *Distress,* attending food ingestion. (3) *Vomiting,* almost invariably followed by abatement of distress. (4) *Tender points* behind and lateral to vetrebral column. (5) *Intestinal hemorrhage.* (6) *Hyperchlorhydria.* (7) *Constipation,* or rather absence of diarrhea.

These make up a syndrome, entirely characteristic, but the stage of the ulcerative process and the personal equation of the patient may considerably modify the clinical picture.

Eusterman[2] of the Mayo Clinic, in an analysis of 2,400 cases of gastric and duodenal ulcer that have come to operation and the diagnosis thus verified, has found that "the diagnosis of uncomplicated peptic ulcer was made in 80 per cent. of the cases." He says, "The complex of chronicity and periodicity of attacks in which pain and distress and the usual association of symptoms, repeated uniformly day by day during the attacks and having a fairly definite relation to food intake and control, is of primary importance in the diagnosis." "The remaining 20 per cent. of the cases presented many difficulties to the diagnostician."

Naturally no practitioner would neglect the obvious laboratory tests for the determination of the degree of acidity and amount of retention of the stomach contents, the presence or absence of occult blood in the stools, etc., etc., and modern radiography may contribute to the diagnosis, although all agree that it has its limitations. But what is most fervently to be desired is an attitude of mind which will recognize the importance of rational and continued treatment of the gastro-intestinal tract in such cases as show a frank disorder but without positive diagnosis of ulcer. Such

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cases promise exceedingly well; unfortunately it is not the rule but the exception for cases of ulcer to seek professional advice in their earliest stages.

On the other hand it must be remembered that not a few cases are rushed to operation on the suspicion of an ulcer, in which no ulcer is found on laparotomy, even after a suggestive history and in spite of apparent radiographic findings. In this connection Cole[3] recently followed up 33 cases to the operating table. Twenty-one cases were symptomatically diagnosed ulcer of the stomach, and no ulcer could be demonstrated at the operation. The other eleven cases were of spasm of the pyloris and other functional disorders. Certainly, such cases are not the province of the surgeon. Whether or not we acknowledge a "pre-ulceration stage" of the same gastric disorder, the weight of argument is entirely for systematic medical treatment at the earliest possible moment. Joslin,[4] from the study of a large series of cases, found that on the average they did not come into the hands of the internist until they had suffered from the disease at least six years and that they did not reach the surgeon until the disease had been present ten years. This suggests the need of a campaign of education which shall serve to focus the attention of the practitioner on the earliest recognizable symptoms of peptic ulcer. The lay mind, too, should be taught that indigestion that does not yield to ordinary dietetic care and hygienic measures, requires the attention of one specially skilled in the treatment of these digestive disturbances which, if neglected, may lead to chronic ulceration and even carcinoma. It may be that the vagueness of ideas as to the etiology of gastric and duodenal ulcer has been responsible for the conflict of opinions as regards their treatment. There remains very much yet to be determined in regard to the production of ulcers in the stomach and duodenum, but it is no longer safe to consider such lesions as purely local in their causation and in their systemic influence. Since the demonstration ten years ago by the author[4] of peptic ulcer induced in dogs by continued feeding of bouillon cultures of *Bacillus coli communis*, a basis has existed for the consideration of ulcer as a result of long exposure of the individual to the effects of intestinal flora multiplying in conditions favorable to their continued virulence and at the same time conditions which gradually break down the normal resistance of the system to a toxic invasion, which is in no sense inflammatory and by no means an infection. All factors which may render the tissues more vulnerable come into play as contributory causes for the production of ulcer on this hypothesis. Faulty or low grade metabolism, nervous exhaustion, insufficient nutrition or the opposite extreme of over-feeding with accummulations of waste products, stasis, distention and atony of the wall of the intestinal tract, all seem to predispose to the gradual yielding of the natural protective antiferments of the gastric and duodenal mucosa with the possibility of an autolysis.

In a contribution in 1914, the author[5] was able to demonstrate that bacteria diffusing into the intestinal wall are unchanged until they permeate to the areolar zone lying just beneath the muscularis mucosæ, where they are at once killed and disintegrated. This normally protective power of the so-called zona transformans is, under abnormal conditions, very much impaired; shock, obstruction, venous stasis, atony, and overfeeding being among the causes operating to lower the bacteriolytic function of this portion of the intestinal wall.

These findings are highly significant for the solution of the riddle that peptic ulcer has always been to the scientific mind. There would seem to be confirmatory evidence in clinical experience for this concept of the etiology of gastric and duodenal ulcer, in the marked improvement and ultimate recovery of cases where treatment was directed largely toward a readjustment to normal of the gastrointestinal tract as a whole, with special reference to relief of congestion and atony of the colon, and a reduction of the intestinal flora and retardation of their growth.

The results of operative procedure on the other hand are open to discussion and even criticism by competent authorities.

Kuttner[6] performs resection in every case of tumor-forming callous ulcer, as he is convinced that this ulcer is in reality of cancerous nature, but the development of other forms into cancer does not occur in his opinion. He adds that gastroenterostomy must be attended by mechanical stenosis to be efficient. Faulhaber and von Redwitz[7] state that mere gastroenterostomy is followed by various complications. Mayo[8] explains that where the pylorus is open much of the food passes out through the pylorus instead of through the gastrojejunostomy opening. Hamburger and Leach,[9] after careful research, explain these operative failures. They show that if the pylorus is left patent, a vicious circle is set up; stasis in duodenum, spasm, or secondary contraction of the opening, are liable to continue the abnormal gastric function or to increase it. This is corroborated by Martin and Carroll[10] who find that roentgenographical examination in man as well as in animals shows that "a patent pylorus continues to functionate in the presence of a patent stoma." E. von Herczel Pester strongly criticises the operative procedures employed in gastric and duodenal ulcers and materially disagrees with both English and American surgeons. His criticism confirms the suspicions previously aroused by Zweig[11] that these failures "stand in marked contrast to the rosy reports from surgical clinics." Rodman[12] expresses the regret that "while patients make operative recoveries they are not cured." Moynihan[13] says: "If the ulcer is small its scar may be inconspicuous and offer little or no obstacle to the easy escape of food. The pylorus then again transmits all or much of the food; the ulcer subjected to renewed irritation breaks down and the symptoms are repeated. The last state of the patient is the same as the first."

M. Leriche's statement[14] of eight years ago that statistics do not tell us whether gastroenterostomy is or is not the treatment of choice in chronic ulcers can be answered by the general advice given by Connell.[15] "I would emphasize the necessity of awaiting remote results before drawing conclusions, as the immediate result is invariably most encouraging and relapse far from uncommon." Cases reported after several operations—"temporary improvement, then return of original complaint."

It seems evident that the error that has been made in the surgery of ulcer is that more attention has been paid to the morphology than to the etiology of the condition, it being generally attributed to local arterial thrombosis or sclerosis. This idea originated with Virchow but has never been established. Brun[16] states that the failures to relieve symptoms when surgery was confined to the operations on the stomach resulted in the adoption of

Lane's methods of excision of the colon or ileosigmoidostomy, with a considerable following in England and in this country. Experience has shown, however, that operative procedures for the correction of intestinal stasis are attended with a high mortality, a realization which has somewhat halted the enthusiasm in this country, especially since it is becoming more evident that far less drastic measures can be employed with success.

The United States ought to be able to give the best résumé on the value of surgical operation in all forms of peptic ulcer, for there seems to have been no hindrance to the operative attempts to cure ulcer of every form. Indeed, operative procedures for the relief of ulcer have assumed almost a national passion in which the internist has acquiesced because of the inadequency of the usual methods to obtain curative results. Because of medical failure we should not cast the responsibility on the surgeon, who, only too often, adds a surgical failure. In 1906 the late Nicholas Senn, Dean of American Surgeons, in a manuscript communication now in my possession, did not hestitate to crystallize definitely the results of his experience. "I regard ulcer of the stomach," he writes, "a strictly medical disease and treat it as such. The only indications for surgical interference are obstructions from cicatricial contraction and dangerous hemorrhage. I look upon gastroenterostomy in all other cases or any other surgical procedure as irrational treatment and one that is liable to be followed by grave remote disturbances of digestion by making a physiological exclusion of the most important part of the intestinal canal and by establishing an abnormal opening between the stomach and the intestinal canal."

Ten years have passed in which surgical endeavor has had its greatest vogue. And now the pendulum swings back again and the words of Senn are echoed by Sir John Bland Sutton.[17] In his Hunterian lecture in February of this year, he observes that "since the treatment of duodenal ulcer passed into the province of surgery it has become the routine practice to perform gastroenterostomy." He protests that "this procedure is inefficient with a patent pylorus, for the chyme ignores the new stoma as the x-rays readily demonstrate. Again, if the pylorus is obstructed, the chyme passes directly into the jejunum, where a remarkable transformation occurs. The wall of the jejunum receiving the impact of the chyme ejected through the new stoma becomes attenuated, the valvulæ disappear and the jejunal walls assume the peculiarities of the supra ampullary segment of the duodenum. This change entails the liability to jejunal ulceration so commonly found; thus a new ulcer has been evolved in this generation by alterations in the environment of the jejunum brought about by surgery." As we have shown, the evidences are fast accumulating, and give weight to the statement that operation should be reserved for those cases in which it is clearly indicated because of mechanical obstructions, not functional resistance. The cure of ulcer remains a biological or physiological problem.

To the clinician the cure is a very practical problem as well; acute symptoms are to be alleviated, the bodily strength is to be maintained and eventually the digestive function is to be restored to normal. It is unfortunate that the medical treatment of ulcer has largely been a matter of a routine, not merely because the healer should adapt his procedures to the daily progress of the patient, but because many of the routine diets are both theoretically faulty and clinically unsatisfactory. The common procedure, for example, is to institute, after a short period of fasting, a diet of *cold milk* and *eggs* in small quantities every hour. These amounts are gradually increased with the addition, during the second week, of *sugar, rice, scraped beef, raw ham* and *butter* as advocated by Lenhartz.

To this my experience bids me take exception on several points. Firstly, I oppose frequent feedings with the system of the one- and two-meal day, for it has been found that small quantities in an atonic stomach remain nearly as long as larger amounts, while at each taking of food fresh stimulus to the flow of HCl is induced. Again the addition of food to a stomach which may already contain partially digested material is certainly nonphysiological. With the two-meal system the caloric need of the body is better satisfied and incidentally the patient's appetite and general comfort is spared the insult of an interminable series of feedings.

As regards the food given, I have felt that eggs are not well borne, from their tendency to putrefy in the intestine just at the time when it is most desirable to maintain adequate function of the colon. Among the split products of lecithin are highly toxic cholin and neurine, to which many patients seem to be very susceptible. Milk, as a dietary basis, does not enter my scheme of treatment; its clotting in the acid stomach delays emptying, while the casein serves too readily for pabulum to the intestinal flora. When peptonized it is unpalatable in the extreme and indeed patients, in most cases, rapidly develop a repugnance for milk in any form when pushed to the extent necessary to give even a moderate share of the caloric requirement. Furthermore a milk diet contains a quite unnecessary excess of fluid and is frequently followed by a distressing amount of gas in the intestine with abdominal distension.

To make my position clear, I propose to outline a method of treatment capable of broad adaptation to the mildness or severity of the individual case, yet concrete and definitive enough to illustrate my principles and my purpose.

It will now be desirable to give in some detail the means employed in this method of treatment with a discussion of the scientific basis and practical aim of each. Rest in bed is required for the first two weeks and advised for the third. There is a preliminary period of three days fast during which small amounts of water may be allowed. On the fourth day a single meal of about 800 c.c. of corn starch gruel is allowed; following this the patient is given two meals a day with gradually increasing amounts of rice, steamed vegetables, and hydrolyzed meat. Naturally the diet must be adapted to each case and changed to suit the symptoms which may come out under treatment. When meat is allowed early in the second week, the extractives must first be removed by soaking the ground meat in cold water for 12 hours, then by pressing out the juice and discarding it.

The indication for this removal of meat extractives is the gastric hyperchlorhydria, for it has been demonstrated that their presence has a definitely stimulating effect on acid production. The meat pulp that remains is placed in boiling water and steamed for one or two hours until the connective tissue is hydrolyzed to gelatine, the larger part of extractives removed and the stearin fat, so difficult of digestion, is driven off. This process leaves

a meat residue of rich protein value (50 per cent.), very digestible and of high acid binding power; it is rapidly absorbed leaving no protein residue to augment bacterial growth in the intestines. Vegetables, similarly, should be steamed for two or three hours, to render them demulcent to the stomach and lessen the tendency to intestinal fermentation. When so treated, vegetables do not lose their alkaline properties nor their caloric value as when boiled; and aside from their nutrient value act as a colloidal paste on the mucosa of the gastro-intestinal tract.

OUTLINE OF TREATMENT

DIET	TREATMENT
Week.	
1. 1 day 2 day 3 day } *Fasting. Rest in bed.* Analgesic emulsion before feeding.	Aspiration of gastric fluid 1 hr. each day. Filter washed with $NaHCO_3$. Alkaline powder 3¼ when required with water.
4 day 5 day 6 day } 1 meal 800 cc corn-starch gruel to be sipped in one hour after morning lavage.	Lavage with Ag No_3 1:10,000 left in 1½ minutes. Washed with green soap. Alternate days. Colon stimulation with pneumatics. Alternate days.
7 day 2 meals of rice, steamed vegetables and mashed potatoes.	
Week.	
2. *Rest in bed.* Two meals a day of rice custard, mashed potatoes. *Vegetables* steamed 3 hrs. under pressure, hydrolyzed to paste.	Aspiration every day. Colon stimulation. Alternate days. Lavage with Ag NO_3 1:2000 (500 c.c.) for 1½ minutes. Alternate days. Alkaline powder when required.
Meat (small amounts) chopped fine and extracted in cold water for 12 hrs., steamed to hydrolyze connective tissue and remove extractives, also to drive off stearin fat. Minimum of milk and eggs. Sugar allowed. Keep up calories.	
Week.	
3 & 4 *Rest*, not necessarily in bed. Increase food amounts gradually, still insisting on hydrolyzed meat and vegetables.	$AgNO_3$ lavage and colon stimulation only at intervals. Vaccines of *B. coli communis*. Autogenous, sensitized to patients' serum. Start with 50 million, watch reaction, increase doses every 6 days.
Week.	
5. Get out into sun and open air. Stimulate interest and appetite.	Iron and iodides if needed. Gastric exercise by double tube insufflation of hot moist air with aromatics, and Hot water intragastric bag 115 deg. x 800 c.c. Thyroid gr. ¼ three times a day. Pituitrin if indicated. Colon stimulation twice a week.

Drainage.—Among the non-surgical procedures, which, in the experience of the writer, have been found helpful in dealing with gastric and duodenal ulcer, is continuous drainage, from the stomach by the use of a tube filter which I devised and used since 1894. The filter is a gold plated metal bulb attached to the end of a rubber tube of small caliber which passes through the mouth into the stomach and is left there for an hour or more, thus draining the excessive acids and toxins from the stomach. As I stated, when I first published this method,[18] this stomach tube filter is "for the purpose of withdrawing fluid contents from the stomach in cases of hypersecretion, allowing the solid food to remain behind. By removing the excess of fluid that accumulates in the stomach and the toxins which are in solution it permits the digestion to continue and obviates the necessity of removing the solid food which is so essential to nutrition. For the purpose of withdrawing the fluid through the filter by suction an exhaust pump is used; or the outer end of the tube may be inserted into a vacuum bottle which exerts a continuous suction. At the same time the fine openings in the bulb of the stomach tube filter prevent aspiration and injury to the mucous membrane, something which will always occur with the plain stomach tube without the filter bulb; furthermore, unless the tip is well weighted, the end of the tube will not sink into the fluid at the bottom of the stomach." The tube may even be passed through the nose after cocaining the nasal tract. The patient soon becomes used to its presence and it is not so objectionable as when passed through the mouth. The relief is so great that the patient prefers its use.

This drainage not only relieves the stomach from liquid contents of the hypersecretion, but so lessens the degree of the hyperacidity that spasm of the pylorus is reduced, and the food particles more readily escape into the intestine. The daily removal of the fluid load also relieves the stretching and atony of the stomach wall.

A similar bulb of small caliber and open end may be passed through the pylorus into the duodenum. As I showed in 1895, being I believe the first to make this demonstration, we may thus furnish nutrition fluid directly to the intestine, giving complete rest to the ulcerated stomach area.

If the stomach findings indicate gastritis with continuous acidity, local treatment is required.

The use of alkalies and the fixation of stomach acid by albumin will not permanently reduce the hyperacidity, but indeed may increase it. On account of the tendency of ordinary lavage to increase atony of the stomach, its use is limited. It is my custom to begin this course of treatment with a few cleansings of the stomach and then to proceed along other lines. Gastric lavage with silver nitrate is very helpful in cases of ulcer with high acidity.

The first effect of the silver nitrate on the stomach is a superficial coagulation of the surface; the dead epithelium, débris, and mucus are washed away with the lavage water. An intense hyperemia then follows, but the end result is a normal circulation of the stomach. The venous congestion is reduced and fresh arterial blood and lymph course through muscle and glands, with a resultant stimulation of new antibodies. In this procedure some albuminate of silver is formed and carried down into the duodenum, causing an intense hyperemia of the mural structures. The common duct is narrowed and the liver becomes engorged, percussion sometimes showing an increase of one inch in liver dulness. In three to twelve hours a reaction takes place, the duct opens wider, and the retained secretions flow out in abundance. Their alkaline reaction influences the pylorus so that the stomach can empty itself; the acid contents of the bowels are neutralized, and intestinal digestion is assisted; constipation is relieved; the stool may even be loose for a time. One or two applications of the silver nitrate lavage may start the patient permanently in the right direction; it should not be repeated more often than every other day, and should always be given to a fasting stomach, never when food is present. The strong solution should be used for a short time, and the treatment then continued with a weaker one. Soap lavage is also useful in hyperchlorhydria, increasing the circulation and stimulating the glands to fresh secretions. By adding oil of cloves, oil of cinnamon, and menthol, the douching solution may be rendered slightly antiseptic. A 5 per

cent. slippery elm infusion makes a useful demulcent lavage.

Intragastric Hyperemia.—Januschke,[19] in the treatment of stomach ulcer and related conditions states that hyperemia produced by heat decreases irritation, quiets pain, and exercises a curative effect in the diseased tissues. The most brilliant and prompt results possible to obtain are secured by the application of heat within the stomach by a unique but simple method devised by me many years ago.[20] A thin rubber bag is carefully tied to the end of a long stomach tube (preferably the double recurrent tube) and introduced into the stomach. The thin rubber does not materially enlarge the tube. Water at a temperature of 110°F. is allowed to run into the bag within the stomach until the patient becomes sensible of the pressure. At the end of two or three minutes the water is returned and a new supply is introduced and the process repeated. The temperature may be increased according to conditions, as high as 118° F., which insures prompt hyperemia of the splanchnic vessels, and reduces venous stasis. The patient for comfort may remain in a reclining position during the treatment. By this means we obtain a gentle passive exercise for the gastric muscles with the immediate application of heat; as a result the pain disappears, the pylorus relaxes its spasm and a great advance has been made toward the healing of the ulcer.

My experiments and clinical observations lead me to the conclusion that peptic ulcer is intimately related to intestinal disorder and abnormal function. This is the conclusion of most operators throughout the world after a careful analysis of all factors that have been presented. Those who hold that it is the result of local infection or localized infection from the blood still regard the intestinal stasis as providing conditions that allow ulcers to form that otherwise would not. The treatment of the intestinal stasis by operative procedures has resulted, it is claimed, in many cures. After failure by surgical operations on the stomach or duodenum, many cases are reported by Lane, Jordan, and other operators, of successful results by Lane's methods for the cure of intestinal stasis. But prompt, effectual and permanent improvement is obtained by a treatment of the colon which I have mentioned on previous occasions.[21] [22] The intermittent introduction of hot water alternating with air, excites peristalsis, relieves atony, and reduces venous stasis as well as cleansing the cecum and ascending colon." While some prefer to place the patient in a lateral position, I find that by elevating the hips to a considerable height, the dorsal position can be employed with advantage and I have, therefore, constructed a special table adapted to my purpose; by means of this table the patient can be raised to any angle desired.

To avoid the evil effects of over-distension with water, it has been my custom for many years to allow only a small quantity of fluid to enter the bowel at one time—100 to 300 c.c., then disconnecting the reservoir, this fluid is allowed to escape through the tube, as in lavage of the stomach. By increasing the temperature (110°, 115° 120° F.), according to the condition, a high degree of stimulation is obtained. Repeating this process produces a form of exercise for the colon. In weakened and atonic conditions, the water used, even in the careful manner described, is not all recovered, but remains partly in the bowel; this results in fatigue and tends to increase the atony. By inflating the bowel with air and pressing upon the abdomen, the air is forced out. Repeating this a few times induces peristalsis, which drives the water and fecal matter through the tube out of the bowel. By connecting the tube with a Politzer bulb and alternately compressing the bulb and releasing the pressure, the entire column of air as far as the cecum is set in vibratory motion; this stimulates peristalsis, and brings about a condition of healthy tone in the muscle wall of the colon.

In repeating the indications for treatment emphasis must be placed in directing this treatment to the local and general condition simultaneously, and nothing should be neglected which lends itself to this end. In 1908 I called attention to the importance of inoculation with autogenous intestinal vaccines sensitized by the sera of the patient. At that time I said, "So far the most practical results have been obtained by the injection of dead bacilli." Now I have found, in addition, after certain reaction with the patient's serum, that sensitized *group* vaccines can be more advantageously administered.

The value of injection of diphtheria antitoxins which I previously suggested has been shown to be due to the horse serum itself, and its effect in checking hemorrhage. The use of human serum may have value in obdurate cases of peptic ulcer as contributing antebodies which the ulcer status so markedly lacks. This phase of the problem is so intricate that we can do little more than feel our way in the light of a few guiding principles.

Veeder,[23] Schmidt,[24] Flesch,[25] and Cheinisse[26] show that ulcer so common before the first year in infancy is due to lack of immunity and the immunity is acquired later as the child develops. Stoerck[27] shows that in status lymphaticus this immunity fails to develop as the child grows, and ulcer then continues to form. In producing ulcer by experimental means the reduction of this general resistance is sought by various methods before attempting the local trauma or infection to produce the ulcer. Injection into blood with pyrogallic acid, pyroin, tetrahydro B.-naphthalene, marked venous congestion, repeated hemorrhages, subjecting animals to unsanitary conditions, are all intended to reduce the normal degree of immunity before attempting to induce ulcer. Accordingly we should bear in mind that no pains should be spared to restore as far as possible the normal resistance of the organism to the subtle action and reaction of the underlying toxemia.

Blood transfusion, now utilized only in cases of anemia and hemorrhage, may be practised in the future with this aim of arming the weakened bodily fluids with vigorous protective elements.

It is not infrequent that a general metabolic deficiency is in the background of this condition of lowered resistance. In many cases I have observed a distinct advantage in the use of thyroid gland beginning with doses of a quarter of a grain twice a day which may be gradually increased with careful reference to the effect upon the patient. The dried pituitary to-day has served as a corrective to the thyroid and seems to contribute to general intestinal tone.

Drugs.—The use of drugs for their *palliative* effect has been considered a makeshift and of but little scientific interest. Since ulcer is regarded by surgeons as a process kept in activity by gastric

secretions, a new value has been added to that class of drugs that restrict the production and irritating effects of the gastric juice. Hence atropine, as it controls hypersecretion, is useful. "It breaks into the vicious circle by giving rest to the ulcer, thus aiding its healing." Westphal and Kasch,[28] Bergmann[29] recommends 0.001 to 0.004 grams daily dosage continued for a long time. Januschke[19] shows that atropine stops spasm while anesthesin will lessen the pain, and papaverine will save the mucous membrane from irritation, giving the ulcer an opportunity for healing. Bismuth has been used successfully for years, especially by the older practitioners, for *local* effect. Insoluble colloids exert a still further advantage; they remove the bacteria from the mucous membrane by mechanical adsorption. I have called attention to the manner in which bacteria colonize on the surface and pass up between the glands. The removal of these microorganisms can be accomplished by various colloid and insoluble demulcents. I have used and recommended bran, slippery elm, Irish moss, or bismuth, for many years, to remove these bacteria and to inhibit their growth upon the surface of the mucous membrane. Hektoen[30] finds that kaolin has this same property of removing bacteria by adsorption and is of service in a wide field of mucous membrane infections since it will inhibit bacterial growth in the intestines, and will act as the other colloids mentioned in preventing the passage of bacteria or their toxins into the tissues. Ordinary antiseptics as formerly used have been found of no practical value. For the relief of the outstanding symptoms of gastric distress in ulcer, mixed alkalis with analgesics have proved to be a reliable resource, especially when administered before the hour of feeding.

In conclusion, I may say that the treatment of gastric and duodenal ulcer by the means and method that I have very briefly reviewed is the result of painstaking care and observation of many cases. If it were not for the gratifying results of the application of these principles, results oftentimes achieved to my own surprise in cases for which operation had been considered imperative, I should not urge so strongly the need, opportunity and hopeful prognosis of the medical treatment of ulcer of the stomach and duodenum.

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14 EAST FIFTY-THIRD STREET.

FERMENTED MILK IN INFANT FEEDING;

A FURTHER STUDY.

BY ALBERT E. MUCKLOW, M.D.,

BROOKLYN, N. Y.

SINCE completing a previous article[1] a persistent effort has been put forth to make the method there described more exact.

Fermented milk and whey[2] mixtures were tried for a year in a series of cases. The results, while excellent, were no better than those obtained from fermented milk and water mixtures and the added expense and labor in preparing the former made them impractical in many cases; hence, they were discontinued.

The method described in the first article,[1] with the refinements presented herewith, is exact, easily executed, and adaptable to all conditions with a minimum of mental effort.

The flexibility of the accompanying formulas, whereby the percentage of fat, proteins, or sugar may be increased or diminished individually or collectively, is shown herewith.

Formula No. 1—Proteins 1.00 per cent; sugar 7.50 per cent; fat { 2.50 per cent / 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 2—Proteins 0.50 per cent; sugar 7.50 per cent; fat { 2.50 per cent / 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 3—Proteins 1.00 per cent; sugar 7.50 per cent; fat { 2.50 per cent / 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 4—Proteins 1.50 per cent; sugar 7.50 per cent; fat { 2.50 per cent / 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 5—Proteins 1.40 per cent; sugar 7.50 per cent; fat..... { 2.50 per cent / 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 6—Proteins 1.60 per cent; sugar 7.50 per cent; fat { 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 7—Proteins 1.80 per cent; sugar 7.50 per cent; fat { 3.50 per cent / 4.50 per cent / 5.50 per cent

Formula No. 8—Proteins 2.00 per cent; sugar 7.50 per cent; fat..... { 4.50 per cent / 5.50 per cent

The formulas are based upon the analyses of cow's milk formerly reported;[1] upon the fact that 0.69 per cent. of the sugar content of milk is lost during fermentation; and upon the knowledge that the richness of a bottle full of milk that has been bottled immediately after milking and undisturbed after bottling, can be determined by the depth of its cream layer.[1]

The ideal formula to insure proper nutrition and growth is one containing 5.50 per cent. of fat,[2] 7.50 per cent. of sugar,[3] and a percentage of proteins varying from 0.60 per cent. at birth to 2.00 per cent. at twelve months.

The percentage of fat should be reduced in the presence of any of the following: Persistent vomiting. Soap stools[4] (putty stools). These consist of soaps of calcium and magnesium. Fat stools.[4] These contain a large amount of free fat and are visibly oily.

Under any of these conditions the fat should be temporarily reduced to 4.50 per cent., 3.50 per cent., or in very feeble infants, to even 2.50 per cent., the subsequent return to the higher percentages being as prompt as possible on account of the value of the butter fat *per se*, and the "vitamins"[5][6] associated with it.

The proteins should be increased with sufficient rapidity to insure a weekly gain of 6 to 8 ounces.

Malt sugar should be used in raising the sugar content of the formulas to the desired percentage. It is the most readily assimilated[7] of all the sugars. By its use the fermentative disorders caused by commercial lactose, or cane sugar, are avoided, with a consequent better absorption of the fat.[4] A convenient form of malt sugar is a malt extract in which 1 ounce by volume contains 1 ounce by weight of combined maltose and dextrin.

To facilitate the construction of the formulas and to simplify their description, larger amounts of the several ingredients than are needed in practice have been given in some of the tables. They may be proportionately reduced for everyday use.

The addition of bicarbonate of soda to the fermented milk to decrease the acidity, and thereby make it more palatable, has been discontinued. The milk is sufficiently palatable without it, and the greater acidity is desirable, being more antagonistic to pathogenic bacteria. The germicidal effect of lactic acid in milk has been emphasized by Heinemann[8] of the Department of Bacteriology and Hygiene at the University of Chicago.

The ideal temperature for fermenting the milk has been found to be 98° Fahr., in which temperature a sufficient amount of lactic acid to destroy harmful bacteria is most speedily produced.

The armamentarium has been increased, consisting in its entirety of the following: The fermenter described in the previous article,[1] lamp, two thermometers, one for the fermenter and one for the water bath used in warming the feedings, Kreamer No. 8 wash boiler in which to sterilize the utensils, large-sized enameled skimmer to remove small articles from the boiler after sterilization, Chapin 1-ounce cream dipper, fine-meshed strainer, six 1-quart lightning preserve jars with rubber washers, two 1-pint glass tumblers, two 3½-quart enameled pitchers, two enameled pans, one to be used as a sterile receptacle for the small utensils while preparing the mixtures, and the other to be kept filled with boiling water to quickly sterilize any article that may become contaminated while in use, and a No. 50½ Chatillons straight spring balance scales graduated in quarter pounds and weighing up to 30 pounds.

In estimating the depth of the cream layers, measurements as small as quarter dipperfuls have been found practical. Hence, the following has been adopted to secure greater accuracy in judging the richness of a given bottle full of milk:

4.00 Per Cent. Fat Milk	4.40 to 4.80 Per Cent. Fat Milk	5.20 to 5.60 Per Cent. Fat Milk
Cream layer, less than 5½ dipperfuls	Cream layer, 5½ to 6¼ dipperfuls	Cream layer, more than 6¼ dipperfuls

In preparing a formula in which whole milk is used the richness of the bottle full of milk from which the whole milk is to be taken should be first determined by dipping off the cream into a pitcher and noting the number of dipperfuls removed. Then proceed to prepare the formula as follows:

Pour the rest of the contents of the bottle into the same pitcher. Pour the entire amount back into the bottle. Again pour the contents of the bottle into the pitcher and back into the bottle; that is, four pourings in all to mix the milk thoroughly.[1]

Dip off into the empty pitcher——dipperfuls of this mixed milk.

Skim off the top——dipperfuls from another bottle full of milk that has not been disturbed and add these to the above milk in the pitcher.

Add either the contents of —— vials of the Bulgarian bacillus culture (add these every fourth day) or —— teaspoonfuls of the preceding day's fermented milk.

Pour the above into a preserve jar. Seal it and stand without disturbing in 90° to 100° (best 98°) Fahr. for twenty-four hours.

Rub the fermented milk through a fine meshed strainer, being sure to leave none on strainer.

Excepting every fourth day, take —— teaspoonfuls of this fermented milk and add them to the next milk to be fermented.

Add to the above fermented and strained milk — dipperfuls of cold water and — dipperfuls of malt extract.

Pour the completed mixture into one or more preserve jars. Seal them and immediately place them on ice.

In preparing a formula in which only top milk is used, the richness of the bottle full of milk from which the top milk is to be taken should be first determined as follows:

Dip off the top four dipperfuls into a pint tumbler. Dip off the fifth dipperful into a second pint tumbler. Dip off the sixth dipperful into a half-pint tumbler to avoid confusion. Dip off the seventh dipperful and retain it in the dipper. Note the number of dipperfuls of cream removed. The amount of top milk required in the formula should then be fermented as aforedescribed.

As a temporary expedient only while awaiting the fermentation of the first lot of milk in a given case or while traveling, the casein may be made digestible[9] by boiling the milk for five minutes in-

TABLE I—FORMULAS FOR VERY FEEBLE INFANTS.

Formula No.	Age	4.00 PER CENT. FAT MILK — CREAM LAYER, LESS THAN 5½ DIPPERFULS						4.40 TO 4.80 PER CENT. FAT MILK — CREAM LAYER, 5½ TO 6¼ DIPPERFULS						5.20 TO 5.60 PER CENT. FAT MILK — CREAM LAYER, MORE THAN 6¼ DIPPERFULS					
		oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.
1	1st 2 wks.	Top 4	7	1	1½	37	3½	Top 10	1	1	½	41¼	3¾	Top 10	2½	1	½	50¼	4½
2	2nd 2 wks.	Top 8	8	1	1½	37¼	3½	Top 10	7	2	1	45¼	4¼	Top 10	9	2	1	55¼	5¼
3	1-2 mos.	Top 12	10	2	1	37¼	3¾	Top 10	17	3	1½	52½	5½	Top 10	20	2	1	68¼	6½
4	2-4 mos.	Top 16	10	2	1	34¼	3¾	Top 10	34	3	1½	65	7	Top 16	24	3	1½	69¼	7¼
5	4-6 mos.	Top 16	28	3	1½	42¼	5¼	Top 16	47	4	2	70	8	Top 16	64	5	2½	112	12

COMPOSITION OF ABOVE FORMULAS

Fat 2.50% in each.
Proteins 0.60% in 1st, 0.80% in 2nd, 1.00% in 3rd, 1.20% in 4th, and 1.40% in 5th.
Sugar 7.50% in each.
Ash 0.12% in 1st, 0.16% in 2nd, 0.20% in 3rd, 0.24% in 4th, and 0.28% in 5th.

TABLE II—FORMULAS FOR FEEBLE INFANTS

Formula No.	Age	4.00 PER CENT. FAT MILK — CREAM LAYER, LESS THAN 5½ DIPPERFULS						4.40 TO 4.80 PER CENT. FAT MILK — CREAM LAYER, 5½ TO 6¼ DIPPERFULS						5.20 TO 5.60 PER CENT. FAT MILK — CREAM LAYER, MORE THAN 6¼ DIPPERFULS					
		oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.
1	1st 2 wks.	Top 6	1	1	½	32¼	2¾	Top 5	3	1	½	27½	2½	Top 5	3	1	½	31	2¾
2	2nd 2 wks.	Top 6	4	1	½	32¼	2¾	Top 5	6½	1	½	28¾	3	Top 5	6	1	½	32	3
3	1-2 mos.	Top 6	8	1	½	32¼	2¾	Top 5	11	1	½	29½	3½	Top 5	10¼	1	½	34	3¼
4	2-4 mos.	Top 6	13	2	1	30¾	3	Top 5	17½	2	1	30¾	3¾	Top 5	16½	2	1	37¼	3¾
5	4-6 mos.	Top 6	20	2	1	24	3	Top 5	25½	2	1	33¼	3¾	Top 5	25	2	1	41	4¼
6	6-8 mos.	Top 6	28	3	1½	24¾	3½	Top 5	39	3	1½	36¼	4¾	Top 5	40	3	1½	48	5½
7	8-10 mos.	Top 6	42	3	1½	26	4	Top 5	57½	4	2	41½	5½	Top 5	60½	5	2½	57½	7

COMPOSITION OF ABOVE FORMULAS

Fat 3.50% in each.
Proteins 0.60% in 1st, 0.80% in 2nd, 1.00% in 3rd, 1.20% in 4th, 1.40% in 5th, 1.60% in 6th, and 1.80% in 7th.
Sugar 7.50% in each.
Ash 0.12% in 1st, 0.16% in 2nd, 0.20% in 3rd, 0.24% in 4th, 0.28% in 5th, 0.33% in 6th, and 0.37% in 7th.

TABLE III—FORMULAS FOR MIDDLING INFANTS

Formula No.	Age	4.00 PER CENT. FAT MILK — CREAM LAYER, LESS THAN 5½ DIPPERFULS						4.40 TO 4.80 PER CENT. FAT MILK — CREAM LAYER, 5½ TO 6¼ DIPPERFULS						5.20 TO 5.60 PER CENT. FAT MILK — CREAM LAYER, MORE THAN 6¼ DIPPERFULS					
		oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk		oz. Water	oz. Malt Ext.
1	1st 2 wks.	Top 4	1½	1	½	16¼	1½	Top 5	1	1	½	17¼	1¾	Top 5	1	1	½	22	2
2	2nd 2 wks.	Top 4	4	1	½	16	1½	Top 5	3½	1	½	16¾	2	Top 5	3½	1	½	23¼	2¼
3	1-2 mos.	Top 4	6	1	½	15¾	1½	Top 5	6	1	½	16½	2	Top 5	6	1	½	23¼	2¼
4	2-4 mos.	Top 4	9	1	½	15¾	1½	Top 5	9	1	½	16¾	2¼	Top 5	9	1	½	23¼	2¼
5	4-6 mos.	Top 4	12	1	½	14¾	1½	Top 5	13½	2	1	16¾	2¼	Top 5	13½	2	1	24	2½
6	6-8 mos.	Top 4	16	2	1	14	2	Top 5	19	2	1	16¾	2½	Top 5	18½	2	1	24¼	2¾
7	8-10 mos.	Top 4	22	2	1	13¾	2	Top 5	25½	2	1	16¼	2¾	Top 5	25	2	1	25¼	3¼
8	10-12 mos.	Top 4	31	3	1½	12¾	2½	Top 5	34	3	1½	19	3	Top 5	35	3	1½	27	3½

COMPOSITION OF ABOVE FORMULAS

Fat 4.50% in each.
Proteins 0.60% in 1st, 0.80% in 2nd, 1.00% in 3rd, 1.20% in 4th, 1.40% in 5th, 1.60% in 6th, 1.80% in 7th, and 2.00% in 8th.
Sugar 7.50% in each.
Ash 0.12% in 1st, 0.16% in 2nd, 0.20% in 3rd, 0.24% in 4th, 0.28% in 5th, 0.33% in 6th, 0.37% in 7th, and 0.41% in 8th.

stead of fermenting it. However, other than raw milk should not be used for any protracted period. The danger of malnutrition from the use of heated milk, not only when sterilized, but even when pasteurized, is a real one. The study of infantile scurvy by Hess and Fish[10] has shown the danger of using pasteurized milk even when a temperature as low as 145° Fahr. is employed.

The following are imperative:

Use Certified Milk.

The bottles of milk, when received from the dealer, and the jars containing the completed mixture, should immediately be placed in the ice chamber of a refrigerator, either in the middle of the chamber, with a cake of ice on either side of and in contact with them, or what is better, but usually impractical, in a pail full of cracked ice. They should be kept in an upright position until needed.

TABLE IV—FORMULAS FOR ROBUST INFANTS

Formula No	Age	4.00 Per Cent. Fat Milk — Cream Layer, Less than 5½ Dipperfuls					4.41 to 4.80 Per Cent. Fat Milk — Cream Layer, 5½ to 6¼ Dipperfuls					5.20 to 5.60 Per Cent. Fat Milk — Cream Layer, More than 6¼ Dipperfuls				
		oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk	oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk	oz. Water	oz. Malt Ext.	oz. Top Milk	oz. Whole Milk	Vials of Culture or Teaspoonfuls of Fermented Milk	oz. Water	oz. Malt Ext.
1	1st 2 wks.	Top 4	½	1	½	12¾	1½	Top 5	0	1	½	15	1½	Top 5	0	1	½	17	1½
2	2nd 2 wks.	Top 4	2	1	½	12¼	1¼	Top 5	1½	1	½	15	1½	Top 6	1	1	½	16¾	1¼
3	1-2 mos.	Top 4	4	1	½	11¾	1¼	Top 5	3½	1	½	14½	1½	Top 6	3	1	½	18¼	1¼
4	2-4 mos.	Top 4	6	1	½	11¼	1½	Top 5	5½	1	½	14	1½	Top 6	5½	1	½	18	1½
5	4-6 mos.	Top 4	8	1	½	10¾	1½	Top 5	8	1	½	13½	1½	Top 6	8	1	½	18	2
6	6-8 mos.	Top 4	11	1	½	10¼	1½	Top 5	12	2	1	12¾	1¾	Top 6	12	2	1	17¼	2¼
7	8-10 mos.	Top 4	14	2	1	8½	1½	Top 5	15	2	1	12¼	1¾	Top 6	15	2	1	17¼	2¼
8	10-12 mos.	Top 4	18	2	1	7½	1½	Top 5	20	2	1	11½	2	Top 6	21	2	1	17	2½

COMPOSITION OF ABOVE FORMULAS.

Fat 5.50% in each.
Proteins 0.60% in 1st, 0.80% in 2nd, 1.00% in 3rd, 1.20% in 4th, 1.40% in 5th, 1.60% in 6th, 1.80% in 7th, and 2.00% in 8th.
Sugar 7.50% in each.
Ash 0.12% in 1st, 0.16% in 2nd, 0.20% in 3rd, 0.24% in 4th, 0.28% in 5th, 0.33% in 6th, 0.37% in 7th, and 0.41% in 8th.

Use a Chapin cream dipper that has been accurately made to hold exactly 1 fluid ounce, to measure the milk, water, and malt extract. The first dipperful from a bottle full of milk should be removed with a teaspoon to avoid spilling.

A dozen vials of a culture of Bulgarian bacilli should be purchased as often as required direct from the laboratory of the manufacturer, immediately placed in the ice chamber of a refrigerator next to the ice and there kept until used.

The water used in the formulas should be cold and should have been either distilled or boiled for 5 minutes.

All utensils should be boiled for 5 minutes just before using them.

Make each feeding warm (not hot) by standing the nursing bottle containing it in a kettle full of water for fifteen minutes, the water being kept at 98° Fahr. by the frequent addition of warm water.

To summarize: The formulas should be prepared with clean hands and sterile utensils.

The milk used should have a low bacterial count; should be raw on account of its greater nutritive and antiscorbutic properties; bottled at the dairy in order to be able to judge its composition by the depth of its cream layer, and iced from the time of bottling until planted with the Bulgarian bacilli.

The casein should be made digestible, not by boiling, but by lactic acid fermentation, the lactic acid having the additional advantages of being germicidal to pathogenic microorganisms, of preventing putrefactive changes in the milk or intestinal tract, and of being a laxative.

Tolerance to the requisite amount of fat should be obtained by preventing fermentative and putrefactive disorders in the intestinal tract. The fermentative disturbances should be avoided by the use of malt sugar; the putrefactive changes should be obviated by the use of clean milk, by the milk proteins being in a readily assimilated form, and by the presence of lactic acid.

The composition of human milk and of the various layers in bottles of cow's milk of different degrees of richness should be known.

Formulas providing any needed percentage of fat, proteins, or sugar, should be at hand.

The percentage of fat should be governed by the gastric tolerance and the character of the stools, and the percentage of proteins by the gain in weight.

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300 SUMNER AVENUE.

FETAL DYSTOCIA AND CESAREAN SECTION.*

BY HERMAN GRAD, M.D., F.A.C.S.,

NEW YORK.

ATTENDING SURGEON, WOMAN'S HOSPITAL.

THE obstetrical consultant who is called into a case of pathological labor is beset with a great many difficulties, and the responsibilities he has to shoulder are at times indeed very great. He has to face the situation of the parturient woman and the unborn child, and take account of two lives that are, as it were, a part of the whole, yet both have problems to solve that have an individuality of each. In no obstetrical complications are there problems more difficult to solve than in conditions of fetal dystocia. Here we have the fetus whose presenting part will not engage in the true pelvis. Many hours of labor have passed by, the mother has suffered untold agonies, but her hard and painful labor has brought forth nothing. The obsterical consultant must solve the problem why the presenting part had failed to engage, and how to disentangle the snarl and terminate the painful and dangerous situation.

To the obstetrician the greatest interest centers

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itself on the true bony pelvis and soft parts of the birth canal. Through this bony ring of the true pelvis he must bring the tender baby unharmed and usher into the world a new life.

The true obstetrical pelvis is that part of the birth canal that lies below the iliopectineal line. It is the inlet of the true pelvis, and is a rigid bony ring throughout its entire circumference. It is solid and unyielding to the tender passenger, and is the crux of the whole obstetric situation. Anything that passes through this gate must measure in diameter less than the ring itself.

In considering this bony ring, we take notice of the diameter of the birth canal. There are two points to bear in mind, namely, the space at the inlet of the pelvis and the diameters of the outlet, and in both of these the anteroposterior and transverse diameters are of importance.

In fetal dystocia the examination as a rule should be conducted under anesthesia. The examining fingers note the diameters of the pelvis. The anteroposterior diameter of the pelvic outlet are the pubococcygeal, which in normal cases should measure 3¾ inches, and the sacropubic diameter should be one inch more. The transverse diameters of the outlet should be 4¼ inches. With the parturient canal empty, the presenting part not being engaged, the ascending finger reaches upward toward the promontory of the sacrum and takes note of the diagonal conjugate, the distance between the center of the promontory to the inferior surface of the symphysis. In the normal pelvis this diameter is 5 inches long (13 cm.). The examining finger takes note of the presenting part, whether a cephalic presentation or otherwise. To make this examination accurate and complete, it may be necessary to introduce the whole hand into the vagina, if it is feasible. In a vertex presentation, the position of the head should be determined, and if the fontanelles are not easily felt, an ear of the fetus should be palpated. It may be of interest here to make note of the normal diameters of the fetal head. The greatest diameter of the fetal skull is the occipitomental diameter, which is 5½ inches, the occipitofrontal 4½ inches, and the diameter is the same whether measured from the root of the nose to the occiput along a horizontal line or measured from the occipital protuberance to the upper edge of the vertical portion of the frontal bone. The suboccipitobregmatic and the cervicobregmatic are both 3¾ inches. The biparital is 3¾ inches and the bitemperal is 3¼ inches. These measurements are more of an academic interest, because, after all, what the obstetrician wishes to know is whether the presenting part in this particular case of fetal dystocia can be made to engage in the birth canal. With the patient anesthetized, and if possible the whole hand in the vagina, an attempt is made to engage the fetal head. As the largest diameter of the pelvic inlet is the transverse, namely, 5¼ inches, the occipitofrontal diameter of 4½ inches of the head finds ample room, while the biparital diameter of the head which is 3¾ inches finds sufficient room in the 4½ inches of the true conjugate of the pelvis. The problem, however, is not as simple as it would appear from the description here given to engage the head in the true bony pelvis. In the vast majority of cases of fetal dystocia, when the consultant arrives, the uterus has become firmly contracted about the fetus, the waters have come away, the pains as a rule are ineffectual, and one is confronted with the question what is best to do for this particular case. By all means attempt should be made to engage the head, allow the patient to come out of the anasthesia and wait for more efficient pains to further engage the head so that either a mid forceps or low forceps operation would terminate the labor.

Fetal dystocia may be classed under four different headings.

A. Fetal dystocia from faulty attitude. (1) Excessive flexion of the head, Roderer's obliquity. (2) Bregma presentation, incomplete flexion. (3) Brow presentation. (4) Face presentation. (5) Presentation of anterior parietal bone or ear, Naegele's obliquity. (6) Presentation of posterior parital bone or ear, Litzmann's obliquity.

B. Fetal dystocia from faulty presentation. (1) Pelvic presentation. (2) Shoulder presentation.

C. Fetal dystocia from faulty position. (1) Persistent occipitoposterior position. (2) Persistent mentoposterior position.

D. Fetal dystocia from general fetal conditions. (1) Multiple or compound presentation. (2) Multiple birth. (3) Malformations. (4) Deformities. (5) Anomalies.

E. Oversize of fetus.

F. Oversize of head.

G. Premature ossification of head.

H. Congenital hydrocephalus.

In a pelvis not deformed, where the true conjugate is 9 cm. or more, many of the faulty attitudes and positions of the head will become corrected by allowing labor to continue, the head will become finally engaged, the excessive or incomplete flexion will disappear and the vertex come down on the perineum. Even in face presentation or persistent occipitoposterior position where the mechanism of labor is taxed to a greater extent, the labor may terminate favorably either with or without interference. The face presentation can often be converted into a vertex by judicious manipulation. But each and every one of these faulty attitudes of the presenting vertex when combined with an oversized fetus or oversized head, or perhaps with premature ossification of the head, may form insurmountable obstacles to the delivery of a live fetus.

Text books tell us that when delivery is impossible "embryotomy is justifiable." It is here that the modern obstetrician steps in with his high ideals and his humanitarianism. He is triving to protect the interest of the unborn baby without jeopardizing the life or health of the mother. Many are the problems that confront the obstetrician at this stage of the situation of fetal dystocia. Shall this case be terminated by a forceps delivery, by a version or cesarean section? A high forceps delivery should be avoided at all times, as it cannot but prove harmful to both mother and child. It can only prove of benefit under exceptional circumstances. To terminate the labor by version means a high fetal mortality. It is not in the best interest of the child, and while the maternal mortality in version is practically negligible, it is not so with maternal morbidity. In a large number of cases laceration of more or less severity accompanies the version, and the morbidity that follows the traumatism and laceration of the soft parts of the birth canal is quite considerable at times. Everyone of us can recall cases where severe laceration of soft parts inaugurated invalidism that lasted for months and years. How many of these patients date their aches and pains from the confinements. These cases have to undergo burdensome plastic opera-

tions before they can be restored to anything like normal health. So that we must admit a high degree of maternal morbidity in cases of version.

There can be no doubt that cesarean section is the ideal way of handling fetal dystocia. It is a humane way of treating these cases. A clean cesarean section in a clean case gives ideal results to both mother and baby, but before we decide on a cesarean section we must take into serious consideration two important points. First, the maternal mortality of the operation, and, second, the condition of the unborn baby, its viability, its probable health. Unfortunately both of them, namely, viability of child and danger to mother, are factors not definitely determinable.

We may profitably discuss, first, the determinable factors about the baby, and, secondly, the dangers of cesarean section to the mother. About the baby we have certain facts that will help us to formulate an opinion about its viability. First, we have the period of gestation; second, length of fetus, Ahlfeld's method; third, Perret's method or external cephalometry; fourth, we have the fetal heart sounds. The activity of life as experienced by the mother—beyond this we cannot go. The clinical symptoms may all point to the viability of the baby and yet when the baby is delivered it may be found to be in very poor condition of health and not even viable. So while we wish to be humane in the interest of the baby, we cannot lose sight of the fact that we are dealing with an unknown quantity, and while in the majority of cases a full-term baby should be viable and vigorous, we will come across cases where all our calculations are upset. The baby is not viable, and it might as well have been delivered by some other method which is less dangerous to the mother than a cesarean section.

The dangers to the mother from cesarean section can be classed under three headings, shock, hemorrhage, and sepsis. There is also a factor to be considered in connection with sepsis, namely, resistance to sepsis, but this is not a determinable factor. There can be little doubt that the shock attending a cesarean operation is somewhat greater than the shock of even a difficult forceps delivery or a difficult version. However, these terms, after all, are relative. We all have seen considerable shock after a forceps delivery or version. It is true that in forceps delivery and version the element of hemorrhage must of necessity cloud the differentiation between shock due to hemorrhage and shock due purely to traumatism. But taking all factors into consideration, the shock after cesarean delivery is only a trifle greater than in other operative deliveries. Regarding hemorrhage one must admit that there is a better control of bleeding in cesarean section than in version or forceps. The third factor of danger in cesarian section, namely, sepsis, is a factor that looms large and ominous in the domain of operative delivery. Yes, sepsis may crowd in from many and various sources. The sepis of omission, the sepsis of commission, the sepsis arising from within or from without, the sepsis from sources that can be controlled and those that cannot be controlled, the sepsis whose source may be a nonsterile amniotic fluid or a nonsterile birth canal. Sources of sepsis to the right of us and sources of sepsis to the left of us volley and thunder. This is the real danger of cesarean section, and no wonder that the conservative obstetrician shakes his head at the progressive accoucheur and raises a finger of warning. Is there anything more pathetic than to have a live and healthy baby and a dead mother after cesarean section? It is pathetic enough to present the expectant parent with a fully developed dead infant after a difficult version or forceps delivery, but it is thrice more pathetic to present the father with a live but motherless infant. Even with this picture before us, we must not be discouraged.

Cesarean section has a place in fetal dystocia, and what we must do is to strive for better technique, better diagnosis, a clear vision of placing indication for cesarean section, weighing the pros and cons of each case as they present themselves, not to generalize but to individualize. Each case is a law unto itself, each case demanding serious consideration. Modern obstetrics clearly shows that we must give up the formerly firmly established dictum, that there is only one indication for cesarean section, the text-book indication, namely, pelvic obstruction. There are cases of pelvic obstruction where cesarean section is contraindicated and an embryotomy is justifiable. While there may be cases with ample pelvic measurements both external and internal, where a cesarean section conserves the best interest of both mother and baby. The entire obstetrical field must be surveyed in determining what is best to be done in a particular case of fetal dystocia. The pelvic measurements are insufficient to go by, the forces supplied by nature, the particular conditions that present themselves, the general state of both mother and infant must all be taken into consideration in deciding on so serious a step as a cesarean section. Yet with all this considered, abdominal section for fetal dystocia offers a vast field of usefulness and humanitarianism in saving the life of the defenseless infant and sparing the mother much suffering, great morbidity and perhaps a lasting invalidism.

In fetal dystocia not alone have we to consider all those causes enumerated before, faulty position, faulty attitude, faulty presentation, excessive size of fetus, oversize of head, and premature ossification of head, but we have to consider conditions that have reference to maternal dystocia. Inertia uteri, inefficient pains, feeble natural forces, contraction ring, enfeebled condition of the mother are all determining factors. In a great many cases of fetal dystocia, it is not only one cause that is operative but we have many etiological factors to contend with, a dystocia from incomplete flexion, for instance, or from excessive flexion or a Naegle's or Litzman's obliquity will disappear if vigorous pains and efficient uterine contraction assails them, but the dystocia will persist for hours and hours if the natural forces of the mother are enfeebled. Add to this picture a ruptured membrane or perhaps a contraction ring and one has a formidable condition to deal with. In cases of this kind, if we are reasonably sure that the birth canal is clean, that the labor has been conducted in a clean manner, cesarian section offers the best means of delivery. If the section is done before the mother has become exhausted from useless attempts at delivery, the prognosis are good for both mother and baby. I beg leave to recite a case from practice:

Mrs. R., aged 36, Para IV, was seen in consultation with the attending physician who had been in attendance on the case for sixteen hours. The patient had been in hard labor for ten hours, and as no engagement had occurred, a consultation was called. The patient was a vigorous woman, who had given birth to three children and always with a low forceps operation. She could not understand why the labor was being pro-

longed so much. In her former deliveries, the babies averaged from 6 to 7 pounds in weight. The examination showed the fetal ovoid to be quite large, 40 cm. from the symphysis to the top of the fetal ovoid. The pelvis was still empty and the vertex presenting. External measurements normal. Diagonal conjugate 12 cm. External os open three to four fingers, internal os less. Fetal heart, 140 sounds, loud and vigorous. Bregma easily felt. It was evident that we were dealing with a case of fetal dystocia; an oversized head, insufficient flexion of head with membranes ruptured. As the case had been conducted in a clean way, with a normal temperature and pulse of mother, as the condition of the fetus was satisfactory, a cesarean section was decided on, believing it to be the safest procedure for both mother and child. The patient was prepared for a section and the abdomen was opened in the midline above the umbilicus. The intestines were packed away carefully, to guard against peritoneal soiling as much as possible. The uterus was opened by a longitudinal incision and a live male child weighing 9 pounds and 14 ounces was extracted. The baby thrived but the mother's convalescence was retarded by a sharp rise of temperature, which however subsided by the third day with primary union of the abdominal incision.

In contrast to this successful case of cesarean section, I shall report another case:

Mrs. A., aged 23, in labor with her first pregnancy. The patient is somewhat anemic, of medium height, not unduly vigorous and had been in labor nearly twenty-four hours. There were two physicians in attendance when I arrived, and every preparation was made for a forceps delivery. Ten vaginal examinations had been made but all under careful preparation and with aseptic gloves. The patient's condition was good, pulse and temperature normal. Fetal heart sounds good. The external conjugate 18 cm., diagonal conjugate 11 cm., pelvis empty, head floating. Membranes intact, cervix open three fingers and dilatable. Attempt to engage head under anesthesia unsuccessful. I gave my opinion that the case was one for cesarean section and that on operative delivery would be in the best interest of both mother and child. I was promptly dismissed from the case and a second consultant called. After several attempts with forceps a dead baby weighing 8 pounds was delivered by version. The patient sustained severe lacerations not alone of the birth canal but of the bladder and rectum, and to-day, nearly three and one-half years after labor, the patient is still a semi-invalid and has not conceived again. For several weeks after delivery her life was despaired of from sepsis, and it was months before she was able to be out of bed. When I saw the case, she was clean and a cesarean section would have resulted in a live baby, spared the mother great morbidity, much suffering and a lasting invalidism.

Called into a case of this kind it will be well to bring a calm mind to bear on the conditions as they present themselves in the chamber of accouchement. There is no necessity for haste. If the case is one of fetal dystocia as I have tried to picture above, haste is not necessary. A hasty conclusion is apt to precipitate an immature one, and this is to be avoided in every way possible. The obstetrical field, which must pass in survey in a case of this kind, is a considerable one, and we must give the matter time for its considerations. Let me try and enumerate all the conditions that we must take into consideration when we arrive as obstetrical consultants in the chamber of delivery in a case of fetal dystocia. We must pay attention to the history of the labor up to the time of our arrival, and also the history of the period of gestation. Is she on time or overdue? When did labor begin and how has it progressed? Have they been real labor pains or not? How have they behaved? At about what intervals did they occur; have they been severe, etc.? The effect they had on the patient. Is the mother bearing the ordeal well or not? Have the waters broken, or has there been any other vaginal discharge? Has the pulse and temperature of the woman been changed or influenced in any way? What is the condition of the rectum and bladder? By inquiring carefully into conditions that had preceded our visit much valuable information will be gained and these inquiries will help greatly in formulating our conclusions as to the best mode of procedure in this particular case of dystocia. Having obtained the history, we advance another step by making a physical examination of the mother and determine the general condition of the patient, and, so far as possible, that of the baby. These examinations should also outline for us, so far as possible, whether expediency is necessary in terminating the labor or not. The external measurements should be taken if possible, but if not expedient at least the external conjugate and the oblique diameters should be measured, it will be of assistance in making final deductions. The internal measurements are of great importance, because a knowledge of them will materially help in deciding for or against the version and the possibility of delivering a live baby. A diagonal conjugate of five inches and normal oblique diameters will give a fair chance of a live baby by version, while a smaller pelvis means a high fetal mortality. Our examination must take into consideration the condition of the baby, its size, its heart sounds, and its viability, and perhaps the history of the condition of the former babies will be of help to us in forming our opinion as to the general condition of the baby. Our next consideration is as to the character of the labor pains and the existing uterine force. I think this is of vast importance. If one could only measure these forces of uterine contraction. Uterine inertia is at times a very serious complicating factor, and one must give the matter careful consideration. Nor is it easily determined, under certain conditions, whether a uterine inertia exists or not. We all have experienced cases where we were convinced of the existence of an inertia and were surprised to find, after a short time, very efficient pains set in with a rapid termination of labor. When inertia does exist the suffering of the mother may be extreme and with absolutely no progress in the labor. So that in the diagnosis of fetal dystocia the character of the uterine contraction is of great importance, and it behooves one to make note of the character of the pains and uterine contractions in order to place properly the indications for interference. As has already been mentioned before, in fetal dystocia, even a few vigorous uterine contractions may change the entire aspect of the case and turn an apparently hopeless case into one of easy forcep delivery. In many cases of inertia not alone are the uterine contractions weak, irregular or tetanoid but the patient does not cooperate with her abdominal muscles, the diaphragm does not become fixed and the uterine contraction is not augmented by external forces. Having determined, if necessary under anesthesia, the presenting part, its position and other determining factors, and having become evident that interference is essential, the obstetrician has the choice of several methods of delivery. Forceps, version, pubiotomy, craniotomy, and cesarean section. With pubiotomy I have had no experience, so will leave it out of consideration, although in recent years there has been a tendency to revive the operation and competent men have claimed advantages for it.

High forceps is a dangerous procedure for both mother and the baby and is justifiable in use only under exceptional circumstances. Version has a

high fetal mortality and considerable maternal morbidity. Craniotomy destroys the life of an innocent being, and is not in accordance with the high ideals in medicine, and yet we must admit the operation, cruel as it is, has a field of usefulness much as one abhors its performance. Cesarean section as a method of delivery in fetal dystocia, is the peer of them all. It is a humane operation, it is merciful and tender, but it has its sting—a sting of cruelty. It behooves the obstetrician to rob this merciful operation of its cruel sting. The operation is to be advocated under clear and precise indications, to deliver a healthy child from a clean uterus, a clean amniotic fluid, and a clean birth canal. If these indications can be met with in a case of fetal dystocia, then nothing can take the place of this form of operative delivery.

40 East Forty-first Street.

VOMITING IN INFANCY.

By J. EPSTEIN, M.D.,

NEW YORK.

A PROPER diagnosis of vomiting in infancy may at times save the life of the infant. Leaving out of consideration the vomiting which is a part of the general symptomatology of various diseases and which may be diagnosed by the other symptoms and physical signs, there is a group of gastric disturbances in which vomiting is the only or chief symptom.

Vomiting in infancy may be the result of: (1) Improper feeding. (2) Improper food. (3) Congenital pyloric stenosis. (4) Rumination.

Improper feeding is the cause of vomiting in a large number of infants. The diagnosis is easy and can be made from the feeding history. These infants whether breast-fed or bottle-fed get the right kind of food but are fed in the wrong way. They receive either too much food at a time or too frequent feedings, with the result that the stomach is filled to overflowing, and the consequent gastric regurgitation or vomiting. These infants have no digestive disturbances, they simply retain as much food as they need and eject the rest by vomiting. To treat such a condition with drugs is worse than useless. Strict directions in writing must be given to the mother or nurse as to the exact quantity of food at each feeding, the number of feedings in twenty-four hours, and the regular intervals. While there is no absolute means of telling exactly how much food each infant requires at each feeding and how frequently it must be fed in order to supply it with sufficient calories for all its needs of energy and growth, the age, weight, digestive capacity, and general condition will aid in determining the quantity of food at each feeding and the number of feedings in twenty-four hours. The following simple practical rule though not exactly scientific is very useful, especially to the general practitioner, in the feeding of healthy infants. An infant should get at each feeding as many ounces of food plus one as it is months old; that is, a baby three months old will take four ounces of food at each feeding, and one four months old five ounces of food. The intervals of feeding may for practical purposes be as follows:

From 1 to 3 months old every.....	2	hours
From 3 to 6 months old every.....	3	hours
From 6 to 9 months old every.....	3½	hours
From 9 to 12 months old every.....	4	hours

After six months of age an infant should get other food besides milk. Orange juice, well cooked cereal, beef juice, and zwieback may be gradually added.

In bottle-fed infants the correction of faulty feeding is very simple because the mother or nurse can easily regulate the quantity of the food at each feeding and the number of feedings according to the directions, but in breast-fed infants the mother can nurse the infant at regular hours, but she cannot tell how much the baby takes at each feeding. For general practical purposes, the weight and the condition of the infant afford the simplest and best guide to the amount of food the baby is getting in twenty-four hours. A large overfed infant tells its tale that it takes too much food for the size of its stomach and therefore vomits the surplus. The remedy, of course, lies in cutting down the time of each feeding. A more exact method consists in weighing the infant before and after nursing, and in this way gain a knowledge of how much food it takes at each nursing. Knowing the number of ounces of breast milk the baby requires at each feeding, the nursing time can be regulated so that the infant will take as much food as it needs to thrive upon and no more. While this method of weighing before and after nursing is exact and scientific, it is not practical. The general condition of the infant and its size and weight are in many cases sufficient.

Improper food is a frequent cause of vomiting in infancy. The quantity and the intervals of feeding may be right, but the quality of the food or the amount of its different constituent elements may not be suitable to the infant's digestion. Impure milk, or milk which is not kept at the proper temperature, or too much fat or protein or sugar may so irritate the stomach that the baby will reject the food by vomiting, and this, when long continued, will cause gastric or gastrointestinal indigestion with other symptoms and signs of ill health. The treatment of vomiting from improper food is more difficult than that of vomiting from improper feeding. In cases of faulty feeding all that is necessary is to regulate the quantity and the hours of each feeding, for there are probably no chemical or anatomical changes in the stomach. The baby simply spills the excess of food from its stomach by vomiting. In feeding with improper food for some length of time there is usually a chronic gastritis or gastric indigestion with abnormal changes in the chemistry or the anatomy of the stomach. The treatment, of course, consists in giving the right kind of food. If the infant is breast fed an analysis of the milk should be made, and the result of the analysis will largely determine the line of treatment. In bottle-fed infants fresh, raw certified milk should be given, beginning with a weak formula and small quantity and gradually increasing in quantity and strength till the infant gets the proper food suitable for its age and digestive ability. The stomach should be washed every day or every other day with plain warm water or a weak solution of sodium bicarbonate. In the majority of cases the infant will get well in a short time under this treatment without any medication. Should medication become necessary an initial dose of some mild laxative may be given. Bismuth subcarbonate in fairly large doses three or four times a day a half an hour before nursing will soothe the irritated gastric mucosa.

Congenital pyloric stenosis or congenital hypertrophic stenosis is not an infrequent disease, and upon an early correct diagnosis may depend the life

of the infant. Though this congenital lesion was long known, it did not receive general medical attention till within recent years, when its frequency and importance became better appreciated. The diagnosis of congenital pyloric stenosis is not difficult and can always be made on the following three chief symptoms and three chief signs:

The three chief symptoms are: (1) Persistent projectile vomiting. (2) Persistent constipation. (3) Persistent loss in weight.

The three chief signs are: (1) Visible gastric peristalsis. (2) Palpable pyloric tumor. (3) Gastric retention of food.

The history of these cases is always very suggestive. The infants are healthy at birth, may be breast or bottle fed, frequently of the male sex, and the first born. The vomiting may begin at any time from a few days to three months old, but in the majority of cases from three to six weeks old. The treatment may be medical or surgical. Since in every case of congenital pyloric stenosis there are probably two factors present, pyloric hypertrophy and pyloric spasm, medical treatment may be directed to the spasm. This consists in feeding small quantities and at longer intervals with human or modified cow's milk low in fat. Sodium bicarbonate or potassium citrate may be added to the food or given before each nursing. Daily gastric lavage is very beneficial. In the majority of cases, however, surgical treatment gives better results and should be advised before it is too late.

Rumination or merycism is a condition in which the food is regurgitated into the mouth in limited amounts and is again masticated and either reswallowed or ejected. It is uncommon in man, but is common in certain animals. It is probably due to a reverse peristalsis and is usually present in neuropathic children of neuropathic parents. A diagnosis can usually be made from observation of the patient who habitually regurgitates some food and after chewing it either swallows or ejects. The treatment of this form of vomiting is difficult. In some cases feeding with a thick food made up of some cereal well cooked with milk does much good. Water should be given between feedings. Gastric lavage may be beneficial.

222 East Broadway.

METHODS AND MYDRIATICS IN REFRACTION.

By E. A. POND, M.D.,

BROOKLYN, N. Y.

INSTRUCTOR IN THE DEPARTMENT OF OPHTHALMOLOGY AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL, AND HOSPITAL; CLINICAL ASSISTANT AT THE MANHATTAN EYE, EAR AND THROAT HOSPITAL; JUNIOR OPHTHALMIC AND AURAL SURGEON TO EASTERN DISTRICT GENERAL HOSPITAL; CHILDREN'S HOME; HOME FOR AGED WOMEN, ETC.

Is It Necessary to Use a Mydriatic to Find the Correct Refraction of an Eye?—That means that the patient must suffer the inconvenience of blurred vision for several hours or perhaps ten days or more according to the drug used.

If the patient happens to be in business, it also means a loss of valuable time, and that means money—which, added to the fee charged, makes a pair of glasses expensive. Is it any wonder, then, that a great number of people are going to the optometrist, who will, can, and does give them an examination and glasses in a few hours, without the inconvenience or loss of time? To be sure the patient takes the chance of having glasses prescribed when he may need treatment, for we know there are many conditions where the eye is diseased, and glasses will improve the vision for a time. Nevertheless, he does take the chance. I find it is not necessary to use a mydriatic in any case of refraction.

To begin with, one never prescribes the correction found under atropine, and homatopine does not act long enough to be of much use. Refraction is not an exact science. Let several experts refract the same person and there probably will be a difference in each prescription for glasses, and all will be good. The whole surface of the lens is not used in the field of vision; only the part exposed by the pupil. If the patient is put at ease in a dark room and made to look at twenty feet, or told to look "a mile away," the accommodation is soon relaxed, and the pupil dilates enough so that the eye can easily be measured by the skiascope. By this means that part of the eye that is actually used is measured.

In more than eight thousand refractions, I have had fewer recorrections without a mydriatic than with one; the patient lost no time from business and suffered no inconvenience. In many cases where I first tested without a mydriatic and then with one, I invariably found the first result to be correct.

There are many methods of testing the refraction. My method is simple and verifying: (1) Take the vision of each eye separately; (2) examine pupil reflex, cornea, and conjunctiva; (3) muscles by finger test (roughly); (4) ophthalmoscope; (5) skiascope; (6) ophthalmometer; (7) test case to verify; (8) Maddox rod and red glass or double prism; (9) color field for red, green, and blue.

Place test cards at twenty feet. If you have a room of ten feet use a mirror, and double the distance, using reversed type. Have adjustable bracket, test case, and ophthalmometer so arranged that your patient does not have to move during the test.

After taking the vision and recording it—a very important step—examine the pupil reaction, the cornea for opacities, etc., conjunctiva, and then with the ophthalmoscope examine the fundus. This method saves time. Try convergence by having the patient follow the point of a pencil or the end of your finger. Next use the skiascope.

The most accurate way to use the shadow test is to ascertain the refraction of one of the principal meridians with a spherical glass; then, leaving this glass in situ, to place a cylindrical glass with its axis in the meridian thus corrected and keep on changing the cylinder until with the two glasses, spherical and cylindrical, a complete and uniform reversal (or block) is obtained in all meridians at once. This method indicates both the axis and amount of astigmatism with great precision (Fuchs).

Most authorities say to reverse the shadow. I find the best results when the pupil is *blocked, i.e.*, has no motion of the shadow at all.

The next step is the ophthalmometer. This instrument, in the majority of cases, is inaccurate, as it measures only the corneal astigmatism. However, it usually gives nearly a correct axis. If the axes are found to be different in the first and second positions, that of the second position is usually correct.

Next use the trial case to find the glass that gives the best vision.

In hypermetropia, never give the full correction except in case of squint. To correct the presbyopia,

give an addition that will range according to the work to be done by the patient. Try each eye separately. The one great fault is getting the range *too close*. There is no set rule, but the age of the patient helps you to know approximately. The addition is always the same in both eyes, except in pathological conditions, or when hypermetropia has not been fully corrected in each eye.

After finding the best glass for distance and near, then place a Maddox rod in front of one eye and a red glass in front of the other and test the muscle balance, first without the correction and then with it. Prisms act wonderfully well in a few certain cases, especially in hyperphoria. The prescribing of prisms requires great judgment, and I think they are too often prescribed. Do not forget that lenses can be decentered to get the prismatic effects. For the diagnosis of paralysis of the ocular muscles by means of the diplopia, through the courtesy of Dr. Wooton of the Mahattan Eye, Ear and Throat Hospital, I will quote his quick and easy method:

The Diagnosis of Paralysis of the Ocular Muscles by Means of the Diplopia.—Diplopia is termed homonymous when each image is on the side of the eye to which is belongs, the image of the right eye to the patient's right, the image to the left eye to his left. Homonymous diplopia always denotes a convergence. Diplopia is termed heteronymous or "crossed" when the images are not on the side of the eye to which they belong, the image of the right to the patient's left, that of the left eye to his right. "Crossed" diplopia always means divergence. The paralyzed eye is always the eye in the direction of whose image the diplopia increases, *e. g.*, red glass before the right eye, red image to patient's right, white image to his left, homonymous diplopia, convergent strabismus. If now, the patient's head be stationary, on moving the candle to his right, the distance between the images increases or, in other words, when he looks in the direction of the red image it is the "red" or right eye that is paralyzed. If the diplopia be vertical, the red image, let us say, being above the white, this rule still applies. If on looking up the distance increases it is the "red" or right eye that is paralyzed; if on looking down, the "white" or left eye. This rule has no exceptions and it makes no difference with which eye the patient may elect to fixate.

The paralyzed muscle is always the muscle that moves the paralyzed eye in the direction in which the diplopia increases. For example, the right is paralyzed, and the diplopia increases when the patient looks to the right. In this case, the paralyzed muscle is the muscle which moves the right eye to the right, namely, the external rectus. The right eye being paralyzed and the diplopia increasing as he looks to the left, the internal rectus is paralyzed, for that muscle moves the right eye to the left, the direction in which the diplopia increases.

Let us suppose the diplopia to be vertical, if, when the patient looks up the diplopia increases, an elevator is paralyzed, if it increases when he looks down, a depressor. With the vertical muscles the case is a little more compilcated than with the lateral, for the reason that there are two elevators, the superior rectus, and the inferior oblique and *two* depressors, the inferior rectus, and the superior oblique. Let us suppose the diplopia has shown that an elevator of the right eye is paralyzed. We are now to determine which elevator is affected. If, when the paralzed eye is made to follow the light in the direction of the temple, the *vertical* diplopia increases, the superior rectus is the muscle; if it increases when the paralyzed eye is directed toward the nose, it is the inferior oblique. Similarly, if the diplopia has shown that a depressor of this eye is affected, and the diplopia increase as the paralyzed eye is rotated toward the temple, the paralyzed muscle is the inferior rectus; if it increases as this eye is turned toward the nose, it is the superior oblique. In the case of the vertical muscles, the tilting of the images is to be disregarded, as is also the homonymous or crossed character, if present, of the diplopia. These few rules are all that is necessary for the diagnosis of *recent* cases of paralysis of the ocular muscles, when diplopia is present.

Finally, it is a good plan to test the field for white and colors for any contractions or scotomata. This is readily done with the hands and small squares of colored paper, held on thumbnail while patient looks in the examiner's eye, or use the perimeter.

Unless the operator speaks all languages, the skiascope is indispensable, for by its use there is really no need of questions or mydriatics.

In cases of children, a mydriatic is not necessary unless you have them frightened. Take a little more time, and put them at ease.

Hypermetropia.—In measuring hypermetropia, I place a plus lens in front of the eye as near the amount as I can guess by means of a flash of the skiascope, and leave it there. If too strong cut it down by adding a minus lens until the pupil is blocked in that meridian. Then place the correct glass in the frame, having the patient keep *both eyes shut* while making the change. The same holds good if the first lens was too weak. Keep adding plus until the pupil is blocked and proceed as before. Then add the cylinder needed, if any. Be careful in myopia not to overcorrect, and it is not very good policy to give the full correction, or sometimes even a glass that will give 20/20 vision for the first glass. Your patient is apt to come back complaining he sees too much and is uncomfortable. You are supposed (in using the skiascope) to deduct plus 1 D in hypermetropia and add minus 1 D in myopia.

Verify your findings with the trial-case, carefully adding to or subtracting from your findings until the best vision and most comfortable glass is found.

Remember that homonymous diplopia means convergence and heteronymous diplopia, divergence.

Also, in writing for glasses, remember that you order .50 D less in toric lenses than in flat lenses, above 2 D.

If it is the patient's first pair of glasses, do not fail to tell him or her that things will appear differently. Sidewalks may seem higher or slanted; they will not see quite as well after dark, etc., but all these troubles will cease in about two weeks. It is a good plan to tell your patient to wear the glasses for two weeks before making any complaint, and at the end of that time to come to you for a verifying examination.

And finally, common sense and experience on the part of the operator are absolutely necessary.

1087 Dean Street

Chronic Cystitis.—Sinha says that santonin acts very promptly in chronic catarrh of the bladder, when given in ½-grain doses three times a day. The sensitiveness and feeling of fullness in the bladder disappear and a cure is generally effected in a very short time.—*Indian Medical Record.*

MEDICAL RECORD.

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THOMAS L. STEDMAN, A.M., M.D., EDITOR.

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THE EGOCENTRIC FACTOR IN GENUINE EPILEPSY.

EPILEPSY is no more a perfectly distinct clinical entity than are other varieties of mental disturbance. Neither is egoism peculiar to this form of disease. The epileptic mode of reaction is present in other forms which do not show the definite symptoms belonging to genuine epilepsy. Even the normal person gives way occasionally to these reactions. These are always based on egoism, but it is the extreme degree of egoism in the epileptic which some believe gives rise to his special symptoms and leads to the complete deterioration which marks the final outcome of the disease. "The egoist is relentlessly pursued by the nemesis of intellectual degradation." Thus Dr. John T. MacCurdy strikes at the basis of epileptic reactions and the fundamental determinant of the epileptic fate in his "Clinical Study of Epileptic Deterioration," published in the *Psychiatric Bulletin*, Vol. IX, No. 2, April, 1916. The epileptic begins life with the extreme egocentric attitude, therefore he must pay the full penalty, unless indeed intelligent therapy turns to account this very weakness and utilizes it as a therapeutic measure. MacCurdy calls egoism "the keynote of epilepsy," but he also shows how this is successfully struck in order to direct the patient's interest toward his environment and to re-arouse it when it fails. Lasting success demands more than ordinary patience and appreciation of the symptomatic character of the manifest selfishness, indifference, and egotism of the individual. For the necessary initiative and perseverance must both be supplied by the physician or other helper. An ideal success is sometimes attained in which the patient reaches the point of self-sustained interest, but too often the original egoism asserts itself at each new difficulty met, with fresh loss of interest in the environment and renewed impulse toward regression. The supplying of a new interest at this point may not be sufficient to overcome the excessive egotistic withdrawal and in this way progressive deterioration occurs.

There are many signs of this extreme egoism in all stages of the epileptic decline. The individual begins life "at outs with his environment." There is always an absence of the emotional life. For this reason the attacks manifest themselves in the intellectual sphere and the deterioration likewise appears in the gradual loss of intellectual acquisitions. The convulsions represent a sudden flight from the necessity for adaptation as the dementia represents the gradual withdrawal from the same thing, but in the intellectual and also in the vegetative nervous level rather than in the emotional sphere. The sexuality of the epileptic strikingly illustrates this in the purely physical nature of his desires and the absence of any love object. Expediency often leads the epileptic, still in the higher grades of deterioration, to a superficial profession of interest, notoriously in religion, which is in reality centered within the limits of his self-interest.

Even the patient who still preserves a considerable degree of insight and response shows a tendency to magnify the ego in conversation. His pursuits likewise must exalt himself as the center. He is reached and stimulated through reward and praise and equally disheartened and ready to relinquish task or pleasure at any failure or blame. It is just here that sympathetic therapy must step in and utilize the fundamental weakness as the one means of preserving or re-arousing the interest essential to the individual's salvation from the egoist's extreme fate.

The egocentric attitude stands out still more marked as dementia proceeds. Attempted replies to the examiner's questions center about some egotistic topic of interest with that perseveration characteristic of the true epileptic dementia. Further on the picture is that of a very young infant, indeed scarcely more than a biological entity, mental contact with environment all but obliterated, just enough of the infant's interest in its own body left to put a coin to its mouth or otherwise manifest the faintest semblance of any relation to its environment.

We are yet far from understanding epilepsy, but it is only by recognition of such profound functional attitudes and their typical reactions that the condition can be better understood, whatever other findings, functional or pathological, science may bring to light. At least this provides a working basis for clinical treatment which can be both prophylactic and curative by meeting the epileptic on his own ground and guiding him through his peculiar weakness to an efficient self-development.

THE HEALTH TRAIN IN FLORIDA.

THE State Health Department of Florida, although unable to fulfill entirely adequately all the functions normal to a body of that sort, owing to certain handicaps, according to the Public Health Reports for June 2, has undertaken very successfully the dissemination of information regarding health matters to the general public and is carrying out the idea in a manner which might well be emulated by other States. The Florida laws authorize the board to disseminate information concerning the cause, nature, and extent of communicable disease by lectures, exhibits, and printed matter. They also provide for a train containing health exhibits which shall travel about the State educating the people; this train carries lecturers and is conveyed free by the railroad.

The work done by the "health train" was formerly accomplished after a fashion by sending the public health exhibit of the State from city to city by express or freight, an expensive and tedious process. Quite recently, however, three cars were purchased and remodeled, one as a living car and two to house exhibits. The railroads by special arrangement haul this train about the State free of charge. It has been found advisable to follow a regular schedule in these trips so that each community is visited in regular turn; requests are frequently received from districts holding fairs or other local celebrations to have the health train visit them, but it has been impracticable to accede to these requests on account of the long irregular trips involved and the extra burden which such would put on the railroad companies, already so generous.

The exhibits comprise the "flies' air line," a sewage disposal plant; illustrations of the way in which underground contamination of water supplies may occur; an open-air house for the tuberculous; "the contrast room illusion"; the comfortable infant; and others. A moving picture apparatus is carried along, the screen being erected outside of the car and the picture projected through the open window. The health train has aroused a great deal of interest in Florida, especially in the smaller communities which are just the ones where it is most needed; in many of these districts fully 90 per cent. of the entire population turn out to view the health exhibits.

Besides the health train, the health officials of Florida are endeavoring to interest the public in other ways. They issue a monthly bulletin which is distributed to about 8,000 people, but as is so often the case, this is circulated largely among people who are well informed anyway. The same is true of the pamphlets which the board of health issue from time to time. Small circulars are distributed from the health train and by the public health nurses; these contain condensed information about such subjects as pellagra, hookworm, flies, and privies. Interesting and instructive posters are prepared in the health department by artists employed for that purpose from time to time and these are exhibited to the public where it can be done to the best advantage. Finally, a feature of the Florida health service, which is certainly unusual though not unique, is the preparation every week of an article on a public health subject which is sent free to every newspaper in the State with a request to publish it in the interest of the public health. These articles are written by an employee of the health department who is experienced in newspaper work and consequently able to write in a popular vein for the lay public.

The above described campaign for public enlightenment in these matters is certainly commendable. Florida has a high death rate, probably due to its 40 per cent. of negro population and to the flocking there of tuberculous cases, and as the State statistician estimated that in 1915 over half the deaths, 53.4 per cent. to be exact, were from preventable diseases, it is to be hoped and expected that the future will show diminution in these figures as the public becomes more and more alive to hygienic matters.

TUBERCULOSIS OF THE FOOT.

THE diagnosis of tuberculosis of the foot requires a considerable amount of care. According to Professor Kirmisson, writing in the *Medical Press*, May 31, 1916, the diagnosis of lesions of the tarsus and dorsum of the foot is based on two considerations: the nature of the osseous lesions and their distribution. The nature of the lesions is inferred from the clinical appearance, more particularly their pasty fungous consistency, and the discovery of enlarged glands. Tuberculous osteitis of the knee and foot is almost always associated with enlarged glands in Scarpa's triangle. This is a very important point to bear in mind. Again it is essential in order to gain a correct diagnosis to recollect that there are forms of osteomyelitis which are chronic *ab origine*, while tuberculous osteitis occasionally runs an acute course. Discovery of tuberculous lesions elsewhere favors the diagnosis of tuberculosis of the foot.

Exact anatomical knowledge is necessary to insure accurate diagnosis. Tuberculous lesions of the dorsum and tarsus are specially apt to occur in one or more of three spots, the tibiotarsal articulation, the posterior half of the tarsus, and the anterior half. In adults and in elderly persons all these joints may become involved simultaneously. In determining the exact seat of the mischief the site of the swelling must be taken into consideration. If the swelling is in the region of the malleoli, it is a case of malleolar osteitis involving the tibia or the fibula as the case may be. If behind the malleoli it may be a case of synovitis, but the involvement is more common by far in adults than in children. There are many other points to be considered in the diagnosis of tuberculosis of the foot, but space is lacking for discussing all of these. It should be remembered, however, that tuberculosis displays a marked preference for the calcaneum. This seat is recognized by the swelling in the depressions on either side of the bone and ultimately by reddening of the skin and fluctuation.

As for therapy, in a general way tuberculous disease of the foot and dorsum is amenable to treatment. It is apt to yield to conservative management, but if this fails it yields readily enough after operation. Kirmisson points out that when a patient comes with a foot in a faulty position, the first thing to do is to restore it to its normal relationship with the leg. Sometimes this can be done by mere reposition, but it may be necessary in certain cases to divide the tendo Achillis, after which the foot must be maintained in a proper position by means of a light plaster splint, leaving the lesions as far as possible uncovered. When the patient comes with abscess formation, the usual practice is to have recourse to deep impuncture, a method which is of veterinary origin, and has become safe and useful only since the introduction of asepsis and the thermocautery. In presence of suppuration the case must be dealt with as with an abscess of whatever origin, by puncture followed by the injection of iodoform ether. In more advanced cases tunnelization of the astragalus gives excellent results. Partial and total tarsectomy generally prove successful.

The Handy Man on the Battlefield.

It has always been the experience of medical men suddenly called upon to do military service that they miss the well-stocked armamentarium which is available for them in their private practice. To the practitioner, well equipped with instruments, living on the same block with a modern drug store and attending cases in hospitals where dressing material appears as if by magic at the spoken word, it is somewhat disconcerting to find himself expected to improvise instruments and get along somehow. We have not all the sublime faith of the old-time obstetrician who considered himself equipped for a labor case if he had a penknife and a piece of string in his pocket. Certainly there is no harm in cultivating one's ingenuity occasionally by doing without accessories which we have been accustomed to regard as almost indispensable and if we have only a modicum of ingenuity ourselves, we can note down the contrivances of others more gifted, when we are fortunate enough to learn them. In the *British Medical Journal* for May 20, Dr. James MacMunn contributes some of his own makeshifts, the most interesting of which are as follows: To remove a foreign body from the urethra he passes an endoscopic tube to the body, then passes in a stick, pencil or pen-handle will do, the end of which has been dipped in liquid cement. This latter is given time to harden and then tube, stick and foreign body are all taken out together. To stop urethral, prostatic, or post-nasal hemorrhage, a condom is tied over a catheter, lubricated, passed and inflated. When rubber gloves are not available, a substitute not to be despised is a coating of iodine, followed by a coating of compound tincture of benzoin followed by a top layer of iodine. When no anal specula are to be had, Dr. MacMunn uses the handles of two toothbrushes, nasal specula are improvised by bending the loops of hairpins back at right angles. Doubtless other physicians and surgeons have their makeshifts which they have invented themselves or gleaned here and there. It would be interesting to compare notes through the medical press so that each might add to his stock of expedients and then in time some compilation could be attempted and issued in a form suitable for carrying about. Such a volume might prove useful to many physicians even in time of peace whose rounds often take them where the needed implements are not available, and in time of war would be invaluable.

News of the Week.

City Death Rate.—During the week ending June 10, the death rate in New York City was 12.79, or 1.39 lower than for the corresponding week of last year, the difference representing a saving of 149 lives. The total number of deaths during the week was 1,362. The reduction was secured chiefly through a decrease in the mortality of the acute infectious diseases, including measles, scarlet fever, diphtheria, and typhoid fever. There was a slight increase in the mortality from pulmonary tuberculosis, whooping-cough, and cerebrospinal meningitis. The mortality from heart disease was considerably lower than that of the same week last year, but this reduction was offset by the increased number of deaths due to Bright's disease. For the first twenty-four weeks of 1916 the death rate was 15.02 as compared with 15.28 for the corresponding period of 1915.

Hay Fever Ordinance.—Through the efforts of the American Hay Fever Prevention Association, the city of New Orleans has recently adopted a hay fever ordinance, which provides that the tenant or owner of any premises shall not permit weeds or grass over two feet in height to grow or stand on such premises, or permit weeds or grass over one foot in height to grow or stand on the sidewalk abutting such premises. In commenting on this ordinance, which has been hailed as the first of its kind to be adopted in America, the New York City Department of Health calls attention to Section 221 of the New York Sanitary Code, which was adopted a year ago and reads as follows: "Growth of poison ivy and rag weed prohibited. No person owning, occupying, or having charge of any lot or premises in the City of New York shall cause, suffer, or allow poison ivy, rag weed, or other poisonous weed to grow therein or thereon in such manner that any part of such ivy, rag weed, or other poisonous weed shall extend upon, overhang, or border upon any public place, or allow the seed, pollen, or other poisonous particles or emanations therefrom to be carried through the air into any public place."

Brooklyn Physicians Admonished.—The New York City Department of Health, in spite of its endeavors to obtain prompt and complete registration of all births occurring in the city and to impress upon physicians the importance of making such returns, has found that the reports from Brooklyn have been regularly incomplete or delayed, so that in comparison with a 100 per cent. registration in the Bronx and 99.2 per cent. in Manhattan, the registration in Brooklyn was only 96 per cent. As a result over a hundred physicians in the last-named borough have been brought to task by the Registrar of Records for failure to file birth certificates within ten days as required by law, and the cases of those who had repeatedly offended in this way and had been warned, have been referred to the Corporation Counsel for prosecution.

Civil Service Examinations.—The New York State Civil Service Commission will hold examinations on July 15, 1916, for the purpose of filling vacancies in the following positions:

Assistant bacteriologist, Quarantine laboratory, Department of the Health Officer of the Port of New York; men and women; salary $1,200 per annum. Open only to candidates who have satisfactorily completed a systematic course in bacteriology and have also had not less than eight months' practical experience in laboratory work, including work in the bacteriology of cholera and plague.

Physician, State prisons and reformatories; men only; salary $2,000 per annum without maintenance. Examination open only to licensed medical practitioners in the State, who since graduation have had at least one year's experience on the resident medical staff of a general hospital, have had at least three years' practice, and are not less than twenty-five years of age. One appointment will be made at Sing Sing in the near future.

Assistant physician, regular or homeopathic; open to men and women; salary $1,200 to $1,600 with maintenance. This examination is intended to provide eligibles for the position of assistant physician in the State hospitals and other positions of a similar nature in State and County institutions. Candidates must be licensed in this State,

graduates of a registered medical school, who since graduation have had one year's experience on the resident medical staff of a general hospital, or as medical interne or clinical assistant in a State hospital or institution, or have been engaged for three consecutive years in the practice of medicine.

Assistant physician, State prisons and reformatories; men only; salary $1,500 per annum without maintenance. Examination open only to licensed medical practitioners in the State, who since graduation have had at least one year's experience on the resident medical staff of a general hospital.

Full details as to the examinations can be obtained on immediate application to the State Civil Service Commission, Albany, N. Y.

Association of Surgeons of the Southern Railway.—The following officers were elected at the meeting of the Society held in Chattanooga, Tenn., June 6 and 7: *President,* Dr. Cooper Holtzclaw, Chattanooga; *Vice-Presidents,* Dr. William H. Armstrong, Rogersville, Tenn.; Dr. T. F. Robinson, Bessemer, Ala.; Dr. Julius H. Taylor, Columbia, S. C., and Dr. Henry McHatton, Macon, Ga.; *Secretary-Treasurer,* Dr. Jacob V. Ray, Woodstock, Ala.

Medical Unit Sails.—The sixth medical war unit to be sent from the United States by the American Physicians' Expositions Committee sailed from New York on June 17, in the charge of Dr. Joseph R. Eastman, professor of surgery in the University of Indiana, Indianapolis.

Dr. Carroll Chase of Brooklyn sailed for France on June 4 to undertake hospital service under the auspices of the Association of American Relief for France and Her Allies.

For Investigation of Tuberculosis.—Announcement has been made of a recent gift to Johns Hopkins University, Baltimore, of $95,000, to be used for the investigation of tuberculosis and the better teaching of physicians and medical students in the recognition and management of the disease and the care of patients. The giver is Dr. Kenneth Dows of New York.

Inspection of Restaurants.—During the first week of the inspection of restaurants, cafés, etc., new being conducted by the New York City Department of Health, 300 eating places in the city were visited, of these only one was rated "good," and only ten "fair" on first inspection.

To Investigate Yellow Fever.—The Yellow Fever Commission instituted by the International Health Board of the Rockefeller Foundation sailed from New York on June 14. The commission, of which Gen. William C. Gorgas, U. S. A., is chairman, will visit a number of ports in South America where the fever is still prevalent. General Gorgas has been given four months' leave of absence for the purpose of directing the investigation.

Dentists Graduate.—At the fiftieth annual commencement of the New York College of Dentistry on June 15 228 graduates, forming the largest class in the history of the college, received diplomas. A tablet in memory of the late Dr. Samuel Dunkin Weisse, former dean of the college, was unveiled.

Public Health Plank.—The platform of the Democratic party, adopted in St. Louis on June 16, contains the following plank: "We favor a thorough reconsideration of the means and methods by which the Federal Government handles questions of public health, to the end that human life may be conserved by the elimination of loathsome diseases, the improvement of sanitation, and the diffusion of a knowledge of disease prevention. We favor the establishment by the Federal Government of tuberculosis sanitariums for needy tubercular patients." The second sentence is badly worded but intelligible enough; what is meant by the beginning of the first sentence can only be guessed at.

Recommend Tuberculosis Sanatorium.—The establishment of a sanatorium costing $1,000,000 for the treatment of barbers suffering from tuberculosis, is recommended in a recent report of a committee composed of the president and general officers of the Journeymen Barbers' International Union of America. If the report is favorably acted upon by the union next September, it is probable that a site somewhere in eastern Tennessee will be chosen. The committee has also made an investigation of tuberculosis among barbers and will include its findings in a final report next September.

To Give Twenty Ambulances.—The members of the New York Stock Exchange have appointed a committee empowered to raise $30,000 for the purpose of equipping and maintaining for one year twenty ambulances to be attached to the American Hospital in Paris. Excellent work has been done by the one ambulance already maintained by the Stock Exchange.

Fund for Biological Study.—The Biological Society of the College of the City of New York is raising a fund of from $500 to $1,000 to be devoted to the encouragement of biological studies at the Marine Station at Woods Hole, Mass., and at the experiment station at Cold Spring Harbor, N. Y.

Gifts to Charities.—By the will of the late Mrs. George G. Wheelock of New York, St. Luke's Hospital receives a bequest of $10,000.

The Brooklyn Hospital, the Bushwick Hospital, the Brooklyn Home for Consumptives, and the Brooklyn City Dispensary receive bequests of $5,000 each by the will of the late State Senator S. M. Griswold of Brooklyn.

Bequests of $1,000 each to Mt. Sinai Hospital and the Montefiore Home, New York, are provided for in the will of the late Mrs. Rachel Lehmaier of this city.

The Mercer Hospital, Trenton, N. J., will receive $150,000 as the result of the decision handed down on June 13 by the United States Supreme Court in connection with the settlement of the estate of Wesley R. Whittaker, formerly of Trenton.

Fordham Gives Degrees.—Forty-two graduates of the School of Medicine, Fordham University, New York, received the degree of doctor of medicine at the annual commencement of the university on June 14. Dr. James T. Walsh of New York, formerly dean of the school, received the honorary degree of doctor of letters, while the honorary degree of doctor of laws was conferred on Dr. Austin O'Malley of Philadelphia.

Alumni Association, Medical Department, University of Buffalo.—At the annual meeting of this association held recently, the following officers were elected: *President,* Dr. Walter D. Greene, '76, Buffalo; *Vice-President,* Dr. William H. Bergtold, '86, Denver; Dr. Henry A. Eastman, '92, Jamestown, N. Y.; Dr. Ross G. Loop, '97, Elmira, N. Y.; Dr. Henry A. Stadlirger, '97, Buffalo, and Dr. M. Louise Hurrell, '02, Rochester, N. Y.; *Secretary,* Dr Julius Richter, '04, Buffalo; *Treasurer,* Dr. Frank E. Brundage, '09, Buffalo. At the annual dinner pledges amounting to $10,000 were received as the nucleus of the Alumni Fund which is being raised

for the benefit of the medical department of the university.

Maine Medical Association.—The annual meeting of this association was held in Portland on June 8, officers for the ensuing year being elected as follows: *President*, Dr. Willis F. Hart, Camden; *Secretary*, Dr. John B. Thompson, Bangor; *Treasurer*, Dr. Edwin W. Gehring, Portland.

Obituary Notes.—Dr. IDA C. BENDER of Buffalo, N. Y., a graduate of the University of Buffalo, Medical Department, in 1890, died at her home on June 11.

Dr. SAMUEL LONG of New Brunswick, N. J., a graduate of the Hahnemann Medical College and Hospital, Philadelphia, in 1873, and a member of the New Jersey State Homeopathic Medical Society, died suddenly at his home, on June 11, aged 65 years.

Dr. FRANK DELOS GRAY of Jersey City, N. J., a graduate of New York University Medical College in 1883, and a member of the American Medical Association, the Medical Society of New Jersey, of which he was president in 1915, and the Hudson County Medical Society, died in Christ Hospital, Jersey City, on June 11, aged 59 years. Dr. Gray was also a member of the Practitioners' Club, and the Alumni Association of Christ Hospital, Jersey City, and was attending surgeon at Christ Hospital and the Jersey City Hospital, and consulting surgeon at the North Hudson County Hospital, Weehawken.

Dr. CHARLES M. TOBYNNE of New York, a graduate of the Eclectic Medical College of the City of New York in 1897, died in the Post-Graduate Hospital on June 13, aged 48 years.

Dr. ROBERT W. HUTCHESON of Freeport, L. I., a member of the Royal College of Surgeons, England, in 1857, a graduate of the University of St. Andrews, Dundee, Scotland, in 1858, and a Licentiate of the Apothecaries Society of London, England, in 1859, died at his home on June 13, aged 80 years.

Dr. SAMUEL MURTLAND of New York, a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1883, and a member of the Medical Society of the State of New York, the New York County Medical Society, and the New York Academy of Medicine, died at his home on June 15, aged 66 years.

Dr. EDWARD J. ULRICH of San Jose, Cal., a graduate of the Cleveland University of Medicine and Surgery in 1871, died on May 31, aged 83 years.

Dr. THOMAS MILLER of Fincastle, Va., a graduate of the University of London, England, in 1859, died at his home after a lingering illness, on May 29, aged 79 years.

Dr. FRANCIS M. HARRINGTON of Providence, R. I., a graduate of the College of Physicians and Surgeons, Boston, in 1891, and a member of the American Medical Association, the Rhode Island Medical Society, and the Providence County Medical Society, died on June 7, aged 47 years.

Dr. HENRY HUGHES of Long Branch, N. J., a graduate of Columbia University, College of Physicians and Surgeons, New York, in 1873, died in New York on June 14, aged 68 years.

Dr. S. CARRINGTON MINOR of New York, a graduate of New York University Medical College in 1892, and a member of the Medical Society of the State of New York, the Bronx County Medical Society, the Society of Alumni of Bellevue Hospital, and the Bronx Medical Association, died at his home on June 16, aged 66 years.

Correspondence.

OUR LONDON LETTER.

(From Our Regular Correspondent.)

ANNUAL CONGRESS OF THE OPHTHALMOLOGICAL SOCIETY—WAR INJURIES—LEBER'S DISEASE—DYSMETROPSIA — CONTUSION HYPOTONIA — FOREIGN BODIES IN THE EYE AND ORBIT—ANATOMICAL RELATION OF THE EYEBALL—TREATMENT OF SYPHILITIC EYE DISEASES.

LONDON, May 27, 1916.

AT the Annual Congress of the Ophthalmological Society, the president, Mr. Walter Jessop, pointed to the fact that the society is now issuing its thirty-sixth consecutive annual volume of Transactions. The Bowman Library is the most complete library of the specialty in the world, and he hoped members would continue to cooperate in keeping it so. He asked, too, that they would notify changes which had occurred in cases that had been discussed, so that their sequelæ might be known. Two brilliant members had died during the year: George Couts of London and Professor Straub of Amsterdam. Referring to the war, the president said the treatment of eye injuries had been satisfactory. He had found so far no case of sympathetic ophthalmitis; this he attributed to the precaution of removing every portion of a smashed eye. In the war of 1870 sympathetic eye trouble was reported in 55.6 per cent. of severe injury to eye or orbit. The war had taught them a good deal about papill-edema. Trench nephritis he regarded as toxic and referred to edema of the retina, ocular hemorrhages and the formation of "white plaques." In the worst cases the blood pressure was high. He advised young ophthalmologists to conduct their examinations by daylight whenever possible.

Mr. Herbert Fisher read a paper on Leber's disease (hereditary optic atrophy) in which he suggested that its cause might be disturbance of the pituitary body, temporary in duration and moderate in degree, implicating the visual pathway. If it be so, he thought organotherapy might do good. During pregnancy the gland might enlarge to two or three times its normal size, and a milky secretion could often be squeezed out of it. The relationship between this and the sexual glands was well known, besides it was so close to the optic chiasma that any slight swelling would extend to it and be palpable there. He showed a skiagram casting a honeycomb-like shadow in the position of the pituitary. There was a full discussion on this subject, after which Mr. Foster Moore read a paper on the retinal circulation in arteriosclerosis. Thrombosis in an artery might cause starvation of tissues and if sudden obstruction a patient might awake to find he was blind: sometimes recovery was just as rapid.

Dysmetropsia was the title of another paper at this society, contributed by Dr. Kinear Wilson, who meant a defect in the capacity to appreciate the size and distance of objects. These cases he divided into (*a*) presumably peripheral, (*b*) probably central, and (*c*) psychical. In the last a hysterical young woman always saw the right half of any object larger than the left. Of two shillings placed side by side she took the right for half a crown. In a case of occipito-parietal tumor the objects seemed so near as to be practically touching the face.

Mr. Teacher Collins read a paper on "contusion hypotonia," pointing out that diminution of tension

was not infrequent after contusion of the eye apart from perforation of the globe. Normal tension was usually restored in a few days, but sometimes not for weeks, occasionally for so long as to threaten permanence. The causes he discussed under the heads: diminished secretion from (*a*) nerve inhibition, (*b*) vascular disturbance, and (*c*) epithelial damage.

Another discussion at this Congress was on foreign bodies in the eye and orbit, introduced by Messrs. Herbert Parsons and A. L. Whitehead. The prognosis and treatment must depend on a variety of factors; *e.g.* whether septic organisms were attached to the intruder and the size and nature of it as well as the site and degree of penetration. An injured eye without useful vision should be removed if there was any suspicion of the presence of a foreign body. If giving no pain or discomfort it should be left alone.

The anatomical relations of the eyeball were next discussed. Mr. Parsons urged more accurate study of the relations of the living eye to the bones by inserting slips of lead-foil in the cocainized conjunctival sac. Despite the heat generated in a high-velocity missile, the particles entering the eye were not always sterile. Diagnosis, pathology, prognosis, treatment, are depended greatly on the nature of the foreign body. Accurate localization was most important and skiagraphy might help this.

A debate on the treatment of the syphilitic eye affections was then introduced by Mr. J. B. Lawford and Capt. H. S. Browning. The former dated these methods from the introduction of organic arsenical preparations in the treatment. They had been extensively prescribed, but many cases of blindness led to their abandonment. Salvarsan seemed more promising. In reference to the ill effects of this reported by some observers he agreed with those who attributed them to fresh manifestations of the syphilitic virus. They improved under continued use of the drug. Captain Browning said in every case of suspected syphilis of the eye the patient's whole body should be subjected to thorough systematic examination. The Wassermann was one of the most reliable tests, but a negative result was not final. Kharsivan he found more toxic than salvarsan. The report of the committee cases of detachment of the retina was presented. It detailed eighty-five cases, half were British. The best visual results ensued when reposition occurred in four or five months, though one had a good result after eighteen months. No albuminuric cases were operated on. Major Cunningham, Professor de Lapersonne, Dr. Hawthorne, Captain Ormond, Mr. Clegg, and Captain Hird contributed further papers.

OUR LETTER FROM ALASKA.

(From Our Special Correspondent.)

TUBERCULOSIS AMONG THE NATIVE ESKIMO—HABITS—SANITATION.

St. Michael, April 18, 1916.

In the ravages of the "great white plague" the Eskimo has not been overlooked. Just how or when this disease was introduced into Alaska no one knows, but it is obvious how its spread, increasing mortality, and morbidity are continued. There are various reports on the tuberculous percentage among the natives and these reports seem to have been formulated by writers other than medical men. This disease is so common in Alaska that every white man or white woman and most of the natives themselves think first of tuberculosis as the cause of all ailments whether external or internal. The general opinion is that about 75 per cent. of the natives are suffering from tuberculosis.

With this in view the writer made a tuberculosis survey of the native children of St. Michael Island. This survey was conducted as follows: (1) Sanitary survey of the native villages so as to obtain an insight into their mode of living, food, percentage air space per individual, number of children under fifteen years of age, sewerage, and garbage disposal. (2) Physical examination of as many children below the age of fifteen as possible. (3) Testing these same children by the von Pirquet tuberculin reaction. (4) Sputum examination. (5) Making developmental measurements.

Sanitary Survey.—A person who has never visited an Eskimo village and has never come intimately in contact with the natives in their natural state has not the slightest conception of the most unsanitary surroundings they maintain. The villages from which these conclusions are drawn, are considered among the cleanest and most up-to-date villages in Northwestern Alaska. The houses are usually one room with a storm door entrance, low ceiling, and about fifteen feet square, made of plank, logs, grass, and scraps of tin, in fact anything that will keep the little heat they have within the building and keep out the cold. Every possible crack is closed so as to keep them warm, and no attempt whatsoever made at ventilation. In this little house will live the entire family and at times other families. In one house of the St. Michael village nineteen persons live continually and sometimes have visitors. The average cubic air space is about 350 cubic feet per person. The native also stores all of his belongings, except dogs, in his house; so we also find poorly tanned and foul smelling furs, seal oil, and fish that have been caught possibly many months before and in a decomposing state, a few dirty vessels of one kind or another, such tools or implements as they make their catch with, and sometimes a stove. The door into the house is usually covered by a piece of canvas, bagging, or a skin so as to aid in keeping out the draughts. Any form of table, chair, or bed is an unusual article. In fact in some of the villages the natives sleep seated on the floor with their backs against the wall. At one time the distinguishing feature between the Eskimo Indian and a citizen (in the legal sense) was based upon whether or not he ate off a table or on the floor.

Water is very scarce, particularly so in winter, as everything is frozen and all water is obtained by melting ice. Considering the above we can readily understand that the Eskimos rarely and in some cases never bathe. They also rub themselves with seal oil, and when you enter one of these houses you encounter an odor incomparable in intensity and offensiveness with anything that the writer ever before came into contact with. They sometimes catch fish in summer and bury it in the ground (possibly to keep the flies away); then will exhume this decomposed mass in winter and eat it as such, or perhaps cook it for themselves or their dogs. Should you enter this house now, the intensity of the smell will stifle you, but the native is placidly enjoying the aroma of these viands.

All waste is thrown out of the door, but as the natives eat all of the seal oil and the entire fish there is but little refuse from this source. The men urinate against the outside of the building, the

women and children defecate and urinate into such vessels as they have and throw this out of the door, the urine freezes and the dogs eat the feces. Is it surprising that communicable diseases spread among these people and that tuberculosis is threatening to destroy the Eskimo? It is only a question of time!

Some tuberculosis investigators have said that once we contract this disease the lesion remains, although at times in an inactive or walled off condition, the patient presenting no symptoms. Having this in mind it was thought best to examine the children. There are two schools at St. Michael, one called the "native school" which pure-breed natives attend, and the other the "white school," where there are a few children with Eskimo blood. The children in both schools were examined through courtesy of the teachers. The results of physical examination, tuberculin reaction, and sputum examinations are collectively tabulated as below:

	White School. (8 Children.)	Native School. (26 Children.)
Positive,	62.5 per cent.	61.5 per cent.
Negative,	12.5 per cent.	23.0 per cent.
Suspicious,	25.0 per cent.	15.5 per cent.

On further examination fully one-half of the suspicious cases would prove to be tuberculous.

This is a small number from which to draw conclusions and it is not intended to state that 61.5 per cent. of the native Eskimo children of Alaska under the age of fifteen years are suffering from active tuberculous lesions, but it does furnish an insight into the high percentage of tuberculosis in the natives even at an early age and in one of Northwestern Alaska's best villages.

During this survey there was occasion to examine eleven adults who were complaining of pain in their chests. All eleven showed advanced tuberculosis. These same adults are living in the above described houses with their children, brothers, and sisters. In all there are 27 houses in the village with 107 persons, 46 of whom are children under the age of 15 years. It was impossible to examine more than 26 of them as the parents objected in the remaining cases and antagonism was avoided wherever possible. The 26 children were all children from the native school, between the ages of 4½ and 14 years of age. Besides the 107 persons referred to above, there are 10 others who live in the village occasionally and a large number of others who live in other villages but visit here at St. Michael, living in the native village during their sojourn.

Although the percentage of positive cases from the white school was higher than from the native school, the physical signs were far more marked in the latter and there was a greater percentage of advanced tuberculosis in the native school. These eight mixed-breed children from the white school live under much better sanitary conditions, in fact all of them are at present living under conditions approximating those of white people and none of them live in the native village. These children intermingle to a certain extent and most of them have lived under conditions, during a portion of their lives, simulating Eskimo habits. Even the white man, in general, lives under poor sanitary surroundings at St. Michael.

It is stated that the Eskimo as a rule has little or no appreciation, but the writer believes he appreciates medical attention when approached in the proper manner. He is a man that one cannot force into doing things, and to attempt to compel him to clean house (in the white man's sense) or to discard food that a civilized man would not eat, will soon gain his ill will and distrust. The field for medical and surgical work on the Alaskan natives is untouched. It is a field where medical missionaries can reap great harvests. The United States Bureau of Education has a small medical appropriation annually but it is far too little and only a very small percentage of the natives can receive much benefit from it. There are a few hospitals scattered over this enormous country and a few doctors here and there. They are undoubtedly doing valuable work, but there are too few of them. If the churches, religious societies, and benevolent organizations in general of that rich and wonderful country of ours—the United States of America—would turn only a part of their attention to Alaska and render financial aid, these poor and wretched natives, many of whom are without clothes and hungry to-day, could be elevated, mentally and physically, to a much better position.

Progress of Medical Science.

Boston Medical and Surgical Journal.

June 8, 1916.

1. Cholecystitis; Changes Produced by the Removal of the Gall Bladder. Edward Starr Judd.
2. Nephropexy. R. H. Gilpatrick.
3. Acute Perforation of Ulcers of the Stomach and Duodenum, with Case Reports. Martin T. Field.
4. Post-Operative Treatment. Harold G. Giddings.

1. Cholecystitis; Changes Produced by the Removal of the Gall Bladder.—Edward Starr Judd discusses the function of the gall bladder and the effects of its removal, and gives the technique of cholecystectomy, which he considers the gall-bladder operation of choice. The conclusions the author draws are as follows: The systemic circulation is probably the most important avenue through which infection reaches the gall-bladder. We are not yet able to recognize all cases of cholecystitis even with the abdomen open. The clinical history is most important in determining the existence of cholecystitis. Chronic cholecystitis without stones does exist as a definite pathological lesion and produces symptoms that will be relieved by the removal of the gall bladder. The only change in surrounding structures produced by removal is the dilatation of the common and hepatic ducts and possibly the stump of the cystic duct. This dilatation is most marked in the hepatic duct. Eventually this dilatation, with increased pressure, overcomes the action of the sphincter at the intestinal end of the duct, and the bile passes through the duodenum with very little resistance. The author believes that this mechanism explains why the removal of the gall bladder cures symptoms produced by inflammation of the pancreas, assuming that the inflammation in the pancreas is caused by bile from the common duct entering the pancreatic ducts. Finally, the changes in the ducts which follow cholecstectomy indicate that the gall bladder has a definite function.

2. Nephropexy.—R. H. Gilpatrick says that our study of the anatomy and physiology of the kidney and its means of support lead us to the conclusion that the organ is never a fixture and that mobility without symptoms may exist to a marked degree. It is therefore neither wise nor necessary to attempt to fix a pathologically moveable kidney in its exact anatomical position, an approach to within one inch being safe and sufficient, as well as much easier of accomplishment. The technique of various operations is given, with re-

ports of cases, and the writer makes a general summary of his position as follows: A mechanical problem is best solved under good mechanical principles. Success is dependent upon the degree to which normal anatomical and physiological conditions are approached. The kidney may not be wounded, fixed or constricted with impunity. Decapsulation, either partial or complete, does not impair kidney function. The most rational method of securing the kidney in position after it has become a wanderer to such a degree as to demand operation, is that of removing the cause and aiding in the reconstruction of natural support. Any permanent artificial support is dangerous if not completely destructive to the kidney's functional activity. The rolled-up and transfixed capsular flap offers a perfectly adequate hold for one end of the anchorage, and the muscular and fascial layers of the loin the same for the other end without sutures which emerge through the skin. If the anatomical relations of the kidney cannot be permanently readjusted without destruction of its functional activity it deserves to be either let alone or removed.

3. Acute Perforation of Ulcers of the Stomach and Duodenum, with Case Reports.—Martin T. Field has had the opportunity during the past few years to study ten cases of acute perforation of the stomach and duodenum. Six of these cases were his own and a brief report is made of them. The conclusions arrived at by the author are as follows: (1) Acute perforation of gastric and duodenal ulcers is not an uncommon accident. Early operation yields a high percentage of cures. Late operation gives a low percentage of cures, even when performed by a master surgeon. (2) It occurs most frequently in adult males giving a history of stomach trouble. Complete absence of dyspepsia (Case 1) should not preclude the possibility of this diagnosis. (3) The most important diagnostic guide is the occurrence of sudden, severe, epigastric pain immediately followed by signs of spreading peritonitis, which manifests itself by the presence of general tenderness and muscular rigidity (4) Early or first hour general tenderness and rigidly are very important signs in differentiating acute perforation from appendicitis and many other surgical lesions within the abdomen. (5) The points of maximum tenderness and rigidity are at first, especially in duodenal perforation, on the right side above and below. The rigidity later becomes board-like over the whole abdomen. This is quite distinctive of perforation, although in exceptional cases it may not be present. (6) Tympany over the liver is usually not present. It may occur, however (Case 4). Its absence should not militate against the diagnosis. (7) The abdominal pain as a rule is very severe and patients have an anxious expression, apparently realizing that something serious has occurred within the abdomen. The pulse, however, is often only slightly accelerated in the beginning. This is surprising, considering the gravity of this condition. (8) Early operation, implying repair of perforation with or without gastroenterostomy, should give a high percentage of recoveries. (9) Simple repair is apt to be followed by stomach symptoms, which later require gastroenterostomy for their relief. (10) In properly selected cases, gastroenterostomy, performed at the time of closure of perforation, is followed by most gratifying results.

New York Medical Journal.

June 10, 1916.

1. The Therapeutic Resources of Saratoga Springs. Simon Baruch.
2. Surgery of the Heart. W. Wayne Babcock.
3. Delayed Gastric Digestion. Martin E. Rehfuse.
4. The Definite Management of Pneumonia. Solomon Solie-Cohen.
5. External Dislocation of the Knee. Royal H. Fowler.
6. Epidemic Pneumonia in the Tropics. F. Hobart Egbert
7. An Apparatus for Intravenous Salvarsan Injection. Louis René Kaufman.

2. Surgery of the Heart.—W. Wayne Babcock says that first it should be emphasized that the human heart is more tolerant of surgical manipulation than that of the cat or the dog, and apparently any operation that may be performed successfully on these lower animals, may, with even greater hope of success, be carried out upon the human heart. Local anesthesia or para vertebral nerve blocking with a 1, ½ or ¼ per cent. novocaine solution is to be preferred for the chest wall. No anesthetic is required for the heart proper. At times an associated moderate narcotism with scopolamine-morphine is desirable, or a slight ether narcosis, which is also to be preferred where haste is essential. An emergency operation upon a shocked and semi-unconscious patient may require no anesthetic. If the pleural cavities are to be invaded, intratracheal insufflation after the method of Meltzer-Auer has advantages. To restrict the inhibitory action of the vagus, a preliminary injection of atropine may be given subcutaneously, while cardiac massage and the intravascular injection of epinephrine are most valuable methods in starting the arrested heart. An excess of epinephrine, however, is dangerous, both from the vascular strain imposed and the danger of pneumogastric exhaustion. Gunshot wounds are more dangerous than incised wounds. Fischer in 1867, from a study of 452 heart wounds, found that from 7 to 10 per cent. are followed by spontaneous recovery. Lorson has reported nine recoveries after twenty-three needle punctures, eleven recoveries after nineteen stab wounds, and three recoveries after 110 unsutured gunshot wounds of the heart. Of operations for wounds of the heart, Vaughan has collected 150 cases, with 35 per cent. of recoveries compared with 15 per cent. of recoveries without operative treatment. Miller found 53 per cent. of recoveries in fifty-one more recent operative cases that he collected. The diagnosis of wounds of the heart may be difficult. In seven of Stewart's twelve cases, on exposing the heart no injury was found. The symptoms vary from instant death to a disability so slight that the patient continues to walk about, ultimately recovering or dying after several hours or days with the pericardium and possibly also the pleura filled with blood. Usually there is marked precordial anguish, pallor, shock, collapse, and at times unconsciousness. There is usually marked dyspnea, with rapid shallow respirations, and the development of cyanosis. The blood pressure rapidly falls, the pulse is weak and irregular, or lost. Method of operating for pulmonary embolism: 1. Dry shaving of the skin and disinfection by tincture of iodine. 2. The skin incision is carried along the left sternal edge from first to third rib, and from this a horizontal incision is made along the second rib. The skin and muscle flap is raised with a resection of the second and at times the third rib to a point well beyond the costochondral junction. Avoiding the internal mammary vessels, the pericardium is opened through the pleura in front of the phrenic nerve, which is to be avoided. 3. A rigid knobbed hook is curved around the aortic and pulmonary artery, a strong rubber tube affixed, and instruments withdrawn, leaving the rubber in place. 4. By the rubber tube both vessels are pulled forward and controlled. The visceral layer of pericardium and fat over pulmonary vessels is excised, so that the vessel cannot slip back into its serous covering. 5. Through an incision in the axis of the pulmonary artery two-fifths of an inch long, a fine curved dressing or polypus forceps is introduced into the branches of the pulmonary artery and the clots are

extracted. The aorta and pulmonary artery must not be constricted over three-quarters of a minute. If uncertain as to complete removal of all clots, the incision should be temporarily closed with a special narrow clamp, the constriction relieved, and later the procedure repeated. In suturing a small forceps springing outward and having a small hook projecting outward at each tip is introduced between the end of the slit, the vessel drawn forward and a flat hemostatic clamp is so applied behind the forceps that the edges of the incision project a little between the branches of the forceps. The blood stream then travels behind the occluded slit and the latter may be quickly closed by interrupted silk stitches. The removal of blood from the pericardium and suture of external parts without drainage complete the operation. In about fifteen cases no recovery has as yet followed the operation, but in one case the patient survived to the fourth day.

6. Epidemic Pneumonia in the Tropics.—J. Hobart Egbert points out that pneumonia is not limited to any particular climate, latitude, or altitude. In the spring of 1913, while the writer was serving as superintendent of the medical department of a large fruit company at Santa Marta, Republic of Colombia, pneumonia occurred, in virulent, epidemic form, among the Colombian soldiers in the Santa Marta barracks. Several cases proved rapidly fatal from mixed infection, with lung suppuration; in others the pneumococcus invaded the meninges, inducing pneumococcic meningitis, and was found in the cerebrospinal fluid. In a number of cases the pneumococcus was demonstrated in the general circulation. Post mortem examination in two rapidly fatal cases revealed extensive pyothorax. The mortality was high, death occurring in 57.9 per cent. of all the soldiers stricken with the disease between March 11 and April 24. Nearly all the cases that ended in recovery had a somewhat classic course, terminating, as a rule, through crisis, with but few important sequelæ. Santa Marta is a seaport on the northwestern coast of the Republic of Colombia in latitude 11° 15′ N. and longitude 74° 14′ W., or, in other words, is 675 miles north of the equator and due south of the City of New York. The town is low-lying and is situated upon the seaward portion of a circumscribed plain, surrounded, except to seaward, by the foothills of the Sierra Nevada. It has a population of about 8,000 and a dry even tropical climate. During the year 1913, the maximum temperature recorded by a standardized thermometer kept in the shaded portico of the office of the superintendent of the medical department was 92° F., and the minimum 79° F.—a variation of only 13° F. throughout the year. In the early period of the epidemic, two cases occurred among the soldiers which tended materially to complicate the situation, in that, while both were serious and important cases, neither presented characteristic signs of pneumonia, but in both the general symptoms corresponded closely to those observed in the first stage of yellow fever. In addition to this, one patient was found to have an enlarged inguinal gland. The cause of the outbreak among the soldiers was at least partly due to overcrowding and to improper accommodations in the local barracks. There were at that time 380 soldiers and about twenty officers quartered in a building that could not well afford proper accommodations for more than half that number. Many of the soldiers were raw recruits from the interior, and although the routine drills, etc., were, especially in view of the warmer climate of the coast, somewhat strenuous for these, all were well fed and under good, wholesome discipline. Local meteorological conditions also apparently favored the spread and virulence of the infection. The season was dry and there had been no rain for some months. The trade winds then blew fresh, and the surface currents were freighted with the polluted dust and sand of the town.

Journal of the American Medical Association.

June 10, 1916.

1. Cases Illustrating the Faulty Treatment of Superficial Malignancy. H. H. Hazen.
2. Contributions to the Movements of the Empty Stomach: XXXIV. A Note on the Movements of the Empty Stomach in Certain Pathologic States. A. B. Luckhardt and W. W. Hamburger.
3. Chylous Ascites and Chylothorax Due to Carcinoma of the Stomach. John H. Outland and Logan Clendening.
4. Development of the State Hospital at Kankakee (1880-1890). Richard Dewey.
5. The Etiology of Iritis. Ernest E. Irons and E. V. L. Brown.
6. Chylothorax, Chylous Ascites and Lymphosarcoma; Report of Case. Henry Enos Tuley and Stuart Graves.
7. An Unusual Case of Chronic Interstitial Nephritis, with Findings in Blood and Urine. Robert H. Halsey.
8. The Examination of Normal Gastric Secretion by the Fractional Method. Eugene S. Talbot.
9. Laminectomy with Simple Exposure of the Spinal Cord: Its Effect on the Reflexes and on the Symptoms of Spinal Disease.
10. Trichonosis and the Cerebrospinal Fluid. William Lintz.
11. A Case of Trichonosis with Embryo in the Spinal Fluid. W. T. Cummins and G. R. Carson.
12. A Case of Beta-Eucain Poisoning. T. G. Orr.

1. Cases of Faulty Treatment of Superficial Malignancy.—H. H. Hazen states that during the past three years he has been consulted by thirty-two private patients for malignant conditions of either the skin or mucous membranes of the mouth. Of this number only six consulted him for early, untreated stages of cancer. The faults in handling the other cases naturally group themselves under three headings; first, neglect on the part of the patient; second, faulty diagnosis on the part of the physician, and third, improper or insufficient treatment by either physicians or quacks. In nine instances, patients had neglected themselves without seeking medical advice. One intelligent man had suffered from a cancer of the scalp for nineteen months, four patients had superficial growths of either the face or neck for over two years, one man had carcinoma of the lip for eight months, two had cancer of the face for six years, and one woman had five neoplasms of the face for seven years before seeking aid. Twelve cases were either improperly or sufficiently treated after a correct diagnosis was made. In several instances more than one faulty method of treatment was employed. Five patients had operations performed from which rapid recurrences took place. Four of the patients had been treated by small divided doses of the Roentgen rays. The new method of single heavy dose therapy has been in use such a short time that the writer and others have not as yet had a chance to study recurrences after it, although some will doubtless take place. The conclusions arrived at are as follows: 1. The public is not yet sufficiently educated as to the importance of attending to superficial sores that will not heal. 2. While it must be admitted that some cases of superficial malignancy are difficult to diagnose, still entirely too many of them are mistaken for other affections, even by experienced physicians. 3. Many cases are not treated radically enough; it should always be remembered that insufficient treatment of whatever kind is the worst possible thing for a patient suffering from a malignant condition. 4. Radium, even in large doses, and when administered by some of its greatest advocates, is by no means infallible in the superficial cases that it is stated to cure.

5. The Etiology of Iritis.—Ernest E. Irons and E. V. L. Brown have investigated all cases of non-traumatic iritis in one hundred patients. By a careful weighing of all the evidence, they were able to determine in most cases which infection was probably responsible for the disease of the eye; but sometimes the available evidence was insufficient and they have placed such

cases in a "combined" group. Some of these patients suffered from several infections. Syphilis, active tuberculosis, gonococcal infection, and alveolar abscess were repeatedly found in the same individual. Out of 100 successive cases of iritis, there were only twenty-three in which syphilis was the cause of iritis and sixteen others due to other causes in which syphilitic infection had occurred, making a total of thirty-nine patients in whom syphilis had to be seriously considered in the etiologic diagnosis. This left sixty-one cases in which a searching examination failed to reveal any evidence of past or present syphilitic infection and in which, therefore, the iritis could not be reasonably thought to be due to syphilis. So far as one may draw conclusions from this number of cases, it would seem that the widely accepted statement that 50 per cent. or more of iritis is due to syphilis may have to be revised. In eighteen patients the writers regarded the dental lesion as the source of the iritis. In fifteen patients the iritis seem to be clearly due to other causes, such as syphilis and tonsillar infection, and the dental infection relatively inactive so far as concerned the causation of metastatis lesions. In the remaining nine cases, the dental infection was associated with other infections, often two or more, including tonsillar, sinus, syphilitic or gonococcal, and they were unable to satisfy themselves which infection was responsible for the disease of the eye. The tonsil was clearly the source of infection in sixteen cases. In thirteen cases of the combined group, tonsillar infection was present with other infections; but as in the case of dental infections, they were not able to determine whether tonsillar or dental infection was the immediate cause of the iritis. Tonsillar and dental infections are frequently found together, and the question may well be raised as to whether the dental infection may not have developed in previous months and years by the same mechanism as the iritis, by repeated infections from the tonsils. Gonococcal infection was believed to be the cause of the iritis in nine patients, all males. In eight patients the iritis appeared to be tuberculous. In three patients the iritis was considered due to infection from the sinuses. In three cases the iritis was associated with non-venereal infections of the genitourinary tract, including two of the prostate. Diabetes was present in three cases, but in each instance, infections were also present, in one, alveolar abscess; in one, tonsillar abscess, ant in one, tuberculosis, syphilis, and tonsillar infection. Several cases came to the investigators with a provisional diagnosis of "iritis from autointoxication." In none of these did they fail to find active infectious processes, such as tonsillar or alevolar abscesses, and the previously resistant iritis subsided on relief of the infection without measures specially directed toward the treatment of the supposed "gastrointestinal autointoxication." There were seventeen patients in whom several infections were present, or in whom there were several foci harboring the same or different infections in such combination that they could not with certainty determine which infection had given rise to the iritis. From the writers' clinical study and from their experiments thus far, it would appear that not one but several factors are concerned in the production of iritis, among which may be noted the presence of a focus of infection in which bacteria may live and multiply, partially protected from the resisting forces of the host; the periodic entrance into the blood stream of these organisms and that lodgment in the eye itself, either by reason of their great number as in sepsis, or by fortuitous embolism; changes in the eye itself, either in vascular anastomoses, or in susceptibility of the ocular tissues owing to previous injury; and finally changes in the organism itself, whereby it becomes better able for a time to maintain itself in the tissues of the eye. Such adaptations on the part of the organism do not necessarily imply any demonstrable change in the morphology or cultural reactions.

8. The Examination of Normal Gastric Secretion by the Fractional Method. — Eugene S. Talbot examined about 150 cases by the fractional method in order to study the entire cycle of secretion during gastric digestion. These included a normal series on proved healthy medical students and nurses, and an abnormal series on private and clinical hospital patients. The technique employed was that of Rehfuss with a number of changes and additions. As a result of the work it is believed that the fractional method of gastric analysis should replace the old tube method. The true secretory curve of digestion can be determined only if the test meal is introduced into the empty stomach. A much larger quantity of residuum may be obtained from the symptom free fasting stomach by the Rehfuss tube than was formerly considered to be within the limits of normal. The intensity of appetite secretion is variably influenced by the Ewald meal in different normal individuals. The difference in the time of occurrence of the high point of secretion and the rapidity of the change in acid concentration make it impossible to determine the true secretory state of a stomach other than by the fractional method of analysis. A plateau type of secretory curve is no proof of the secretion of an acid of uniform concentration. There is no form of secretional curve common to all normal stomachs, although the vast majority of normal curves have certain characteristics in common. The contour of a given normal curve is dependent on the following main factors—the intensity and duration of appetite secretion as influenced by the test meal, the amount of gastric mucus, the concentration of food secretion, and the emptying time of the stomach. The emptying of the normal stomach is fairly uniform. Many phenomena associated with the normal gastric cycle of digestion as determined by the fractional method of analysis have yet to be explained.

The Lancet.

May 20, 1916.

1. Hunterian Lectures on Links in a Chain of Research on Syphilis. Delivered before the Royal College of Surgeons of England by I. E. R. McDonagh.
2. Notes on a Case of Syphilis of the Aorta. Clifford Allbutt. With a Pathological Report. Hubert M. Turnbull.
3. The Treatment of Head Injuries in a Casualty Clearing Station. Alexander Don.
4. Two Cases in Which the Lateral Ventricle Was Opened in the Course of Operations for the Removal of a Bullet and Indriven Bone from the Brain. H. F. Woolfenden.
5. The Treatment of Hepatic Failure in Yellow Fever, Malaria and Other Conditions: A Suggestion. Andrew Balfour.
6. Hysterical Mutism in a Boy. Arthur I. Hall.
7. A Case of Palpebral Chancre. H. J. McGregor and Donald M. Livingstone.

1. Links in a Chain of Research on Syphilis.—I. E. R. McDonagh, in discussing chemotherapy, says that Ehrlich's principle in applying the "side-chain" theory to treatment was shortly this: To find drugs, the chemical groups of which would combine with the chemical groups of the parasites to be attacked, without combining with the chemical groups of the host's cells. The chemical groups of both the drugs and the cells received the name of "chemoceptors." The disease which Ehrlich hoped to combat was sleeping sickness, and as arsenic was the body which appeared to have the greatest influence upon the disease, experiments were undertaken with this metal. Ehrlich's views as to the mode of action of salvarsan, was that a union takes place between the drug and certain parasites, with a destructive action upon the latter. What the nature

of the union is, and why the death of only certain parasites should follow, are not explained. Summing up the points which stand out, with respect to the mode of action of salvarsan, the writer states that we can, in short, say that strongly absorbed metallic and non-metallic compounds become attached to the lipoid-globulin molecules of the syphilitic parasite, the plasma cells, and the serum by virtue of their amino groups and of the peculiar physical properties of the protozoal lipoid-globulin molecules. The metallic compounds attack those phases of the *Leucocytozoon syphilidis* in which reaction is most marked, especially the spirochetal phase, in virtue of its free hydroxyl groups. Both metals and non-metals act as catalysts, that is to say, they accelerate the complementary or oxidase-reducase action of the lipoid-globulin molecules of the serum and of the plasma cells by increasing directly and indirectly the supply of active oxygen, which is necessary for the action of adsorption, a chemico-physical action which destroys the parasites. The writer wanted an element which had the following properties: 1. Of more than one valency; 2. An atomic weight of less than 75; 3. A non-metal; 4. A reducing agent. Only two elements occurred to him which would fulfill these conditions, and these were phosphorus and sulphur. He discarded phosphorus, owing to the fact that it can produce very toxic symptoms, such as fatty degeneration of the liver, so he conducted experiments with sulphur and succeeded in making a compound which has in some respects a more powerful therapeutic action than that of salvarsan. He prepared several compounds, but soon found that one was much superior to the others, and this one was di-ortho-amino-thio-benzine, or "intramine," as it is commercially called. As intramine is a new drug, some points with regard to its administration might with advantage be given. All intramuscular injections are apt to be painful; the intensity of the pain varies with different individuals, and is mostly due to the bulk of the injection and the edema and contraction of the muscle fibers which follow it. There are several ways in which pain can be reduced. First and foremost, the intramine should be well warmed before it is injected. Immediately after the injection pain is experienced; this lasts for a few minutes, then vanishes, to reappear some hours later when the edema and contraction set in. The patient should be well massaged after the injection has been given; he should walk about to aid absorption, and the moment the stiffness begins to set in he should have a very hot bath in which some soda has been dissolved. For the next two or three days the leg should be moved as much as possible, hot baths should be repeated, and the part should be well massaged. By the fourth day every trace of intramine will have vanished from the buttock, no induration will remain, and the patient should be able to move about in the normal way. There is usually a rise of temperature on the second and third days, the degree depending upon the severity of the case; the patient may perspire freely, and sometimes a few days later an erythema appears over the injected buttock, which either remains localized or spreads over the body, in every case to disappear twenty-four or forty-eight hours later. The erythema is probably due to the sulphur. However big be the dose, and however frequently it be repeated, McDonagh has never noticed any other ill-effects than those already described; therefore it may safely be assumed that intramine is an entirely innocuous drug. He cannot help closing his lectures with the prophecy that intramine, especially when alternated with powerfully adsorbed oxidizing agents, is going to play a very important part in the treatment, not only of syphilis, but of all chronic infections, since it has already proved itself of considerable value in cases of tuberculosis and chronic gonorrhea. It is even probable that intramine may have a place in the treatment of malignant diseases.

4. Two Cases in Which the Lateral Ventricle Was Opened in the Course of Operations for the Removal of a Bullet and Indriven Bone from the Brain.—H. F. Woolfenden draws attention to the extreme fatality that follows the opening of a lateral ventricle during an operation for the removal of a foreign body, whether a bullet, shell fragment, or depressed bone, and records two cases in which recovery followed the operation. In about 200 cases that have come under his notice there have been some half dozen cases where, after the removal of the foreign body, cerebrospinal fluid has been found escaping from the depth of the wound, either at the operation or during the dressings some little time after the operation. In these cases the marked infection present had compelled an operation to be undertaken, although *x*-rays showed the likelihood of the ventricle being involved, and, further, this marked infection had reluctantly compelled one to leave in a drain. These patients mostly died from cerebral hernia following infection of the ventricle and basal meningitis, but one died from extreme emaciation and wasting due directly to the persistent escape of cerebrospinal fluid from a fistula that connected the lateral ventricle with the scalp wound. In view of this high mortality he ventured in the two cases recorded to depart from the general rule in early cases of always draining the track after the operation for the removal of foreign bodies or depressed skull fragments which were embedded in the brain. In these two cases the signs of sepsis were absent or slight, and so he felt justified in taking the risk of leaving a possibly infected track of the brain undrained to the risk of establishing a cerebrospinal fistula. Fortunately this procedure was justified, and either the wound was not infected or probably the patient's tissues were able to overcome the infection that was there. In the first case it is likely that the wound was clean, in the second case, a certain degree of infection appeared to be present. Both the cases occurred at a base hospital in France.

5. The Treatment of Hepatic Failure in Yellow Fever, Malaria, and Other Conditions: A Suggestion.—Andrew Balfour has had opportunities at Panama and elsewhere of studying sections of the liver from cases of yellow fever, toxic jaundice, blackwater fever, and malaria associated with icterus, and of noting the marked destruction of liver cells which occurs in these diseases. These studies have brought to his mind a case of malarial infection in the Sudan where, although quinine eventually cleared the blood from a heavy infection of *P. falciparum*, death occurred after a peculiar set of cerebral symptoms. At the time the medical officers in attendance on the case felt themselves between the devil and the deep sea, for they had difficulty in deciding whether these symptoms were due to the action of material toxins or were evidence of a tendency to quinine poisoning in a subject very susceptible to the effects of the drug. In the light of recent work and remembering the condition of the liver as revealed post-mortem, he has no hesitation in saying that the symptoms in this case were an expression of hepatic failure. Now what are the symptoms associated with the destruction of liver cells? They are chiefly of cerebral origin, pointing to a poisoning of the higher nerve centers. It will be found that these symptoms are common to delayed chloroform poisoning, yellow fever, severe cases of epidemic jaundice, the

so-called Mediterranean fever, Weil's disease—whatever that may be—blackwater fever, certain forms of fatal malaria, acute yellow atrophy, phosphorus poisoning, etc. The object of his note is to suggest that on the lines indicated by Colonel Hunter in cases of toxemic jaundice, etc., endeavor to prevent or at least cut short the rapid destruction of liver cells which seems to him plays so important a part in bringing about a fatal issue in such diseases as yellow fever and bilious remittent fever. Colonel Hunter thinks that in the destruction of liver cells there is, owing to the strain thrown upon this organ, increased fat metabolism with acidosis and acetonuria, and the liver cell coming under the influence of its own ferments, undergoes autolysis and thus presents the characteristic appearances seen post-morten. Colonel Hunter further thinks that ammonia, as a rule, keeps the ferments in check, and in the early stages of febrile diseases, purging the patient with calomel and withholding food prevent the formation of ammonia and thus the hepatic ferments have full play. Colonel Hunter's theory and researches would lead to one important practical conclusion, *i.e.* the necessity in cases of delayed chloroform poisoning and toxemic jaundice of keeping up the supply both of sugar and protein food, the latter in peptonized form.

British Medical Journal.

May 20, 1916.

1. Notes on Military Orthopedics. III. The Soldier's Foot and the Treatment of Common Deformities of the Foot. Robert Jones.
2. The Causes and Prevention of Trench Foot. Basil Hughes.
3. The Excystation of Entameba Histolytica (Tetragend) as an Indication of the Vitality of the Cysts. W. I. Renfold, H. M. Woodcock, and A. H. Drew.
4. Amebic Dysentery in a Man Who Had Never Left England. C. Worster-Drought and D. D. Rosewame.
5. The Teatment of Puerperal Sepsis by Uterine Suction and Drainage. Norman Porritt.
6. A Note on the Use of the Galvanometer as an Aid to the Diagnosis of Nerve Lesions. C. Nepeau Longridge.
7. A Simple Portable Refrigerating Box and Its Use as a Temporary Incubator in Military Work. S. Delpine.

1. The Soldier's Foot and the Treatment of Common Deformities of the Foot.—Robert Jones describes the deformities and disabilities of the foot, those to which the soldier is more especially liable, and their treatment. These disabilities and deformities include flat foot, acute flat foot, traumatic flat foot, flat foot from periarthritis, rigid flat foot, osseous flat foot, flat foot due to spasm of the peronei. The flat foot for clinical purposes may be divided into two classes. (a) The foot which the patient can invert. (b) The foot which he cannot invert. The first class will not respond to any mechanical treatment, such as a plate or alteration of the boot. It will not even suffer correction by means of a bandage to an outside iron from knee to heel. An operation of forcible manipulation and fixation under an anesthetic are essential preliminaries to the simpler mechanical methods. The second class will never require an operation. This simple clinical division should be helpful to the military surgeon. He has purposely avoided all mention of tiptoe exercise. These exercises are excellent, but they will not cure a flat foot if the patient is allowed to come down in the flat-footed position between the period of exercises. If the principle of deviation of body weight on to the outer edge be loyally adhered to every ordinary case will recover, even without special tiptoe exercise. Loyal adhesion to the principle stated means that the patient never sets foot on the ground except in a properly crooked boot, shoe or slipper. Even in his bath he must be careful to stand on the outer edge of the foot. The whole idea of treatment is to insure that uninterrupted adaptive shortening of stretched structures shall take place. Massage, tiptoe exercises, electric stimulation of muscles all help to hasten the recovery, but a few minutes careless walking in stocking soles will undo all benefit from other treatment by again stretching recovering structures. Frequently the high arched foot is the most troublesome type when the tendons are strained and the ligaments begin to give. The strain upon the astragalo-scaphoid joint in this type is, for obvious mechanical reasons, great, and the progress of the affection is often marked by a prominence about the scaphoid due to pressure osteitis.

5. The Treatment of Puerperal Sepsis by Uterine Suction and Drainage.—Norman Porritt is of the opinion that the suction tube has all the advantages with none of the dangers of the uterine douche. In at least two cases he has seen the uterine douche convert a smart sapremia into a rapidly fatal general infection, while in another case it set up acute, presumably chemical peritonitis. While he was administering the douche the woman was seized with agonizing abdominal pain, which was quickly followed by general collapse and rapidly developing abdominal tendencies and distention. The douching was at once stopped, but the patient died five hours after the onset of the acute pain. To illustrate the patulousness of the fallopian tubes, Dr. Goodall narrates a case of congenital atresia of the sigmoid. The abdomen was markedly distended, and dark liquid blood was coming in spurts from the vagina. On operating the abdomen was found full of blood and meconium, the sigmoid having ruptured. At the autopsy, four hours later, blood was still coming from the vagina. In the cadaver Dr. Goodall has injected methylene blue into the uterine cavity with douch can and cannula, imitating as closely as possible the technique of operative work. With a pressure of only two feet of elevation, and in some cases only eighteen inches, and with a temporary obstruction to the outflow, such as is frequently caused by clots and fragments of tissue, he was able to send fluid into the peritoneal cavity through the fallopian tubes. Hence, he says the risk of chemical peritonitis, not to speak of septic peritoneal contamination. Uterine suction tells us the conditions in the interior of the uterus. It is most instructive to watch the gradual alteration of the staff withdrawn from a thick offensive fluid, loaded with semi-solid purulent masses, to a clear red liquid, and from that to an inoffensive mucus. Moreover, it prevents us from being misled, as we doubtless often are, but the deceptive character of what we find upon the diaper. The diaper may be covered with discharge, which may be only an overflow, or it may not come from the penthouse in the uterus at all, for there may be odorless discharge on the diaper, and foul, fetid fluid in the uterus. And efficient drainage of the uterus is the key to the successful treatment of puerperal sepsis.

Cleaning Vacuum Bottles.—Whenever a vacuum bottle gives any odor at the mouth of the bottle it should be cleaned. Hot water, soda (caustic soda or washing soda is more cleansing and quicker than baking soda, but the latter will do), and little clippings of clean paper will do the work, shaking from time to time for fifteen minutes with the bottle corked. Milk causes most of the uncleanness in a vacuum bottle, and bottles used for it should be cleaned often. Coffee with milk in it is apt to leave a sediment. Soup will sometimes leave an odor calling for a cleaning. Beer gives off a peculiar smell that soda also removes. Water will deposit a fine mud after a time, due to lime sediment, and soda will remove this when used as directed above.

Society Reports.

AMERICAN MEDICAL ASSOCIATION.

Sixty-seventh Annual Session—Held in Detroit, Mich., June 13, 14, 15 and 16, 1916.

(Special Report to the MEDICAL RECORD.)

SECTION ON DISEASES OF CHILDREN.

(*Continued from page* 1118.)

The Factor of Starvation in the Development of Acetonuria.—Drs. S. BORDEN VEEDER and MEREDITH JOHNSTON of St. Louis presented this communication. They emphasized the distinction that must be made between acetonuria and acidosis. Acidosis was now used in a more general way to designate a decrease in the alkali reserve in the blood. It was a question of practical value to the pediatrician to know how starvation influenced the acetone bodies in the urine. Observations were made on children of different ages and body weight. The diet on which they were fed before the period of starvation was one consisting of 40 or 50 per cent. carbohydrates. It was found that the total quantity of acetone varied directly with the period of inanition. The total output when the children were not starved was 3 mgs. per kilo body weight. During the first twenty-four hours of starvation there was little difference in the output of acetone bodies, but there was an increased elimination during the second day. If the period of starvation extended over only one day, the output of acetone bodies on the second day returned to normal figures. In eighteen cases in which there was a second twenty-four-hour period of starvation the output of acetone bodies increased from 20 to 410 mgs. per kilo body weight. On the day following the second day of inanition the output of acetone bodies was less than on the second day. In febrile and toxic conditions the figures were high, but not as high as during inanition. Folin and Denis had found that obesity was not a predisposing factor in increasing the total output of acetone bodies. The writers had made observations on children well nourished and on those undernourished, and found no relation between the degree of acetonuria and the degree of inanition. All the children were closely watched for clinical symptoms, particularly with reference to the symptoms of acidosis in childhood, but there was not a single child that appeared to be affected in any way, save for hunger, by the lack of food. It seemed safe to conclude that starvation could not be the cause of the symptoms of acidosis.

Dr. JOHN LOVETT MORSE said it seemed that after listening to these papers there were certain points which the practitioner might carry away with him. One of these was that the presence of acetone bodies was not proof of disease, and, vice versa, that the absence of acetone bodies was not proof that there was not an acidosis. If starvation caused the presence of acetone bodies in the urine when one was giving a child to starvation treatment, he could not tell whether the acetone bodies were due to the starvation or to the disease. Acetone bodies might be found in all the conditions of childhood accompanied by fever. It seemed that the physician must learn to examine the blood for acetonemia and not trust to the presence of acetonuria. When they had all learned to tell whether a patient had acidosis by the examination of the blood they were still confronted by the fact that acetonemia was not a primary condition, and before they could treat this condition satisfactorily they must find its underlying cause. Newspapers reported an epidemic of acidosis in Boston last winter. In most of these cases the urine was never examined and in some cases in which it was examined no acetone bodies were found. It seemed impossible to have an epidemic of acidosis, because acidosis was a secondary and not a primary condition. It had been his experience that a careful examination showed that these children had something else. There were places in New Hampshire where there were a great many cases of severe illness in children. The only thing found in these children outside of vomiting was the change in respiratory excursion and a diminution in the amount of urine. In these cases large amounts of acetone bodies were found in the urine. The large majority of these children got well, but some of them died. One could not deny that these were cases of acidosis. In cases presenting these symptoms the complications had all shown a bacterial infection of the blood and a local focus of infection.

Dr. CHARLES GILMORE KERLEY said he thought this subject was one of the most important that would come before the section at this meeting. He had been trying for five or six years to correlate these cases, showing a recurrent symptomatology. They found cases in which there was a distinct acetonuria and cases in which there was a distinct acidosis; it was not these but the borderline cases that gave the most difficulty in the attempt at classification. The type of case that showed the acetonuria were the children fed with too much milk. The majority of children of runabout age received too much fat and too much sugar. These were the children that showed acetonuria and high fever; about 60 or 70 per cent. of them showed acetonuria; a smaller percentage of cases of pneumonia, scarlet fever, and other conditions accompanied by a fever also showed acetonuria. In these children the power of assimilation of carbohydrates seemed to be held in abeyance and acidosis resulted. Dr. Kerley cited three cases of acidosis in which there seemed to be no definite complications.

Dr. JOHN JAHORSKY of St. Louis asked how the clinician was to distinguish these cases of acidosis from cases of gastrointestinal intoxication without having the tests accurately carried out. He wanted to know whether the hyperpnea could be depended upon, and when this was present whether it was better to give sodium bicarbonate. Should these cases of gastrointestinal intoxication be treated in the old way by barley water, saccharine water, etc., or should one begin right away giving large doses of bicarbonate instead of calomel?

Dr. HENRY D. CHAPIN of New York said that in answer to Dr. Jahorsky's question the treatment of the diarrhea was not different from that used ordinarily, giving castor oil, washing out the bowel, stopping the milk, and then giving carbohydrates.

Dr. JOHN HOWLAND of Baltimore, in closing the discussion, said that in the first place in the discussion there had been shown the same confusion in calling recurrent vomiting acidosis, which he had distinctly warned against in his paper. Cases of recurrent vomiting were not acidosis; an overwhelming majority of cases of recurrent vomiting had acetonuria, but this was not acidosis. One did not have acidosis until there was a diminished alkali reserve in the body, and in recurrent vomiting a diminished alkali reserve was almost the exception. One need give the alkali treatment only when the acetonemia was severe and prolonged. There was only one symptom of acidosis, and that was the hyperpnea, the exaggerated breathing of the air-hunger type. Acidosis might occur without fever and without vomiting. The examination of the carbon dioxide tension of the alveolar air was not so difficult if the air was collected by the method devised by Dr. Marriott. In this way the air could be collected at the bedside.

Wednesday, June 14—Second Day.

Further Study of the Amino-Acid Content of the Blood.—Drs. C. J. PETTIBONE and F. W. SCHLUTZ of Minneapolis presented this paper, which was read by Dr. Schlutz. He reviewed the literature with reference to amino acids, which showed that the amount of amino acids in the blood varied widely, but there was little to show what relation the amount of amino acids in the blood might bear to various pathological conditions. The normal amount of amino acids per 100 c.c. of blood in infants was about 4 mgs. To find out what the variations from normal might be, a series of sixty children were studied, varying in age from one month to thirteen years. Among the pathological conditions present in this series were diphtheria, scarlet fever, bronchopneumonia, tuberculosis, atrophy, a number of nervous disorders, nephritis, rachitis, encephalitis, tonsillitis, and a number of other conditions. The blood examined was taken from the median basilic vein and the estimations were made by the method of Van Slyke and Meyer, 2 to 5 c.c. of blood being used. The analyses were made one-half hour after taking the blood. The figures ran lower for children than those of Van Slyke and Meyer for adults. In the diseased conditions the figures did not seem to differ from those found in health. There was no increase in the amino content of the blood in febrile conditions, as might have been expected; neither was there a decrease. There seemed to be no striking correlation between the amount of amino acid present in the blood and the length of time since the last feeding.

Symposium on Syphilis — The Frequency of Hereditary Syphilis. — Drs. FRANK S. CHURCHILL and R. S.

AUSTIN of Chicago presented this contribution, which was read by Dr. Churchill, who explained that the report on a series made by him in 1910, in which he found thirty-nine positive Wassermann reactions in a series of 102 infants, was open to criticism, because at that time he had taken a number of weakly positive Wassermann reactions as positive which in the light of their present knowledge would not be accepted as definitely positive. Dr. Austin had nothing to do with that part of the work. The present study was based on an unselected series of 695 patients coming to the Children's Memorial Hospital Clinic from November 1, 1915, to June 1, 1916. They had now learned that a weakly positive Wassermann reaction might be obtained in many conditions other than syphilis, as yaws, leprosy, tuberculosis, eczema, and some acute infections. In order that statistics might be considered reliable, there were two factors requisite: they must be based on the observation of a large number of individuals, and there must be accuracy in diagnosis. To meet this latter requirement in hereditary syphilis the family history of the patient and the laboratory findings must be taken into consideration. Owing to the transitory positive Wassermann reactions in other conditions it was well to have the test repeated. They had found positive Wassermann reactions in forty-two cases of eczema, sometimes a single and sometimes a double Wassermann. After describing the technique used the author stated that they had divided their reactions into three groups according to the degree of hemolysis. A single positive Wassermann reaction was regarded as of almost no value from a diagnostic point of view. A double Wassermann with physical signs of syphilis, of course, clinched the diagnosis. In the absence of clinical signs it was well to have the test repeated. A triple Wassermann reaction even without physical signs of syphilis was farly good proof of the presence of lues. While this series of cases was too few to warrant definite conclusions, they had found that twenty-three cases could be considered as syphilitic. Sixteen of these twenty-three cases gave a triple Wassermann reaction. Six of the twenty-three cases showed no physical manifestations of the disease and the diagnosis was only based on the triple Wassermann reaction. The cases that were not considered syphlitic were grouped in definite classes. In 640 of these 672 cases there was nothing suggestive of syphilis. There was a certain number of cases in which there was a doubt as to whether they were syphilitic, and these cases should be regarded as syphilitic, treated, and kept under observation, both for their own good and for the welfare of society. A study of the incidence of hereditary syphilis as found in the literature showed a wide range of results and varied from 2 to 14 per cent. in Europe and in this country. In this series the incidence was 3.3 per cent., while in four of the largest studies made in this country it had ranged from 2 to 6 per cent.

The Clinical Course and Physical Signs in Heriditary Syphilis.—Dr. ABNER POST of Boston presented this paper, which was read by Dr. Philip H. Sylvester of Newton Center, Mass. He stated that there was an amount of irreconcilable variation in the descriptions of infantile syphilis found in the literature. A difference should be made between the child that was syphilitic *ab initio* and the one rendered syphilitic after life had begun. Hereditary syphilis had been confused with congenital syphilis. Hereditary syphilis occurred in a great variety of clinical forms, and there was a difference between early and late hereditary syphilis. In the early form the child was usually emaciated, suffered from impaired digestion, showed an eruption of the bullous type, had cracked lips which might ulcerate, and enlarged liver and spleen. In contrast to this severe type all gradations of symptoms might be found. Some of the children appeared apparently healthy until they developed something that indicated the condition. Obstinate wakefulness might arouse suspicion, and was particularly likely to occur in cases in which the disease affected the bones. Another symptom was the nasal catarrh, often leading to the belief that adenoids were present. Operation in such cases gave no relief. The nasal passages were decidedly narrowed. Aside from the fact that operation gave no relief to the patient, there was the danger that the operator might be infected. It was difficult to form an estimate of the incidence of infantile syphilis, as it was quite customary to give marasmus as the cause of death on the death certificate of many children in whom syphilis was the cause of the marasmus. Syphilis showed a marked tendency to involve the lymphatic system; the enlarged glands of syphilis were often attributed to tuberculosis. In many subjects the skin was of a pale, sallow, yellowish hue. The eruption of hereditary syphilis was maculopapular. It usually was noticeable first on the heels and had a glistening appearance. There was sometimes desquamation. This condition might be observed on the palms of the hands as well as on the soles of the feet; it was also often found under the diaper. Other signs that were characteristic of early syphilis were shedding of the nails, thinning of the hair, and cranial exostoses. These latter were often attributed to rachitis. Other bone changes of syphilis might also be mistaken for rachitis, as osteochondritis. As to the treatment, salvarsan administered to the mother usually brought about a great improvement in the succeeding baby, but there still might be some stigmata of syphilis. It had been stated that in the case of twins one might show the stigmata of syphilis and the other not. Cases were cited which showed that a thorough search might often reveal the signs of syphilis in a child supposed to be healthy.

Comparative Studies of the Luetin and Wassermann Reactions.—Drs. L. R. DEBUYS and J. A. LANFORRD presented this communication. They stated that in studying the symptoms of congenital syphilis they had found that there were not many classical symptoms. Moreover, it was important to recognize syphilis early in order to give the child the best possible chance in life. For this reason laboratory tests that could be depended upon were important. In making the Wassermann tests they had used the classical method of Wassermann, which was described in the paper, and in making the luetin tests they had used the technique of Noguchi, carried out minutely. They had made 350 Wassermann tests and 159 luetin tests in 179 cases. Thirty old cases studied with the Wassermann reaction several years ago were included. The period during which the cases were observed varied from one month to five and one-half years. There were seventy-nine children, sixty-three mothers, and eight fathers. The children varied in age from twelve days to just under puberty. In sixty-two families more than one member was tested by both the Wassermann and the luetin tests. The latest reaction in a mother was twenty-four days, and in another instance the reaction only showed itself after fourteen days. In some instances in which the Wassermann test had been negative, after the luetin test was made and was positive the Wassermann also became positive. It seemed that in some instances active anti-syphilitic treatment brought out a positive reaction where the reaction had previously been negative. The most violent luetin reactions occurred in a mother and nursing baby in whom there were no signs of syphilis. It developed that the mother had been given potassium iodide, and the interesting feature in this case was not only the effect of the iodide on the mother but also on the nursing baby. In this study they had found that the luetin test was more reliable than the Wassermann. In eighty-one children and parents the readings of the luetin test were dependable. In four instances there was a negative luetin and a positive Wassermann, and it was believed that there was an error in technique in these cases, as they all occurred on the same day, and none of them was considered clinically as luetic. The positive luetin reaction was found in many instances in which the Wassermann was negative. It was also found that a positive luetin test ran regularly in families, which was further evidence of the accuracy of this test. In the series of thirty old cases studied only by the Wassermann test, in which the luetin test had not been made, it was shown that thirteen out of twenty-nine would not have been recognized by the Wassermann reaction alone. It had also been observed that the Wassermann reaction varied from time to time, according to the activity of the disease. This was not the case with the luetin test. In concluding, the writers stated that the luetin test should not displace the Wassermann test, for the Wassermann reaction indicated the presence of anti-bodies in the blood. The luetin test showed the presence of syphilis even though it was inactive. However, the luetin test had the disadvantage that it was influenced by drugs, and again it should not be considered negative until sufficient time had passed to be sure that one would not have a late reaction.

Late Hereditary Syphilis.—Dr. P. C. JEANS of St. Louis presented this paper. He said the division of hereditary syphilis into early and late was not very

satisfactory, for the early changes might occur as late as the fifth or sixth year and the late changes might occur as early as at birth. This division must be relegated to its proper place. The only evidence of syphilis might be a positive Wassermann reaction. There was very little literature on the subject of latent syphilis, and the question arose whether such cases should be treated. It seemed to him that in such cases there was some advantage in carrying out the treatment just as though the manifestations of the disease were present, in spite of the possibility of developing a keratitis. If these cases were not treated there was a probability that the condition would manifest itself later anyway. The writer then reviewed Head's classification of syphilis of the central nervous system, and stated that it was the classification he would adopt in discussing syphilis of the central nervous system. He stated that certain authors had tried to correlate the symptoms of syphilis and chorea. He had had one case in which he thought the syphilis was the cause of choreic symptoms. In this instance salvarsan cleared up the choreic symptoms. About 20 per cent. of cases of epilepsy might be be considered as due to syphilis. Multiple sclerosis proper did not occur in childhood. Hemiplegia was the most frequent acquired paralysis due to syphilis. Syphilis of the central nervous system was not as uncommon in children as had been supposed. Optic atrophy had been seen as early as four and one-half years of age; tabes was not so rare, but it was difficult to make a diagnosis of this condition in children. Paresis was more common than tabes. In young children the intelligence was not developed, so it was impossible to demonstrate the changes incident to syphilis of the central nervous system. It was often difficult to differentiate syphilitic from tuberculous processes, especially when the bones, joints, and lymph glands were involved. It had been the writer's experience that both the gross and microscopical picture might be indistinguishable. Many syphilitic processes were treated as tuberculous and support was even brought to the diagnosis of tuberculous by the laboratory tests. Hutchinson's triad was scarcely ever present. In a study of several hundred cases he had not found it present once. He had found keratitis present in 25 per cent. of his cases. Hutchinson's teeth in 6 per cent. and deafness in 1 per cent.

The Treatment of Hereditary Syphilis.—Dr. PHILIP H. SYLVESTER of Newton Center, Mass., read this paper. He said that a pregnant syphilitic woman had a much better chance of having a viable child if treated than if untreated. Since they had established their system of prenatal care in Boston he felt sure the percentage of viable children was greater and there were fewer abortions than before. Salvarsan was effective in the early cases, but salvarsan had been largely discarded in the new form in favor of neosalvarsan. After treatment by salvarsan or neosalvarsan alone the clinical symptoms returned after the cessation of the treatment, so that they had returned to the old treatment by mercury. Even if salvarsan was used at first it must be accompanied by mercury. There had also been a reaction in favor of inunctions of mercury. The tendency was to increase the dose of salvarsan rather than to diminish it and to give it in a concentrated solution. It could be very easily given through the longitudinal sinus. There were some new ideas advanced with reference to treating syphilis with antimony and mercury by inhalation, but thus far one could not say much of them. There was very little to show that the treatment of the mother influenced the child after birth. Some felt that breast milk contained antibodies and others attributed the improved condition of the child when the mother was under treatment to the better milk supply. Mercury should be given for several months and then, if at the end of six months the Wassermann was not positive, it might be omitted for a time, but it should be given at intervals over a period of two years, even though the Wassermann remained negative. If the child gave a negative Wassermann at the end of 2½ years it might be considered to be cured. Others believed that neosalvarsan should be given every two, three, or four months in addition to the older treatment. The late cases of syphilis in children might be divided into two groups. The one corresponded to the tertiary stage in the adult, and in these cases the results of treatment were more encouraging than in the adult, but less so than in the early stage. The second group included cases of syphilis of the nervous system. Some good results had been claimed for the Swift-Ellis method of treatment. Many cases in which nutrition was poor and the mental development retarded were in reality syphilitic. Many of these children were not sick, but they were distinctly under par, and if the Wassermann reaction was positive they should be given routine antisyphilitic treatment. Of fifty early cases treated by the writer eighteen presented clinical evidence of early syphilis. The dose of salvarsan that the writer used for a baby of one month was 0.1 of a grain; in a baby from one to six months, 0.2 gr.; from six months to one year, 0.25 gr. The writer described the treatment given different cases in this series and emphasized the importance of early treatment and a continuation of treatment over a period of two years. He said neosalvarsan was the most favorable arsenical preparation for use in children and thought that though the treatment of syphilis of the central nervous system had been disappointing it was not discouraging and all cases should be treated.

Dr. BORDEN S. VEEDER of St. Louis said there was one point he wished to emphasize, and that was the involvement of the central nervous system in hereditary syphilis. The statements made in textbooks that probably the involvement of the central nervous system in hereditary syphilis was rare was probably incorrect. The statement had been made that it was easy to give neosalvarsan intravenously. He did not think it was easy to administer it in this way. He had made injections of bichloride of mercury into the muscles and the cases cleared up more rapidly than with neosalvarsan. He usually gave 1 per cent. solution in four or five minims. In using this treatment one had to watch the kidneys very carefully, since one might activate a nephritis by the bichloride. He gave these injections every day for a period of ten days and then stopped it for a time, and later gave it again for a week. In syphilis of the nervous system he used mercury, as in these cases salvarsan did not seem to have the slightest effect. This was probably due to the fact that in syphilis of the nervous system the lesion was due to the death of nerve cells and nothing would do any good when syphilis of the central nervous system was well established.

Dr. HENRY DWIGHT CHAPIN said that as he recalled it Dr. Sylvester had stated that he gave large doses of mercury in little children. It should be remembered that in these young children gingivitis was not present to serve as a warning that a sufficiently large amount of mercury had been administered. The gastrointestinal symptoms of hereditary syphilis had been spoken of, but there was one other prominent symptom, and that was prolonged anemia. This was difficult to treat in some cases. It might also be mentioned that there was an impression that the breast milk might be affected by the arsenical preparations. He had attempted to prove this statement, but had never found arsenic in the breast milk, and had abandoned the idea of influencing syphilis in the child by treating the mother. Osteochondritis might be distinguished from rickets because it was unilateral, while in rickets the swelling was invariably symmetrical.

Dr. JOHN LOVETT MORSE of Boston said that enlargement of the lymph nodes in children was so common in disturbances of nutrition that he thought it should be disregarded as a sign of syphilis. He had been investigating the possible etiological relationship of syphilis to chorea, and his study seemed to show that syphilis could not be regarded as a cause of chorea. In his series of thirty cases he found only one with a positive Wassermann reaction, and that was a feeble reaction. Some French observers had treated chorea with very favorable results by the use of arsenic intravenously, so that the fact that the case reported was improved by salvarsan could not be taken as proving that the chorea was due to syphilis.

Dr. MARY DUNNING ROSE of New York related an instance in which a negative Wassermann reaction had influenced her to defer anti syphilitic treatment, with the result that there was a loss of six months time in a case that should have been treated.

Dr. STOLL of Hartford, Conn., gave a lantern-slide demonstration of the conditions found in Hutchinson's teeth and other deformities of the teeth resulting from syphilis and also of several other bony deformities.

A Case of Duodenal Ulcer—Operation and Improvement.—Dr. H. M. MCCLANAHAN of Omaha reported this case. He stated that the patient was a girl 7 years of age who had been well until she was 5 years old. She then began to have recurrent attacks of gastric pain and vomiting, at intervals of from three weeks to six months. There was a peristaltic wave that could be

induced by drawing the fingers across the abdomen. There was tenderness in the region of the pylorus and a palpable mass. The case appeared to be one of partial stenosis of the pylorus or malignancy. The patient was operated upon by Dr. Jones of Omaha and the stomach was found much dilated and there was a very small pyloric orifice with a ring that could not be stretched. A posterior gastrojejunostomy was performed and recovery was prompt. The child was soon apparently well but was not sufficiently careful of her diet with the result that the symptoms reappeared. Dr. Jones found at the operation what appeared to be a healed duodenal ulcer. The case illustrated the need of proper post-operative care. The appearance of a peristaltic wave was very unusual in a child of this age and also the finding of the healed duodenal ulcer.

Dr. E. E. GRAHAM of Philadelphia said that pyloric stenosis in older children was not so uncommon as was supposed, but it was quite uncommon to meet with a duodenal ulcer in a child. The peristaltic wave and the typical tumor did not usually appear in older children, and in these particulars Dr. McClanahan's case was very unusual.

Dr. CHARLES GILMORE KERLEY of New York said it was unusual to find the peristaltic wave in older children; that was a symptom in infants but was rarely seen in older children. The palpable mass was also favorable to making a diagnosis. Just before coming away Dr. Downes had operated on a case of hypertrophic pyloric stenosis for him in an infant and they found a mass an inch in diameter and neither Dr. Downes nor he had been able to feel it. It was sometimes quite difficult to palpate these tumors, and if one did not find a tumor it did not mean that there was no hypertrophy.

Dr. V. W. TURNER of Des Moines, Iowa, described a case of pyloric stenosis which he observed which was operated on by the longitudinal incision of the tumor. This child, a three-months old baby, made a good recovery.

Dr. HARRY LOWENBURG of Philadelphia said he had had 30 or 40 cases of pyloric obstruction and nine had been operated upon. In all instances a gastroenterostomy had been done. Some were now performing a pyloroplasty, the operation known as the Ramstedt operation or its modification which Dr. Strass of Chicago had been using.

Dr. C. H. JOHNSON of Grand Rapids said that four months ago he had operated on a case of pyloric stenosis by the Strass method and the case had made a good recovery; since then he had three or four successful cases.

Dr. JULIUS H. HESS of Chicago said that he was familiar with Dr. Strass' work. Of the first 23 cases upon which he had operated, 21 were living. He reviewed the method of performing both the Ramstedt and the Strass operation and thought the Strass operation had certain advantages. If in doing the Ramstedt operation one accidentally cut through the mucosa he then had to resort to a posterior gastroenterostomy. The Strass operation had another advantage in that it left no raw surface.

Chronic Intestinal Disorders of Mechanical Origin in Children.—Dr. CHARLES GILMORE KERLEY of New York presented this communication. He stated that he wished to change the title of his paper so that it would include the chronic digestive disorders of the stomach as well as of the intestines. Digestive disturbances might be grouped into those due to bacterial infection, those due to perverted function, and those dependent upon chronic appendicitis. Certain cases showing recurrent symptoms of gastrointestinal disturbance, vomiting, fever, and sometimes respiratory symptoms, did not respond to the treatment that was usually effective in these cases. In seeking for the reason of his failure to treat these cases successfully he had resorted to the *x*-ray and this had opened up an entirely new field. Many of these cases had shown intractable constipation or constipation alternating with diarrhea. The *x-ray* had furnished the explanation. In some instances an elongated sigmoid was found and in others a ptosis of the stomach; there were others again showing a partial pyloric stenosis. These cases were treated by massage, gymnastics, Russian oil, olive oil, or fluid extract of cascara. If he wished to administer a teaspoonful of cascara in a day he gave it in three doses and in that way obtained a better effect than though it was all given at once. Massage and physical therapy had been of the greatest aid in dealing with the constipation due to the long sigmoid. He regulated the diet by omitting white bread, crackers, and similar articles, and gave more green vegetables and fruits, except in cases in which there was diarrhea. In cases having a diarrhea he omitted the fruit and vegetables and gave boiled skimmed milk. Tese roentogenograms had demonstrated the possible dangers of enemas. The effect of the enema was to further irritate the bowel in these cases. The *x*-ray served the additional purpose of showing the parents just what was wrong with the child and made it easier to get their cooperation. When they were shown that there was an anatomical deformity they did not expect the child to be cured immediately. In many cases they had found that they were dealing with a ptosis. Ptoses in the adult were congenital or had their origin during child life. The child of five, six, or eight years ate a large meal three times a day and with each meal drank two or three glasses of milk, being urged to do this by his parents very often. The result was the stomach had more food to carry than was suited to its carrying power and as a result the child got a ptosis. The cases having ptosis of the stomach wore a Dr. Aaron band, modified for children, and having a transverse ridge which supported the stomach. He also had these children rest on the right side after meals. The vomiting, the asthmatic attacks, the eczema, the colitis, or the constipation had disappeared or been greatly helped in all of these cases by the recognition of the true condition and the treatment described.

Roentgen-Ray Findings of Chronic Intestinal Disorders of Mechanical Origin in Children. — Dr. LEON T. LE WALD of New York gave this demonstration which showed the conditions found in the cases which Dr. Kerley had described. The first series of pictures which he exhibited showed air that was present in the stomach of the infant normally. It was shown that when the baby was kept in a horizontal position the food in the stomach covered the esophageal opening so that this air could not escape; as a consequence it was forced into the intestines and caused colic. It was shown that if the baby was thrown over the nurse's or mother's shoulder an opportunity was given for the escape of this air. Roentgenograms of many of Dr. Kerley's cases were exhibited which showed the elongated sigmoid, or the ptosed stomach, or moderate pyloric stenosis. It was his rule to consider a case suitable for operation if no food passed through the pylorus at the end of an hour. He warned surgeons in doing a gastroenterostomy to always be sure that they had closed the pyloric end of the stomach. He had seen several cases in which a fatal pneumonia had resulted from neglect in this respect. The fact should be emphasized that ptosis was not a matter of anatomy but rather of function. Two instances of syphilitic lesions of the stomach were shown and Dr. Le Wald said it was becoming very evident that many visceral lesions were of syphilitic origin, not only gumma but interstitial changes. Operations that had been suggested as corrective of the elongated sigmoid were an anastomosis between the cecum and the sigmoid or a resection of the proximal portion of the sigmoid.

Dr. HENRY DWIGHT CHAPIN of New York said he had presented a paper on this subject at the Minneapolis meeting and had shown a series of *x*-ray pictures to demonstrate that the sigmoid flexure of infants was a very much larger and more complicated structure than was believed. There were several cases in which the sigmoid went above the umbilicus; in other cases it formed a figure eight and was very mobile and very large. These showed the utter uselessness of high enemata to babies. One could not pass a soft catheter into the sigmoid flexure of a baby, so we might be coming to a point where we could stop annoying babies by trying to pass a tube. If the tube was introduced two or three inches and the bag was placed about two feet above the baby's body one could wash out the whole large intestine, if the solution was allowed to flow in slowly.

Dr. L. R. DE BUYS of New Orleans advanced the theory that the pressure on the air ball in the stomach might be responsible for the projectile vomiting seen in pylorospasm.

Dr. HARRY LOWENBERG said he had been studying along the same lines as Dr. Kerley had been working and he would have liked it better if Dr. Kerley had told them more in detail with reference to the way in which he treated the case that he said was the severest case of colic he had ever seen. With the charcoal test and the *x*-ray one could tell whether a child was getting enough food to sustain life and one could speedily tell

whether he was dealing with an operative or a non-operative case, but one could not always depend on the peristaltic wave and a palpable pylorus to show whether the case was one for operation or not.

Dr. KERLEY said that, in answer to the question as to how he treated the cases with severe colic, he used massage and physical therapy. Sweet oil and olive oil were given in doses as large as one-half an ounce. He took away cow's milk and employed evaporated milk mixtures.

Familial Cyanosis.—Dr. JULIUS H. HESS of Chicago presented this contribution. He said he had used this name for the want of a better one to describe a clinical picture occurring in three boys, aged 11, 9, and 5 years respectively, all children of the same family. The study of these cases had led to the finding of a new method of diagnosis for congenital heart lesions. In these children the cyanosis of the skin and mucous membranes was constant, increasing under exertion, excitement, and more especially in the presence of inflammatory conditions of the respiratory tract, to which all three boys were subject. Very careful physical examination, roentgenograms, metabolic studies, blood examinations and analyses, and tuberculin tests were made. The spectroscopic examination in each case showed the absorption bands corresponded to oxyhemoglobin. The skin showed no pathological pigmentation. The spleen and liver were seemingly normal in size. The physical examination did not yield signs of heart involvement sufficient to account for the condition presented, and hence these thorough investigations were made in the endeavor to account for the condition. In the course of his observations he found that a determination of the difference between the arterial and venous blood in cyanosis and in a normal condition would be of value. He had devised a method of making this comparison which he demonstrated and which would be of material assistance in diagnosing congenital heart lesions.

Dr. WALTER M. BOOTHBY of Boston said that about a year ago at the Brigham Brent Hospital in Boston they had made a study exactly like the piece of work just presented and had reported four cases which were published in the Journal of Physiology. It seemed quite remarkable that this same work should have been going on in two laboratories at the same time.

Dr. E. L. HOOVER of Elkhart said he wished to say a word in approval of this method. Thus far all methods of studying the heart had dealt only with the mechanism. They had had no way of finding the systolic output of the heart and the systolic output of the ventricle; this method gave the desired information and it would also give an idea of the reserve energy in the heart, something that they had not had up to the present time.

A Study of the Deaths in Philadelphia During the Past Five Years from Scarlet Fever, Measles, Diphtheria, Whooping Cough and Typhoid Fever.—Dr. EDWIN E. GRAHAM of Philadelphia presented this paper. He said that a study of these statistics led to several interesting conclusions quite different from the general opinion as to the mortality of the diseases to be considered. The most effective way of showing these facts was by grouping the mortality rates of the different diseases according to age. In studying the death rate in infants under one year of age it was found that pertussis was responsible for the greatest number of deaths, more than measles, diphtheria, or scarlet fever. Measles had the next highest mortality, much exceeding the number of deaths caused by diphtheria. With the exception of typhoid fever, which was rare during the first year of life, scarlet fever caused the fewest deaths. Scarlet fever caused fewer deaths than any other disease in this series. The most deaths from measles among infants occurred between the first and second year of life. Pertussis was not as fatal after the first year though it also had a high rate during the second year. There were no deaths from typhoid fever under one year. Between the ages of two and five years of age, diphtheria caused far more deaths than all the acute infections combined. Scarlet fever showed the lowest mortality at this age, although it caused more deaths in children between two and five years of age than at any other period of life. At this age measles was a serious disease. Whooping cough caused almost as many deaths between the ages of two and five as in those under two years of age. Therefore it must be considered a serious disease during the early years of life. The mortality of typhoid fever increased year by year and did not reach its highest point until adult life. Between five and ten years of age diphtheria caused more deaths than any other disease. At this age the mortality from measles and whooping cough decreased rapidly. There was no mortality from whooping cough between the ages of ten and fifteen years. On the other hand, typhoid fever now caused a higher mortality than any other acute infection and diphtheria ranked second. Between the ages of fifteen and twenty years there was an appreciable increase in the number of deaths from typhoid fever, while the mortality from scarlet fever was very low. From 1911 to 1915 the number of deaths from scarlet fever was 608 and of these 45 per cent. occurred between the ages of two and five years. Taking the death rates for all ages diphtheria was the most fatal disease in this group, having caused during this five-year period, 1,741 deaths. Typhoid fever had the next highest mortality, but in the last two years it had dropped, owing to an improved water supply and the pasteurization of milk. Measles at all ages caused more deaths than scarlet fever. The combined mortality of diphtheria was 11.8 per cent. This high mortality was attributed to the late recognition of the disease, for which parents were more often responsible than physicians. In the scarlet fever cases it had been noted that the mortality was lower when the number of cases was fewer. The points to be emphasized were the low death rate from scarlet fever, which was a much dreaded disease, and the high death rate from measles and whooping cough, against which children were less carefully protected.

Dr. ISSAC ABT said that the high mortality in diphtheria was a sad commentary on their method of dealing with diphtheria. That they should have such a mortality in a disease against which they possessed a specific remedy was because the disease was not recognized sufficiently early. It should be insisted that men learn to make a clinical diagnosis of diphtheria and should not depend too much on the laboratory. When the membrane was dense and covered the vulva and nares one was justified in suspecting diphtheria and should use antitoxin without waiting for a laboratory examination.

Thursday, June 15—Third Day.

Election of Officers.—The Section elected the following officers to serve for the coming year: *Chairman*, Dr. J. P. Sedgwick of Minneapolis, Minn.; *Vice-Chairman*, Frank C. Neff of Kansas City; *Secretary*, Dr. F. B. Gegenbach of Denver; *Representative to the House of Delegates*, Dr. H. M. McClanahan of Omaha.

Alkali Earth Equilibrium in Spasmophilia.— Dr. CLIFFORD C. GRULEE of Chicago read this paper. He discussed the literature on this subject and related the observations that he had made on six cases at the Presbyterian Hospital in Chicago. He found that giving large doses of calcium reduced the electrical irritability, while giving sodium and potassium salts increased the irritability. The increase in the electrical irritability was accompanied by a drop in weight. Three non-spasmophiliacs were given sodium and potassium without effect. Dr. Grulee said he did not feel that his observations had shown any definite relation between alkali earth equilibrium and spasmophilia, but the results spoke for an increased electrical irritability and a retention of the sodium and potassium salts. He had used sodium bicarbonates and sodium citrate, ten or fifteen grains every two hours, and calcium lactate given in large doses every four hours.

Dr. L. R. DEBUYS of New Orleans said that all were agreed that the calcium salts were the ones that controlled spasmophilia.

Dr. ALBERT BEIFIELD of Iowa City reported one case of spasmophilia treated successfully with calcium salts. The calcium salts produced practically a negative effect on the cathode. He gave sodium chloride, 15 grains every hour, and it lessened the irritability; the effect was shown within a few hours after the administration and disappeared within twenty-four hours.

Dr. HENRY F. HELMHOLZ of Chicago said he wished to recall an interesting report he had heard in Washington by Dr. Howland, in which it was shown that the calcium content of the blood during tetany was markedly reduced; this might explain some of the benefit Dr. Grulee observed during his experiments.

Dr. JOHN ZAHORSKY of St. Louis said he thought there was some more profound disturbance of nutrition in spasmophilia than simply a disturbance of salt metabolism and it was a question whether they would solve the problem by simply studying this phase of the subject.

Dr. T. C. MCCLEAVE of San Francisco asked Dr.

Grulee whether he thought calcium lactate was as effective as the other salts of calcium.

Dr. C. G. GRULEE of Chicago, in closing the discussion, replied that calcium lactate had seemed to give very good results in his hands. Much of this work must be reported with reserve. It was not what we gave but what a child absorbed that produced the result. He felt that the calcium treatment of spasmophilia was a distinct advantage.

A Study of 226 Cases of Chorea.—Dr. ISAAC ABT of Chicago presented this report. He said that notwithstanding the voluminous literature on chorea, there were many phases still open for discussion, because they did not know the exact cause of the disease. Chorea was one of the most common diseases; their hospital records showed that they treated 226 cases since 1880. During these years they had had 80,000 patients, 10,150 of whom were children. The cases of chorea were therefore 2 1/5 per cent. of all cases treated. As to the age incidence, some claimed that they had seen congenital rickets; the usual age, however, at which the disease was most frequent was from five to fifteen years. Their records showed the highest percentage of cases between the ages of five and fourteen years. They had had two cases three and one-half years of age. The disease was more frequent among females than among males, many authorities finding the ratio about three to one; in their series they had found it two females to one male, that was, 151 girls and 75 boys. They had studied the seasonal incidence of chorea in this series and found that January had the highest number of admissions to the hospital of chorea cases and December next; October showed the fewest. These records did not confirm the seasonal findings of Gowers. The author then discussed the literature on the relation of rheumatism and endocarditis to chorea, and also the bacteriology of chorea. He stated that the relation of rheumatism to chorea had not yet been proven; however, it was his belief that chorea was of infectious origin. In 143 cases in which a special history of rheumatism was mentioned only 13 gave a definite history of articular rheumatism. In 119 of the cases there were no manifestations of rheumatism preceding the chorea. The findings were similar regarding chorea and tonsillitis; only 45, or 33 1/3 per cent., gave a history of tonsillitis. These records did not justify the assumption that there was any relation between chorea and acute infectious diseases. There had been a tendency to assume a relation between syphilis and chorea, especially on the part of French observers, and some even claimed that they had treated cases of chorea successfully with salvarsan or neosalvarsan. In this series there were only two cases that showed any definite manifestation of congenital lues, so that these must be taken as a mere coincidence. Dr. Abt said that while he considered chorea as of infectious nature there was no question but that shock might bring on the symptoms of the disease. There seemed to be a tendency to localization of the choreiform movements. In 153 cases observed in this respect 46 showed a greater degree of involvement on one side than on the other. Of the 226 cases in this series, 73 showed cardiac affections, the majority being diagnosed as mitral. A few cases showed various other complications; two complications frequently observed were headache and vomiting. Some cases showed difficulty in speech and mental symptoms. In this series there was a total death rate of about 2 per cent., only one death being the direct result of the chorea. The average case remained in the hospital from five to eight weeks. There were 35 cases that had more than one attack. Some of the cases that received arsenic recurred and some that did not receive arsenic did not recur. Some of the cases were treated with large doses of arsenic; those cases treated without arsenic did as well as those treated with arsenical preparations. Arsenic might possibly have a deleterious effect of the heart muscle and innervation. It seemed unfair to treat a case of chorea with salvarsan unless syphilis was present.

Dr. HENRY F. HELMHOLZ of Chicago, Ill., said he would like to give the statistics from the Children's Memorial Hospital. They had had 138 cases of chorea, 33 1/3 per cent. of which gave a history of tonsillitis. Fifty-four per cent. of this series gave a history of either tonsillitis, rheumatism, or of cardiac involvement. From Rosenow's work, showing that the streptococcus had a tendency to localize in different parts of the body under different conditions, it might be that in chorea it localized in the brain. Even a single finding of this kind would carry more weight than a series of cases with negative findings.

Dr. ABRAHAM JACOBI of New York said he had seen a great many cases of chorea and had written on the subject in 1875, at which time he had come to the conclusion that there was a close relation between chorea, rheumatism, and endocarditis, and that one frequently saw rheumatism first, endocarditis second, and chorea third; changes in this order, however, might take place. Rheumatism should not be overlooked in children who did not walk; it was easy to overlook it in such young children. Sometimes children showed a limp and sometimes they complained of pains which were likely to be called growing pans. In such cases one must think of rheumatism. As to arsenic, Dr. Jacobi said he did not believe that arsenic frequently had a deleterious effect. On the other hand, arsenic in young children and in the adult was a tissue builder, and he used it especially in myocarditis where there was a functional murmur, because, just like phosphorus, it built up the tissues. One should not lose sight of the value of arsenic in any disease in which there was anemia, as it influenced the development of muscle and tissue. Dr. Jacobi said that Dr. A. L. Goodman of New York had been working on the treatment of chorea and had proven that chorea was at least curable, not after weeks and months of treatment, but within a few days. Dr. Goodman's method of treatment was to withdraw from the patient about 40 c.c. of blood; then to take the serum of this blood, about 18 or 20 c.c., and inject that into the spinal canal. About 12 cases had been treated in this way and remarkable cures were demonstrated. If the first injection did not effect a cure a second and even a third injection might be made.

Dr. C. S. WAHRER of Fort Madison, Ia., said that it was supposed that rheumatism was an etiological factor in chorea. They had a therapeutical armamentarium against rheumatism and he wondered why this had not been applied in the treatment of chorea.

Dr. ISSAC ABT, in closing the discussion, said he believed that chorea was a symptom of nervous exhaustion in many instances and when it was due to this cause the child readily recovered with the rest treatment, hot baths, etc.

Obscure Fever in Infancy and Childhood.—Dr. EDGAR P. COPELAND of Washington, D. C., presented this paper. He stated that in considering fever of obscure origin one must bear in mind the structural and functional immaturity of the heat regulating mechanism, in every sense comparable to the immaturity of other systems in early life. The effects of such deficiency, invariably present to a greater or less extent in the very young, varied greatly, always being more pronounced in those individuals exhibiting other evidence of the instability of the nervous system, as expressed in convulsive attacks, tetany, etc. Under such conditions the responses to varied stimuli manifested themselves as unusual disturbances of body temperature. The recognition of these facts, however, did not obviate the necessity of the most diligent search for those definite pathological conditions giving rise to obscure fever in early life. The writer called special attention to dental caries as a cause of obscure fever and stated that middle ear diseases was also frequently a cause of fever, which might be overlooked by the most competent aurist, because middle ear disease might be present which could not be detected by inspecting the ear drum. It would sometimes be found that there was drainage from the middle ear into the pharynx when nothing could be seen by the ordinary aural examination. There might be an unsuspected infection of the tonsils which caused fever and in his opinion such an infection was more often the cause of obscure fever than was generally supposed.

Dr. F. M. POTTENGER of Los Angeles said he thought that the cases of obscure fever reported gave the syndrome of toxemia and the fever was part of the sympathetic disturbance. The toxemia might be produced by proteins broken up in the body. Proteins might be divided into poisonous and non-poisonous. It had been shown that a fasting animal got fever if protein was administered to it. This was illustrated by the fact that in typhoid fever, when afer fasting the patient was given milk, there occurred a protein poisoning and a rise in temperature. The depressive emotional states did the same thing as toxemia through the action of the sympathetic nervous system which caused a vasomotor constriction.

Dr. T. C. MCCLEAVE said he had been interested in what had been said about the tonsils because he had

had difficulty in getting the throat men to remove tonsils. The throat men did not know a great deal about the relation of general pathology to the condition of the tonsils; the pediatrician was a better judge as to the advisability of removing the tonsils.

Dr. ABRAHAM JACOBI said that in very few of these cases was it the tonsils that were at fault; even large tonsils were not at fault. The fault lay with the rest of the pharynx, the lymphoid bodies that surrounded the antrum and were between the nares and the throat were more often the cause of fever and toxic symptoms than the tonsils themselves. It had been his teaching that the nose must be kept clean, not by an atomizer but by irrigation. In giving irrigations emphasis must be placed on the danger of snuffing, a neglect to warn against snuffing might result in middle ear trouble.

Dr. ST. GEORGE T. GRINNAN of Richmond, Va., called attention to the possibility of having obscure fever as the result of over exercise. In certain children a blood examination might show a leucopenia and a low-hemoglobin percentage. He cited such a case in a child in which rest in bed for two weeks effected a cure.

Dr. JOHN LOVETT MORSE of Boston called attention to a great lack in our knowledge in that we did not know what were the normal variations of temperature in childhood. Again one had to be sure the thermometer was right before he said that a child had fever. As to the dental caries as a cause of fever, many dentists were two generations behind the time. A child might have an infection of the teeth and yet look all right. Teeth that were filled might have abscesses at their roots which were not suspected until the *x*-ray revealed their presence. The ears as a cause of fever must not be ruled out because the drum looked normal; one must remember that the child might have disease of the ethmoid cells or the antrum that might be the cause of symptoms. Nothing had been said about the urinary tract, the possibility of an infection here being the cause of fever must not be forgotten.

Dr. CHARLES GILMORE KERLEY stated that when the temperature was above 100° F. it could not be regarded as normal and should arouse suspicion. In many cases the cause could not be found. If a child with fever was put to bed, if the fever was of infectious origin the temperature would not come down, but if the child was neuropathic the rest would reduce the temperature.

The Natural Protection of the Child Against Tuberculosis, and Gradual Development of a Specific Cellular Defense.—Dr. F. M. POTTENGER of Los Angeles made this contribution. He emphasized the importance of recognizing that childhood was the time in which infection with tuberculosis occurred and that the prevention of adult tuberculosis was in the hands of the pediatrists. Most adult infection was simply the stirring up of a latent infection acquired in childhood. The question was how could we keep the child from becoming infected. The answer was that we must recognize the importance of the lymphatics. There were two kinds of defenses, humoral and cellular, and neither were specific. The child came in contact with various kinds of bacteria and gradually developed immunity by producing specific enzymes, and until this immunity was developed he must depend for protection on the lymphatic defense. The tonsil was the lymphatic structure for this defense. The fact that a tonsil was enlarged was not evidence that it should be removed, but rather that it was being overworked in exercising its function of defense. Hence tonsils should not be removed just because they were enlarged. They must be removed if they were diseased. The fact that a few tubercle bacilli were found in the tonsil did not indicate that the tonsil should be removed because the bacilli were destroyed before they passed through the tonsils to other tissues. In early life the bacilli passed readily through the tissues but when the cellular defense was established this did not occur, and, consequently, in the adult one got surface infection or clinical tuberculosis which did not involve the lymphatics but the tissues themselves, while in the child the opposite was true.

Dr. JOHN RITTER of Chicago expressed himself as much pleased to hear this attempt to stop the promiscuous removal of the tonsils. The lingual tonsil, the adenoids, and the tonsil proper were infantile organs whose purpose was to stop the entrance of bacilli into the body. Tuberculosis was a different proposition in a child from what it was in an adult. When one found a tuberculosis of the mediastinal glands in a child the bacilli had passed through the bronchus or trachea until they reached the mediastinal glands which set up a defense. One should be very careful in making a diagnosis of pulmonary tuberculosis in a child. Particular care should be exercised in guarding against the entrance of tubercle bacilli as far as possible. If there was disease of the tonsil it should be treated, but it should not be removed unless absolutely necessary. Dr. Ritter said he might make the statement that he had records showing that in cases in which the tonsils had been removed within six months or a year an active tuberculosis had supervened.

Dr. JOHN ZAHORSKY of St. Louis emphasized the statement that the tonsil was the first line of defense in the young child against infection, and if one removed much of the tonsillar ring there might ensue a bronchial pneumonia or a lymphadenitis. One should be very conservative in considering the removal of tonsils. The pediatrist was the one to decide when the tonsil was to be removed.

Dr. JAY I. DURAND of Seattle said the tonsil was a wide open gland while other glands were protected; this favored infection of the crypts of the tonsils which acted as culture tubes. It was difficult to tell when a tonsil should come out, but, in his opinion, it was better to err on the side of taking them out. A perfectly smooth scar tissue was a better defense than an infected tonsil. The general resistance of the child was improved by the removal of diseased tonsils and he had not seen a greater amount of infection after the removal of the tonsils. The bronchial glands were a means of defense as well as the tonsils.

Dr. T. C. MCCLEAVE expressed the opinion that it was safer to err on the side of removing the tonsils than on the other side. The tonsil doubtless had a protective function, but this was easily lost. He thought clinical experience justified the statement that in a large proportion of children readily infected tonsils were diseased. He had seen fewer infections supposed to have their portal of entrance by way of the throat in cases in which the tonsils had been removed and could not agree with the speaker who said that there were a greater number of bronchial infections after the removal of the tonsils.

Dr. ST. GEORGE T. GRINNAN of Richmond said that in Virginia one seldom saw tonsillitis in young negroes, yet these young negroes had a large amount of tuberculosis of the lung. It was extremely rare to see tuberculosis of the lungs in young white children but they had a large amount of glandular tuberculosis, and a large number of children who had it also had their tonsils.

Dr. F. P. GEGENBACH of Denver asked Dr. Pottenger how much importance he placed on the persistent enlargement of the anterior cervical glands and if there was any advantage in removing the tonsils in these cases, and also whether he would remove the tonsils in cases in which there was already a tuberculous adenitis.

Dr. CHARLES GILMORE KERLEY said he thought it was faulty teaching that would allow a diseased tonsil containing tubercle bacilli to remain in the throat. There was need of careful judgment as to what constituted a diseased tonsil. He believed that the tonsil had a function in the development and shaping of the throat and its removal should be avoided if possible until a child was three or four years of age. The removal of the tonsils resulted in adhesions between the pillars with a narrowing of the throat and a tendency to dryness of the throat. In contagious and infectious diseases, such as grip, measles, etc., the tonsil might furnish a site of infection as well as furnishing a method of prophylaxis against infection. Dr. Kerley said he had yet to see a case of tuberculous adenitis occur after tonsillitis when the child had been properly operated upon, and he had yet to see tuberculous glands as the result of operation when the tonsil had been thoroughly eradicated.

Dr. F. M. POTTENGER, in closing the discussion, stated that he would not allow a focus of infection to remain, but the point he had wished to emphasize was that the child had no other defense except the natural defense provided by the lymphatics, and that these had the function of building up a specific immunity against different varieties of bacteria. He would not remove a tonsil for tuberculous adenitis because he did not believe the tonsil was at fault.

Pediatric Nursing.—Dr. J. P. SEDGWICK of Minneapolis, Minn., presented this communication in which he discussed the influence which apparently minor conditions might have on the outcome of a case. He said that the present methods of charting a case had become so cumbersome that it consumed considerable time

to interpret a chart. He had devised a plan for graphic charting by which the condition of the child with reference to weight, temperature, feeding, etc., was shown by plotting the curves. There was a space for notes. A surprising amount of information in connection with the case could be quickly grasped by observing such a chart. By aseptic nursing in childhood a great deal of cross-infection could be prevented. In instances in which a nursing mother had a respiratory infection as grip, a cold, etc., she should wear a mask of two layers of gauze over the nose and mouth. Other members of the family and visitors were often a source of danger to the child. In order to prevent cross-infection in their hospital they placed the beds of the children seven feet apart. An experience with vulvovaginitis had taught them the importance of bathing female infants on a slab with running water. The writer cited instances in which the condition of premature and atrophic babies had varied directly with the attention that was given to a proper regulation of the temperature. In one instance too much warmth had caused a rise in temperature to 106° F. Other instances were cited in which insufficient warmth had resulted in a subnormal temperature. The importance of urinary analyses in infants was emphasized and a modification of the Lawrence apparatus for collecting the urine in female infants was demonstrated. In closing, Dr. Sedgwick stated that often the painstaking efforts of the physician were spoiled by incompetent nursing.

Report of Five Cases of Tertian Malaria Treated with Organic Synthetic Arsenic Intravenously.—Dr. FRANK C. NEFF of Kansas City, Mo., presented this report. He stated that synthetic arsenic had been given with satisfactory results in malaria of the tertian type but that it had little effect in the other types of malaria. He related the history of five cases showing a similarity in that after the administration of the diarsenal the plasmodium had disappeared from the blood. He gave doses of two or three decigrams of diarsenal and after two or three injections found that the plasmodium had disappeared. Several of the cases were not followed up; in others there has been a recurrence of the organisms and the treatment had to be repeated. There were no reactions that would contraindicate the use of salvarsan or neosalvarsan. While these agents had caused the disappearance of the organisms from the blood no conclusion could be drawn as to the permanence of the cure. Perhaps permanent results might be produced by different methods of administration or by the use of this treatment together with quinine as an adjuvant.

The Use of Boiled Milk in Infant Feeding.—Dr. JOSEPH BRENNEMANN of Chicago read this paper. He stated that the use of boiled milk in digestive disturbances was quite general and if it was good for the sick baby there seemed no reason why it should not be good for the well baby. The advantages of boiled milk were both bacteriological and physiological. The bacteriological advantages were understood by all. The physiological advantages depended upon the difference in the coagulability of the casein in boiled and raw milk. Boiled milk formed very hard curds which could only be broken up by peripheral digestion. In some instances the curds in raw milk were so large and so hard that they could not be gotten rid of even by vomiting. One of the reasons for the good results obtained with *eiweiss* milk was that it formed almost invisible curds. One never observed bad results in changing a baby from raw milk to boiled milk while the reverse was by no means true. The writer referred to the recent tendency to attribute all digestive disturbances in babies to the fats and carbohydrates in the food; he felt that the casein was also a factor in the production of symptoms of indigestion. The commercial pasteurization of milk was open to the objection that the milk was kept 24 hours after it had been pasteurized. Milk boiled at home was preferable to pasteurized milk; pasteurized milk might be considered as belonging in the raw milk class. If milk boiled at home was as popular as pasteurized milk there was every reason to believe that babies would suffer less.

Dr. C. G. GRULEE of Chicago said that scurvy had been held up as the scarecrow to prevent people from using boiled milk. He was in the habit of using boiled milk and boiled certified milk. He had never seen a case of scurvy that could be attributed to boiled milk.

Dr. HARRY LOWENBERG of Philadelphia said that if Dr. Brennemann needed anyone to come to his assistance in advocating the use of boiled milk he was ready to do so. He was using boiled milk and even went so far in some instances as to use the old fashioned flour ball. As to the question of boiled milk as a factor in the production of scurvy he was ashamed to say that he had known of practitioners who failed to recognize the classical symptoms of scurvy, and even in cases in which subperiosteal hemorrhages were present were giving salicylates under the impression that they were dealing with rheumatism. He was in accord with the speaker in the belief that the protein of cow's milk could still be considered a factor in the production in indigestion in infants.

Dr. C. S. WAHRER of Fort Madison, Iowa, said he had been following this section for years and had come to a few conclusions. One had to be careful in drawing conclusions. He had heard of one man who made the statement that 33 1/3 per cent. of left-handed people were criminals, therefore left-handedness was a sign of criminality. Someone had replied, "Yes, but 77 per cent. of left-handed people are otherwise normal." This had its application to the feeding of babies. Most children did best on mother's milk; some did well on raw milk; some did well on pasteurized milk; others did well on goat's milk; others again on ass' milk, and some did well on anything.

Dr. JULIUS H. HESS said the disadvantages that were held against boiled milk might be obviated by giving fruit juices and vegetables earlier. Some children took more milk when it was boiled than when it was raw. He found that frequently boiled milk was being fed much in excess of the requirements of the child. This was not true of babies with a tendency to rickets; in these infants he had found that feeding cod-liver oil enabled the baby to handle more calcium. There was no question that there were fewer intestinal infections where boiled milk was used. They used boiled milk and had practically no gas bacillus infections.

Dr. L. R. DEBUYS of New Orleans said he had used first raw milk, then pasteurized milk, and now he was using boiled milk, but he always made it a point, whatever method was employed, to be sure that he first had good milk. He was now teaching that as soon as feeding with boiled milk was begun one must begin to add orange juice to the diet.

Dr. T. C. MCCLEAVE expressed the opinion that commercial pasteurization was a fallacy. Milk cooked in the home was better and from it one would get no infections.

Dr. CHARLES GILMORE KERLEY of New York said that one should not make sweeping statements, but must look upon this subject from the broad standpoint. Personally he preferred raw milk, but only a comparatively small part of the human family could have pure raw milk, inasmuch as it could not be provided. The next best thing was boiled or cooked milk. It was true that boiled milk was more easily digested than raw milk, especially was this true if the milk was boiled in the presence of starch. Dr. Kerley said he had never succumbed to the tendency to consider fats and carbohydrates the only cause of digestive disturbances; he had always believed that the casein played a part. There was no doubt that the feeding of cooked milk was a factor in the production of scurvy. Therefore, the speaker insisted, as soon as a child was put on boiled milk, orange juice or some other fruit juice should also be given as a precautionary measure.

The Use of Malt Soup Extract in Infant Feeding.—Dr. B. RAYMOND HOOBLER of Detroit read this paper in which he called attention to the failure of the prescribed formulæ accompanying the various preparations of malt soup to meet many of the indications in infant feeding. One great fault of some of these formulæ was that they called for wheat flour boiled but a very short time. The formulæ for the use of malt soup extracts might be greatly varied by adding it to a well cooked cereal, not necessarily wheat flour, but any other cereal that seemed best suited to the case. The cereal should be cooked at least one-half hour. One could then select any kind of milk that seemed indicated, boiled, pasteurized, certified, or raw. The writer presented a number of formulæ that illustrated how many of those for the use of malt milk might be made much more flexible, and he also explained the effect of different cereals with reference to fermentation and to the presence of different varieties of intestinal flora.

The Influence of Diet on the Development and Health of the Teeth.—Dr. JAY I. DURAND of Seattle presented this communication which consisted of an investiga-

tion of the incidence of caries in the teeth of 5000 children with reference to feeding during infancy. The highest percentage of caries was found in those fed on sweetened condensed milk. He cited statistics based on an examination of the skulls of a number of the primitive races which showed that caries was very rare in those races in comparison with what was found in modern civilized races. For instance, dental caries in Maori skulls had an incidence of only 0.76, while the Maori child in a civilized environment showed an incidence of 15 per cent. The foods that predisposed to caries were the sweet, sticky carbohydrates. These should not be eaten at the end of a meal as they lodged in the crevices of the teeth and even a thorough brushing failed to entirely remove them. There they fermented and caused caries. The foods which cleansed the teeth and prevented caries were the hard foods that required vigorous mastication, and raw vegetables such as lettuce and celery.

The Regulation of Children's Diet After Infancy.—Dr. J. H. M. KNOX of Baltimore presented this paper. He stated that the dietary needs of the infant during the first year of life were usually very carefully considered and in view of this fact it was rather surprising that so little attention was paid to the diet of children after infancy. But few studies had been made to ascertain the caloric requirements of the growing child at different ages or the relative amounts of the various food elements required for proper growth and development. It had been estimated that 100 calories per kilo or 45 per pound was the average requirement of a child one year old. Tables were presented which indicated the relative amounts of the various food elements required at different ages. After the first year of age the child could adapt itself to a wide variation in the proportions of the various food elements. These tables showed that as the age of the child advanced the amount of protein required decreased, and the proportion of carbohydrates increased. The quantity of fluid required varied widely and was dependent upon temperature, humidity, etc. The mineral requirements of the diet were usually fully met by the ordinary vegetable and cereal in the diet. The physician should be able to provide a well-balanced ration for a growing child and one that would be well digested. There was great danger of overfeeding growing children. A case illustrating the effects of overfeeding was cited, in which the child was getting 2500 calories per day, that was 150 calories per kilo body weight; the number of calories was diminished by one-half and the child rapidly improved in condition. Diet lists suited to children of various ages were presented together with a list of foods that could be used as substitutes for those given. The writer said he would not discuss the alteration of the diet in disease, but that by a careful adjustment of the diet in disease the child might be kept along without lowering the caloric value of its diet.

Report of a Committee on the Investigation of Diarrheal Diseases.—Dr. JOSEPH I. GROVER presented a statistical study of diarrheas in Boston for 1915 and Henry F. Helmholz presented an analyses of the mortality for 1915 in the Infant Welfare Society of Chicago. The points brought out by Dr. Grover's statistics were that absolute humidity had a larger influence than any other one factor in infectious diarrheas. The proprietary foods, more especially those causing a great deal of carbohydrate fermentation, seemed to predispose to diarrhea and children with other diseases were more susceptible to the diarrheas of infancy than other children. Dr. Helmholz's analysis of the Infant Welfare Work in Chicago brought out very clearly the relation of poverty to the mortality from diarrheal diseases and showed in a most striking manner that the visiting nurse was an exceedingly potent factor in lessening infant mortality among the poor foreign population. The mortality had been far higher in August than during any other month.

Dr. HENRY DWIGHT CHAPIN said he thought these statistics gave a wrong impression, in that they gave a much higher death rate in August than in July. He had made studies some years ago for five consecutive years and found that the mean temperature of July was 2 per cent. higher than that of August, and the mortality was higher for July than for August. Another unusual thing in these statistics was that the mortality rate from respiratory diseases was greater in August than in March. In New York he had found that the highest point in the mortality rate was not reached on the hot days, but a few days after the hot spell.

Books Received.

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REFRACTION OF THE HUMAN EYE AND METHODS OF ESTIMATING THE REFRACTION. Including a section on the Fitting of Spectacles and Eye-Glasses, etc. By JAMES THORINGTON, A.M., M.D. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia. 344 illustrations, 27 of which are colored. 407 pages. Price $2.50 net.

A TEXT-BOOK OF FRACTURES AND DISLOCATIONS. With special reference to their Pathology Diagnosis and Treatment. By KELLOGG SPEED, S.B., M.D., F.A.C.S. Published by Lea & Febiger, Philadelphia and New York. Illustrated with 656 engravings. 888 pages.

DISPENSARY CONTROL OF TUBERCULOSIS. Eighth Annual Report of the Association of Tuberculosis Clinics of the City of New York. 39 pages.

GYNECOLOGY. By WILLIAM P. GRAVES, M.D., F.A.C.S. Published by W. B. Saunders Company, Philadelphia and London. With 424 Original Illustrations, 66 of them in colors. Octavo volume of 770 pages. Price, Cloth, $7 net; Half Morocco, $8.50 net.

EMBRYOLOGY, ANATOMY, AND DISEASES OF THE UMBILICUS, TOGETHER WITH DISEASES OF THE URACHUS. By THOMAS S. CULLEN. Published by W. B. Saunders Company, Philadelphia and London. With 269 original illustrations and 7 plates by MAX BRODEL and AUGUST HORN. Large octavo of 680 pages. Price, Cloth, $7.50 net; Half Morocco, $9 net.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS. By ROBERT W. LOVETT, M.D. Published by P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia. Third Edition, Revised and Enlarged, with 180 Illustrations. 213 pages. Price, $1.75 net.

BLOOD-PRESSURE. Its Clinial Applications. By GEO. WILLIAM NORRIS, A.M., M.D. Published by Lea & Febiger, Philadelphia and New York. Second Edition, Revised and Enlarged. Illustrated with 102 Engravings and 1 Colored Plate. 424 pages.

THE SEX COMPLEX. A Study of the Relationships of the Internal Secretions to the Female Characteristics and Functions in Health and Disease. By W. BLAIR BELL. Published by William Wood & Company, New York. Illustrated. 233 pages. Price $4 net.

SURGICAL NURSING AND TECHNIQUE. A Book for Nurses, Dressers, House Surgeons, etc. By CHAS. P. CHILDE. Published by William Wood & Company, New York. Illustrated. 229 pages. Price $2 net.

PLAGUE. Its Cause and the Manner of Its Extension—Its Menace—Its Control and Suppression—Its Diagnosis and Treatment. By THOMAS WRIGHT JACKSON, M.D. With Bacteriologic Observations by Dr. Otto Schobl. Published by J. B. Lippincott Company. Illustrated. 192 pages.

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